



REPAIR DIAG CZUAAAO MAY 1983 COPYRIGHTS 1983 MADE IN USA DEUNA AH-T364A-MC FICHE 3 OF M. IF IF III IF A

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IDENTIFICATION

PRODUCT CODE: AC-T363A-MC

PRODUCT NAME: CZUAAAO REPAIR DIAG

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MAINTAINER: DISTRIBUTED SYSTEMS DIAGNOSTIC ENGINEERING

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- GENERAL INFORMATION
- 1.1 PROGRAM ABSTRACT

THIS PRODUCT IS THE PDP-11 REPAIR LEVEL DIAGNOSTIC FOR THE UNIBUS TO NI ADAPTER (DEUNA). THIS DIAGNOSTIC WAS DESIGNED TO DETECT STATIC AND DYNAMIC HARDWARE FAILURES IN THE DEUNA BOARDSET. THE DEUNA BOARDSET IS THE TWO MODULES WHICH PLUG INTO THE PDP-11 UNIBUS. THE TWO MODULES ARE THE M7792 PORT MODULE AND THE M7793 LINK MODULE. THIS DIAGNOSTIC CAPABLE OF TESTING FIGHT SHICH POARDSETS ON A STAGE PRP-11 UNIBUS. IS CAPABLE OF TESTING EIGHT SUCH BOARDSETS ON A SINGLE PDP-11 UNIBUS.

THIS DIAGNOSITC WILL ONLY RUN IN A STANDALONE, OFFLINE ENVIRONMENT. THE DEUNA IS LOGICALLY REMOVED FROM THE 'WIRE' BY THE DIAGNOSTIC, SO NO MESSAGES FROM OTHER NODES ON THE NETWORK, TO THE DEUNA UNDER TEST, WILL DISRUPT THE TESTING PROCESS. HOWEVER, BECAUSE THIS DIAGNOSTIC RUNS THE DEUNA SELF-TEST IN TEST 9, AND THE SELF-TEST PERFORMS AN EXTERNAL LOOPBACK AS PART OF ITS TESTING PROCEDURE, IT IS RECOMMENDED THAT THE DEUNA TRANSCEIVER CABLE BE REMOVED FROM THE H4000 TRANSCEIVER AND PLUGGED INTO A FIELD SERVICE EXTERNAL LOOPBACK CONNECTOR AND PLUGGED INTO A FIELD SERVICE EXTERNAL LGOPBACK CONNECTOR.

THIS DIAGNOSTIC HAS BEEN WRITTEN FOR USE WITH THE DIAGNOSTIC

RUNTIME SERVICES SOFTWARE (SUPERVISOR). THESE SERVICES PROVIDE THE INTERFACE TO THE OPERATOR AND TO THE SOFTWARE ENVIRONMENT. THIS PROGRAM CAN BE USED WITH XXDP+, ACT, APT, SLIDE AND PAPER TAPE. FOR A COMPLETE DESCRIPTION OF THE RUNTIME SERVICES, REFER TO THE XXDP+ USER'S MANUAL. THERE IS A BRIEF DESCRIPTION OF THE RUNTIME SERVICES IN SECTION 2 OF THIS DOCUMENT

1.2 SYSTEM REQUIREMENTS

THE FOLLOWING LIST OF HARDWARE IS REQUIRED TO RUN THIS DIAGNOSTIC:

PDP-11 CPU
28k WORDS OF MEMORY
CONSOLE TERMINAL
DEUNA BOARDSET (M7792, M?793)
PLUS, ONE OF THE FOLLOWING:
-LINK BOARD TO BULKHEAD CABLE CONNECTED AND BULKHEAD TO
TRANSCEIVER TAP CABLE CONNECTED (NORMAL ONLINE CONFIGURATION)
OR
-LINK BOARD TO BULKHEAD CABLE CONNECTED AND BULKHEAD TO FIELD
SERVICE EXTERNAL LOOPBACK CONNECTOR INSTALLED (OFFLINE CONFIGURATION)

1.3 RELATED DOCUMENTS AND STANDARDS

XXDP+ USERS MANUAL CHQUS XXDP+ PROGRAMMERS MANUAL DEUNA LINK BOARD FUNCTIONAL SPECIFICATION DEUNA PORT BOARD FUNCTIONAL SPECIFICATION DEUNA PROGRAMMING SPECIFICATION

1.4 DIAGNOSTIC HIERARCY PREREQUISITES

THIS DIAGNOSTIC ASSUMES THAT THE PDP-11 PROCESSOR AND MEMORY ARE IN WORKING CONDITION AND IS CAPABLE OF EXECUTING PDP-11 INSTRUCTIONS NORMALLY. THE UNIBUS IS EXPECTED TO BE FULLY OPERATIONAL I.E. ANY PROBLEMS REPORTED BY THIS DIAGNOSTIC, ABOUT THE INTEGRITY OF THE UNIBUS, ARE ASSUMED TO BE THE RESULT OF A FAILURE ON THE DEUNA AND NOT THE FAULT OF OTHER DEVICES CONNECTED TO THE UNIBUS.

THIS DIAGNOSTIC DOES NOT REQUIRE ANY PRELIMINARY TESTS BE EXECUTED ON THE DEUNA, NOR DOES RUNNING OF ANY OTHER TESTS PRIOR TO RUNNING THIS DIAGNOSTIC, AFFECT THE OPERATION OF THE TESTS IN THIS DIAGNOSTIC.

FOR A COMPLETE TEST OF THE DEUNA, ALL THE AVAILABLE DIAGNOSTIC SOFTWARE SHOULD BE RUN. THIS WOULD INCLUDE RUNNING THE DEUNA FUNCTIONAL DIAGNOSTIC AND THE DECX-11 SYSTEM EXERCISOR WITH THE DEUNA MODULE SELECTED.

1.5 ASSUMPTIONS

THIS DIAGNOSTIC ASSUMES THAT THE DEUNA WILL NOT HANG THE UNIBUS WHEN AN ACCESS IS MADE TO ANY ONE OF THE PCSR REGISTERS. THE DEUNA IS CAPABLE OF ASSERTING ACLO ON THE UNIBUS, THIS FEATURE COULD, IF BROKEN. CAUSE THE UNIBUS TO HANG. THIS TYPE OF FAILURE IS NOT DETECTED BY THE DIAGNOSTIC.

PORTIONS OF THIS DIAGNOSTIC USE SPECIAL DIAGNOSTIC MICROCODE THAT IS LOADED INTO THE DEUNA WRITEABLE CONTROL STORE. THIS MICROCODE ALLOWS THE DIAGNOSTIC MORE VISABILITY INTO THE INTERNALS OF THE DEUNA HARDWARE AS WELL AS NOT RELYING AS HEAVILY ON THE COMPLEX OPERATIONAL MICROCODE IN ROM, HOWEVER, THIS INCREASES THE DIAGNOSTIC'S COMPLEXITY SOMEWHAT. THEREFORE, IT IS ASSUMED THAT THE USER OF THIS DIAGNOSTIC IS FAMILIAR WITH THE DEUNA ENOUGH TO READ DEUNA MICROCODE SHOULD AN ERROR OCCUR.

2.0 OPERATING INSTRUCTIONS

THIS SECTION CONTAINS A BRIEF DESCRIPTION OF THE RUNTIME SERVICES. FOR DETAILED INFORMATION, REFER TO THE XXDP+ USER'S MANUAL (CHQUS).

2.1 COMMANDS

THERE ARE ELEVEN LEGAL COMMANDS FOR THE DIAGNOSTIC RUNTIME SERVICES (SUPERVISOR). THIS SECTION LISTS THE COMMANDS AND GIVES A VERY BRIEF DESCRIPTION OF THEM. THE XXDP+ USER'S MANUAL HAS MORE DETAILS.

| COMMAND | EFFECT |
|----------|---|
| START | START THE DIAGNOSTIC FROM AN INITIAL STATE |
| RESTART | START THE DIAGNOSTIC FROM AN INITIAL STATE |
| CONTINUE | CONTINUE AT BIEST THAT WAS INTERRUPTED (AFTER ^C) |
| PROCEED | CONTINUE FROM AN ERROR HALT |
| EXIT | RETURN TO XXDP+ MONITOR (XXDP+ OPERATION ONLY!) |
| AL | ACTIVATE A UNIT FOR TESTING (ALL UNITS ARE |
| | CONSIDERED TO BE ACTIVE AT START TIME |
| DROP | DEACTIVATE A UNIT |
| DISPLAY | TYPE A LIST OF ALL DEVICE INFORMATION |
| FLAGS - | TYPE THE STATE OF ALL FLAGS (SEE SECTION 2.3) |
| ZFLAGS | CLEAR ALL FLAGS (SEE SECTION 2.3) |

A COMMAND CAN BE RECOGNIZED BY THE FIRST THREE CHARACTERS. SO YOU MAY, FOR EXAMPLE, TYPE "STA" INSTEAD OF "START".

2.2 SWITCHES

THERE ARE SEVERAL SWITCHES WHICH ARE USED TO MODIFY SUPERVISOR OPERATION. THESE SWITCHES ARE APPENDED TO THE LEGAL COMMANDS. ALL OF THE LEGAL SWITCHES ARE TABULATED BELOW WITH A BRIEF DESCRIPTION OF EACH. IN THE DESCRIPTIONS BELOW, A DECIMAL NUMBER IS DESIGNATED BY "DDDDD".

| J'TCH | EFFECT |
|-------------|---|
| /TESTS:LIST | EXECUTE ONLY THOSE TESTS SPECIFIED IN THE LIST. LIST IS A STRING OF TEST NUMBERS, FOR EXAMPLE - /TESTS:1:5:7-10. THIS LIST WILL CAUSE TESTS 1,5,7,8,9,10 TO |
| | BE RUN. ALL OTHER TESTS WILL NOT BE RUN. |
| /PASS:DDDDD | EXECUTE DDDDD PASSES (DDDDD = 1 TO 64000) |
| /FLAGS:FLGS | SET SPECIFIED FLAGS. FLAGS ARE DESCRIBED IN SECTION 2.3. |
| /EOP:DDDDD | REPORT END OF PASS MESSAGE AFTER EVERY DDDDD PASSES ONLY. (DDDDD = 1 TO 64000) |

TEST/ADD/DROP ONLY THOSE UNITS SPECIFIED IN THE LIST. LIST EXAMPLE - /UNITS:0:5:10-12 USE UNITS 0,5,10,11,12 (UNIT NUMBERS = 0-63) /UNITS:LIST

EXAMPLE OF SWITCH USAGE:

START/TESTS:1-5/PASS:1000/E0P:100

THE EFFECT OF THIS COMMAND WILL BE: 1) TESTS 1 THROUGH 5 WILL BE EXECUTED, 2) ALL UNITS WILL TESTED 1000 TIMES AND 3) THE END OF PASS MESSAGES WILL BE PRINTED AFTER EACH 100 PASSES ONLY. A SWITCH CAN BE RECOGNIZED BY THE FIRST THREE CHARACTERS. YOU MAY, FOR EXAMPLE, TYPE "TES:1-5" INSTEAD OF "TESTS:1-5".

BELOW IS A TABLE THAT SPECIFIES WHICH SWITCHES CAN BE USED BY EACH COMMAND.

| | TESTS | PASS | FLAGS | EOP | UNITS |
|----------|-------|------|-------|-----|-------|
| START | X | X | X | X | X |
| RESTART | X | X | X | X | X |
| CONTINUE | | X | X | X | |
| PROCEED | | | X | | |
| DROP | | | | | X |
| ADD | | | | | X |
| DISPLAY | | | | | X |
| FLAGS | | | | | |
| ZFLAGS | | | | | |
| EXIT | | | | | |

2.3 FLAGS

FLAGS ARE USED TO SET UP CERTAIN OPERATIONAL PARAMETERS SUCH AS LOOPING ON ERROR. ALL FLAGS ARE CLEARED AT STARTUP AND REMAIN CLEARED UNTIL EXPLICITLY SET USING THE FLAGS SWITCH. FLAGS ARE ALSO CLEARED AFTER A START COMMAND UNLESS SET USING THE FLAG SWITCH. THE ZFLAGS COMMAND MAY ALSO BE USED TO CLEAR ALL FLAGS. WITH THE EXCEPTION OF THE START AND ZFLAGS COMMANDS, NO COMMANDS AFFECT THE STATE OF THE FLAGS; THEY REMAIN SET OR CLEARED AS SPECIFIED BY THE LAST FLAG SWITCH.

| FLAG | EFFECT |
|-------------|--|
| HOE | HALT ON ERROR - CONTROL IS RETURNED TO |
| LOE IER* | RUNTIME SERVICES COMMAND MODE LOOP ON ERROR INHIBIT ALL ERROR REPORTS |
| ÎBE • | INHIBIT ALL ERROR REPORTS EXCEPT FIRST LEVEL (FIRST LEVEL CONTAINS |
| IXE* | ERROR TYPE, NUMBER, PC, TEST AND UNIT) INHIBIT EXTENDED ERROR REPORTS (THOSE CALLED BY PRINTX MACRO'S) |
| PRI | DIRECT MESSAGES TO LIVE PRINTER |
| PNT | PRINT TEST NUMBER AS TEST EXECUTES |
| BOE | "BELL" ON ERROR |

UAM UNATTENDED MODE (NO MANUAL INTERVENTION)
IDR INHIBIT PROGRAM DROPPING OF UNITS
ADR EXECUTE AUTODROP CODE
LOOP ON TEST

*ERRCR MESSAGES ARE DESCRIBED IN SECTION 3.1

SEE THE XXDP+ USER'S MANUAL FOR MORE DETAILS ON FLAGS. YOU MAY SPECIFY MORE THAN ONE FLAG WITH THE FLAG SWITCH. FOR EXAMPLE, TO CAUSE THE PROGRAM TO LOOP ON ERROR, INHIBIT ERROR PEPORTS AND TYPE A 'BELL' ON ERROR, YOU MAY USE THE FOLLOWING STRING:

/FLAGS:LOE ER:BOE

2.4 HARDWARE QUESTIONS

WHEN A DIAGNOSTIC IS STARTED, THE RUNTIME SERVICES WILL PROMPT THE USER FOR HARD. ARE INFORMATION BY TYPING "CHANGE HW (L)?" YOU MUST ANSWER "Y" AFTER A START COMMAND UNLESS THE HARDWARE INFORMATION HAS BEEN "PRELOADED" USING THE SETUP UTILITY (SEE CHAPTER 6 OF THE XXDP+ USER'S MANUAL). WHEN YOU ANSWER THIS QUESTION WITH A "Y", THE RUNTIME SERVICES WILL ASK FOR THE NUMBER OF UNITS (IN DECIMAL). YOU WILL THEN BE ASKED THE FOLLOWING QUESTIONS FOR EACH UNIT.

WHAT IS THE PCSRO ADDRESS?
THIS IS THE ADDRESS AT WHICH PCSRO RESIDES ON THE UNIBUS.
THIS ADDRESS IS SWITCH SELECTABLE ON THE PORT MODULE.
THE ALLOWABLE RANGE IS 160000-177776.

WHAT IS THE VECTOR ADDRESS?
THIS IS THE INTERRUPT VECTOR ADDRESS. THIS ADDRESS IS ALSO SWITCH SELECTABLE ON THE PORT MODULE. THE ALLOWABLE RANGE IS 000-776.

SAMPLE DIALOGUE:

DR>START

CHANGE HW (L) ? Y

UNITS (D) ? 2

UNIT 0

WHAT IS THE PCSRO ADDRESS? (0) ? 170000 WHAT IS THE VECTOR ADDRESS? (0) ? 700

UNIT 1

WHAT IS THE PCSRO ADDRESS? (0) ? 170010 WHAT IS THE VECTOR ADDRESS? (0) ? 710

2.7 QUICK START-UP PROCEDURE (XXDP+)

TO START-UP THIS PROGRAM:

- 1. BOOT XXDP+
- 2. GIVE THE DATE AND ANSWER ANY QUESTIONS THE MONITOR ASKS
- 3. TYPE "R NAME", WHERE NAME IS THE NAME OF THE BIN OR BIC FILE FOR THIS PROGRAM
- 4. TYPE "START"
- 5. ANSWER THE "CHANGE HW" QUESTION WITH "Y"
- 6. ANSWER ALL THE HARDWARE QUESTIONS

WHEN YOU FOLLOW THIS PROCEDURE YOU WILL BE USING ONLY THE DEFAULTS FOR FLAGS AND SOFTWARE PARAMETERS. THESE DEFAULTS ARE DESCRIBED IN SECTIONS 2.3 AND 2.5.

- 3.0 ERROR INFORMATION
- 3.1 TYPES OF ERROR MESSAGES

THERE ARE THREF LEVELS OF ERROR MESSAGES THAT MAY BE ISSUED BY A DIAGNOSTIC: GENERAL, BASIC AND EXTENDED. GENERAL ERROR MESSAGES ARE ALWAYS PRINTED UNLESS THE "IER" FLAG IS SET (SECTION 2.3). THE GENERAL ERROR MESSAGE IS OF THE FORM:

NAME TYPE NUMBER ON UNIT NUMBER TST NUMBER PC:XXXXXX ERROR MESSAGE

,WHERE; NAME = DIAGNOSTIC NAME
 TYPE = ERROR TYPE (SYS FATAL, DEV FATAL, HARD OR SOFT)
 NUMBER = ERROR NUMBER
 UNIT NUMBER = O - N (N IS LAST UNIT IN PTABLE)
 TST NUMBER = TEST AND SUBTEST WHERE ERROR OCCURRED
 PC:XXXXXX = ADDRESS OF ERROR MESSAGE CALL

BASIC ERRCR MESSAGES ARE MESSAGES THAT CONTAIN SOME ADDITIONAL INFORMATION ABOUT THE ERROR. THESE ARE ALWAYS PRINTED UNLESS THE "IER" OR "IBR" FLAGS ARE SET (SECTION 2.3). THESE MESSAGES ARE PRINTED AFTER THE ASSOCIATED GENERAL MESSAGE.

EXTENDED ERROR MESSAGES CONTAIN SUPPLEMENTARY ERROR INFORMATION SUCH AS REGISTER CONTENTS OR GOOD/BAD DATA. THESE ARE ALWAYS PRINTED UNLESS THE 'IER', 'IBE' OR 'IXE' FLAGS ARE SET (SECTION 2.3). THESE MESSAGES ARE PRINTED AFTER THE ASSOCIATED GENERAL ERROR MESSAGE AND ANY ASSOCIATED BASIC ERROR MESSAGES.

4.0 PERFORMANCE AND PROGRESS REPORTS

AT THE END OF EACH PASS, THE PASS COUNT IS GIVEN ALONG WITH THE TOTAL NUMBER OF ERRORS REPORTED SINCE THE DIAGNOSTIC WAS STARTED. THE "EOP" SWITCH CAN BE USED TO CONTROL HOW OFTEN THE END

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OF PASS MESSAGE IS PRINTED. SECTION 2.2 DESCRIBES SWITCHES.

5.0 DEVICE INFORMATION TABLES

AT THE COMPLETION OF THE FIRST PASS OF EACH DEUNA BEING TESTED, INFORMATION FOR THAT DEUNA IS PRINTED. THIS PRINTOUT CONTAINS THE ETHERNET DEFAULT ADDRESS (OBTAINED BY READING THE PHYSICAL ADDRESS ROM), THE OPERATIONAL MICROCODE ROM VERSION NUMBER, AND THE SWITCH PACK SETTINGS FOR SELF TEST LOOPING AND REMOTE BOOTING.

SYAMPLE PRINTOUT:

ETHERNET DEFAULT ADDRESS (HEX): AA-00-03-00-00-02

ROM MICROCODE VERSION (DECIMAL: 1

SWITCH PACK SET FOR :

SELF TEST LOOP DISABLED
REMOTE BOOT ENABLED

6.0 TEST SUMMARIES

TEST 1: PCSRO READ ACCESS TEST

THIS TEST WILL VERIFY THAT THE PORT CONTROL AND STATUS REGISTER O CAN BE READ FROM THE UNIBUS AND THAT THE PREDETERMINED BITS APPEAR IN THE EXPECTED BIT POSITIONS.

TEST 2: PCSR1 READ ACCESS TEST

THIS TEST WILL VEH!FY THAT THE PORT CONTROL AND STATUS REGISTER CAN BE READ FROM THE UNIBUS AND THAT THE PREDETERMINED BITS APPEAR IN THE EXPECTED BIT POSITIONS.

TEST 3: PCSR2 READ ACCESS TEST

THIS TEST WILL VERIFY THAT THE PORT CONTROL AND STATUS REGISTER 2 CAN BE READ FROM THE UNIBUS

TEST 4: PCSR3 READ ACCESS TEST

THIS TEST WILL VERIFY THAT THE PORT CONTROL AND STATUS REGISTER 3 CAN BE READ FROM THE UNIBUS

TEST 5: RESET TEST

THIS TEST WILL VERIFY THE RESET STATE FOR ALL DEUNA UNIBUS REGISTERS

TEST 6: PCSR2 REGISTER READ/WRITE TEST

THIS TEST WILL CHECK THE REGISTER FOR ALL SAO AND SA1 ERRORS (STUCK AT O AND STUCK AT 1 ERRORS). THE HOST WILL WRITE PATTERNS TO THE REGISTER AND READ THEM BACK TO VERIFY. THE PATTERNS TO BE USED ARE AT THE LABEL PATERN: IN THE GLOBAL DATA SECTION OF THIS PROGRAM.

NOTE: SINCE PCSR2 BIT 00 IS ALWAYS PRESET TO LOGIC O, THE LOWEST ORDER BIT OF THE PATTERN WILL BE MASKED BEFORE DOING THE COMPARISON.

TEST 7: REGISTER PCSR3 READ/WRITE TEST

THIS TEST WILL WRITE PATTERNS TO THE WRITEABLE FIELD OF PCSR3 AND WILL READ THESE BACK FOR VERIFICATION.

TEST 8: NOP TEST

THIS TEST WILL VERIFY THAT THE DEUNA PROCESSOR IS ALIVE AND CAN RESPOND TO A PORT COMMAND ISSUED. THE NOP PORT COMMAND WILL BE ISSUED TO THE DEUNA IN PCSRO BITS 3:0 AND WILL WAIT FOR THE 'DNI' BIT TO SET IN PCSRO.

THE NOP PORT COMMAND USES A MINIMUM OF HARDWARE BUT FORCES THE T11 TO EXECUTE THE PORT COMMAND SEQUENCE.

TEST 9: SELF TEST

THIS TEST VERIFIES THAT THE ROM BASED SELF TEST CAN BE RUN SUCCESSFULLY WHEN INVOKED VIA THE SELF TEST PORT COMMAND.

TEST 10: DEUNA ROM DUMP TEST

THIS TEST WILL VERIFY THAT THE DATA PATH FROM THE T11 PROCESSOR TO THE UNIBUS INTERFACE IS INTACT AND ABLE TO TRANSFER DATA RELIABLY. THIS DATA PATH IS CRUCIAL FOR FURTHER TESTING BECAUSE IT IS NECESSARY FOR LOADING REPAIR-LEVEL DIAGNOSTICS INTO THE WCS.

THE TEST STRATEGY IS TO TRANSFER KNOWN DATA OVER THE DATA PATH AND TO VERIFY THE TRANSFERRED DATA.

THE DATA SOURCE FOR THE DUMP TEST IS THE ROM MICROCODE RESIDENT ON THE DEUNA PORT BOARD. A DUMP OF THE ROM WILL EXERCISE THE DATA PATH NEEDED FOR LOADING WCS AND THE ROM CONTENTS CAN BE VERIFIED. THE ROM MICROCODE WILL BE CHECKED BY VERIFYING THE CRC BYTES. THE CRC BYTES CHARACTERIZE THE DATA CONTENTS OF THE ROM AND ARE BURNED INTO THE ROM AT THE TIME OF MANUFACTURE. A FAILURE TO VERIFY THE CPC CALCULATION ON THE DUMPED ROM DATA DUMP WILL BE INTERPRETED AS AN ERROR IN THE DATA PATH.

TEST 11: WCS LOAD/DUMP TEST

THIS TEST WILL USE THE LOAD/DUMP PORT COMMAND TO VERIFY THE DATA PATHWAY TO/FROM THE WCS. PATTERNS WILL BE USED TO CHECK THE DATA PATHWAY FOR ALL SAO AND SA1 ERRORS.

BECAUSE THE UPERATIONAL MICROCODE NEEDS THE LOWER 2K OF WCS ONLY THE TOP HALF OF WCS WILL BE LOADED WITH A DATA PATTERN THEN DUMPED BACK TO MEMORY FOR VERIFICATION. THIS PROCEDURE WILL BE REPEATED FOR ALL PATTERNS.

TEST 12: LOAD AND START FUNCTION TEST

THIS TEST WILL VERIFY THAT THE LOAD AND START MICROADDRESS PORT COMMAND IS OPERATIONAL.

THE PROCESS IS TO LOAD WCS WITH MICROCODE THAT WHEN STARTED WILL WRITE A PATTERN OF DATA TO THE LITE-BYTE FIELD OF PCSR1 REGISTER WHICH CAN BE READ FROM THE UNIBUS AND BE VERIFIED.

NOTE: THIS TEST USES MICROCODE MODULE 'A'

TEST 13: COMPREHENSIVE WCS MEMORY TEST

THIS TEST WILL EXHAUSTIVELY TEST THE WCS MEMORY.
CUSTOM MICROCODE MODULE B. MICROTEST #1 IS USED TO DO THE ACTUAL TESTING.
MICROTEST #1 RUNS A SERIES OF MICROSUBTESTS TESTS ON THE WCS MEMORY CHECKING
FOR BOTH ADDRESS AND DATA ERRORS. IF AN ERROR DOES OCCUR THE PORT CONTROL
BLOCK WILL CONTAIN THE INFORMATION ABOUT THE ERROR.

PCBB+0: CONTAINS THE MICROSUBTEST THAT FAILED PCBB+1: 0 = DATA ERROR, 1 = ADDRESS ERROR PCBB+2: CONTAINS THE ADDRESS OF THE LOCATION PCBB+4: CONTAINS THE DATA THAT WAS WRITTEN PCBB+6: CONTAINS THE DATA THAT WAS READ

TEST 14: INTERRUPT VECTOR TEST

THIS TEST WILL SERIFY THAT THE INTERRUPT INTERFACE LOGIC OF THE DEUNA IS CAPABLE OF GENERATING AN INTERUPT VECTOR AND ARBITRATING FOR CONTROL OF THE UNIBUS. THE DEUNA INTERRUPT ENABLE BIT WILL BE SET AND AN INTERRUPT WILL BE CAUSED BY ISSUING A NOP PORT COMMAND. AN INTERRUPT IS EXPECTED AT THE CORRECT VECTOR AND AT THE CORRECT PRIORITY.

TEST 15: PCSRO INTERRUPT BIT TEST

THIS TEST WILL VERIFY THAT EACH OF THE INTERRUPT BITS IN REGISTER PCSRO CAN CAUSE AN INTERRUPT.

EACH OF THE INTERRUPTS OF REGISTER PCSRO IS SET UNDER THE CONTROL OF THE T11 AND NOT DIRECTLY BY HARDWARE. THE T11 THEREFORE CAN INITIATE UNIBUS INTERRUPTS BY SETTING BITS IN REGISTER PCSRO.

THIS TEST USES MICROMODULE C. MICROTEST #1.

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MICROCODE MODULE C IS LOADED IF NOT ALREADY DONE SO BY A PREVIOUS TEST.

THE DEUNA INTERRUPT VECTOR IS SETUP TO STORE THE CONTENTS OF PCSRO WHEN THE INTERRUPT OCCURS. PCBB+O IS LOADED WITH THE INTERRUPT BIT THAT IS TO BE TESTED THEN PCSRO COMMAND BITS ARE LOADED WITH A 1 TO TELL THE T11 TO EXECUTE MICROTEST #1. WE WAIT FOR THE INTERRUPT TO OCCUR THEN SEE IF THE CONTENTS OF PCSRO AT THE TIME OF THE INTERRUPT CONTAINED THE CORRECT INTERRUPT BIT. THE TEST IS REPEATED FOR ALL THE INTERRUPT BITS.

TEST 16: TIMER TEST

THIS TEST WILL USE THE CUSTOM MICROCODE MODULE 'C' TO CHECK THE OPERATION OF THE TIMER.
THE TIMER IS ACCESSIBLE ONLY TO THE T11 PROCESSOR. THE HOST PROCESSOR CAN START THE TIMER ONLY WITH THE ASSISTANCE OF THE T11 PROCESSOR.

FOR THIS TEST THE MICROCODE WILL BE LOADED ONLY IF IT HAS NOT ALREADY BEEN DONE BY A PREVIOUS TEST.

WHEN THE MICROCODE IS STARTED THE T11 WILL START THE TIMER AND WILL SET 'DNI' WHEN THE TIMING INTERVAL HAS EXPIRED. THE INTERVAL IS 10 SECONDS.

ANY TIME FROM 8 TO 12 SECONDS IS AN ALCEPTABLE RANGE.

TEST 17: LINK MEMORY TEST

THIS TEST WILL EXHAUSTIVELY TEST THE LINK MEMORY.

THE LINK MEMORY OCCUPIES THE 16-32K ADDRESS SPACE OF THE T-11.
CUSTOM MICROCODE MODULE C MICROTEST #3 IS USED TO DO THE ACTUAL TESTING.
MICROTEST #3 RUNS A SERIES OF MICROSUBTESTS TESTS ON THE LINK MEMORY CHECKING
FOR BOTH ADDRESS AND DATA ERRORS. IF AN ERROR DOES OCCUR THE PORT CONTROL
BLOCK WILL CONTAIN THE INFORMATION ABOUT THE ERROR.

PCBB+0: CONTAINS THE MICROSUBTEST THAT FAILED PCBB+1: 0 - DA'A ERROR, 1 = ADDRESS ERROR, PCBB+2: CONTAINS THE ADDRESS OF THE LOCATION PCBB+4: CONTAINS THE DATA THAT WAS WRITTEN PCBB+6: CONTAINS THE DATA THAT WAS READ

MICROSUBTEST # DESCRIPTION-

ACCESS TEST
ADDRESS SHIFT TEST
DATA LATCH TEST
ADDRESS BIT SHIFT #1
ADDRESS BIT SHIFT #2
MARCH TEST

TEST 18: DMA 'TO' ADDRESS TEST

THIS TEST WILL VERIFY THAT THE INTERNAL REGISTER 'DMATO' CAN BE READ AND WRITTEN. THE T11 WILL BE USED TO WRITE AND READ THIS REGISTER.

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THIS TEST REQUIRES THE USE OF CUSTOM MICROCODE MODULE C MICROTEST #4. PCBB+O WILL BE WRITTEN WITH THE DATA PATTERN TO TEST, THE T11 WILL WRITE THIS PATTERN TO THE 'DMATO' REGISTER AND READ IT BACK AND PUT THE DATA READ INTO PCBB+2. THE DATA AT PCBB+2 WILL BE VERIFIED.

TEST 19: DMA 'FROM' ADDRESS REGISTER TEST

THIS TEST CHECKS THE OPERATION OF THE REGISTER/COUNTER THAT CONTAINS THE ADDRESS OF THE LINK MEMORY WORD TO BE MOVED TO THE HOST DURING DMA OPERATIONS. THE REGISTER CAN BE WRITTEN BY THE T11 BUT IT CAN NOT BE READ BACK FOR VERIFICATION, THEREFORE IT MUST BE CHECKED INDIRECTLY.

THE METHOD USED IS TO LOAD MICROCODE MODULE C IF IT HAS NOT ALREADY BEEN DONE. THE MICROTEST #5 LOADS EACH LOCATION OF LINK MEMORY WITH ITS ADDRESS THEN IT TAKES THE CONTENTS OF PCBB+O AND LOADS IT INTO THE DMA 'FROM' ADDRESS REGISTER, THE 'TO' REGISTER IS LOADED WITH THE ADDRESS OF PCBB+2, THE WORD COUNT IS LOADED FOR A ONE WORD TRANSFER AND THE DMA ENGINE IS STARTED. THE HOST VERIFIES PCBB+2 = PCBB+Ú

TEST 20: DMA BLOCK TRANSFER TEST

THIS TEST WILL VERIFY THAT THE DMA ENGINE CAN TRANSFER A MAXIMUM SIZE DATA BLOCK TO HOST MEMORY.

THIS TEST USES CUSTOM MICROCODE MODULE C. MICROTEST #6. THE MICROTEST FILLS EACH LOCATION OF LINK MEMORY WITH ITS ADDRESS AND THEN SETS UP A TRANSFER FROM LINK MEMORY TO THE ADDRESS POINTED TO BY PCBB+0. THE TRANSFER SIZE IS 1776 WORDS. AFTER THE MICROTEST FINISHES THE BUFFER IS CHECKED TO SEE IF IT CONTAINS THE INCREMENTING ADDRESS PATTERN.

TEST 21: TRANSMIT DONE TEST

THE TRANSMIT STATE MACHINE INFORMS THE PORT MODULE PROCESSOR OF A 'TRANSMIT DONE' CONDITION. IT DOES THIS BY GENERATING AN INTERRUPT WHENEVER IT FINISHES TRANSMITTING A DATAGRAM. SINCE THE 'TRANSMIT DONE' INTERRUPT IS A NECESSARY CONDITION OF EVERY DATAGRAM TRANSMISSION, THIS TEST WILL USE THE INTERRUPT TO INDICATE THAT THE TRANSMIT STATE MACHINE IS FUNCTIONING.

MICROCODE MODULE D MICROTEST #1 WILL BE USED FOR THIS TEST. IT SETS UP THE T-11 FOR AN INTERRUPT, STARTS A DATAGRAM LOOPBACK AND WAITS FOR A TRANSMIT INTERRUPT. THE T-11 WILL BE RELEASED FROM THE LOOP IF THE XMIT DONE INTERRUPT OCCURS. UPON RELEASE THE DNI BIT WILL BE SET IN PCSRO SIGNALING THAT THE TEST IS COMPLETE.

TEST 22: RECEIVER DONE TEST

THE LINK HARDWARE INCLUDES LOGIC TO TELL THE DEUNA PROCESSOR WHEN A LINK MEMORY BUFFER HAS BEEN FILLED AND DATA IS AVAILABLE FOR PROCESSING. THE HARDWARE INTERRUPTS THE DEUNA PROCESSOR. BECAUSE THE INTERRUPT HAPPENS WHEN A LINK MEMORY BUFFER IS FULL AND THE LINK MEMORY IS FILLED BY THE OPERATION OF THE RECEIVE STATE MACHINE, THE INTERRUPT CAN BE USED TO CHECK IF THE STATE MACHINE WORKS.

MICROCODE MODULE D MICROTEST #2 WILL BE USED FOR THIS TEST. IT SETS UP THE T-11 FOR AN INTERRUPT, STARTS A DATAGRAM LOOPBACK AND WAITS FOR A RECEIVER INTERRUPT. THE T-11 WILL BE RELEASED FROM THE LOOP IF THE INTERRUPT OCCURS. UPON RELEASE THE DNI BIT WILL BE SET IN PCSRO SIGNALING THAT THE TEST IS COMPLETE.

TEST 23: DATA BYTE FRAMING TEST

THIS TEST WILL CHECK THE LINK MODULE DATA PATH FOR BYTE DATA BOUNDARY CONDITIONS.

THE T-11 PROCESSOR WILL TRANSMIT DATA IN LOOPBACK MODE. THE DATA WILL BE ORGANIZED SUCH THAT DATA BOUNDARIES ARE CREATED BETWEEN ADJACENT BYTES IN THE DATA STREAM (I.E. 1111111110000000011...) THE T-11 PROCESSOR WILL VERIFY THE CONDITION OF THE DATA AFTER IT IS LOOPED BACK TO THE RECEIVER DATA BUFFER.

THIS TEST WILL USE MICROCODE MODULE 'D' MICROTEST #3. TESTING OF THE DATA FRAMING WILL BE DONE BY THE T-11 PROCESSOR. THE HOST PROCESSOR, MEANWHILE, WILL WAIT FOR A 'DNI' IN REGISTER PCSRO. IF 'DNI' APPEARS, THE HOST PROCESSOR WILL CHECK PCSR1 FOR AN ERROR CONDITION. IF AN ERROR CONDITION IS SET, ADDITIONAL ERROR INFORMATION WILL BE FOUND IN THE PCBB AS FCLLOWS:

PCBB+0: RECEIVER STATUS WORD PCBB+2: DATA TRANSMITTED

PCBB+4: DATA RECEIVED

PCBB+6: WORD OFFSET INTO RECEIVER BUFFER OF BAD DATA

TEST 24: DATA WORD FRAMING TEST

THIS TEST WILL CHECK THE LINK MODULE DATA PATH FOR WORD DATA BOUNDARY CONDITIONS.

THIS TEST WILL USE MICROCODE MODULE 'D' MICROTEST #4. TESTING OF THE DATA FRAMING WILL BE DONE BY THE T-11 PROCESSOR. THE HOST PROCESSOR, MEANWHILE, WILL WAIT FOR A 'DNI' IN REGISTER PCSRO. IF 'DNI' APPEARS, THE HOST PROCESSOR WILL CHECK PCSR1 FOR AN ERROR CONDITION. IF AN ERROR CONDITION IS SET, ADDITIONAL ERROR INFORMATION WILL BE FOUND IN THE PCBB AS FOLLOWS:

PCBB+0: RECEIVER STATUS WORD

PCBB+2: DATA TRANSMITTED PCBB+4: DATA RECEIVED

PCBB+6: WORD OFFSET INTO RECEIVER BUFFER OF BAD DATA

TEST 25: DATA PATH PATTERN TEST

THIS TEST WILL CHECK THE LINK MODULE DATA PATH FOR ALL 'STUCK AT 0' AND 'STUCK AT 1' ERRORS.

THE T-11 PROCESSOR WILL TRANSMIT DATAGRAMS OF MAXIMUM LENGTH IN LOOPBACK MODE. THIS PATTERN LOOPBACK PROCEDURE WILL BE USED FOR ALL PATTERNS OF UP TO WORD WIDTH.

THIS TEST USES MICROMODULE 'D' MICROTEST #5 TO DO THE TESTING. THE HOST PROCESSOR WILL PASS A DATA PATTERN TO THE T-11 PROCESSOR THROUGH THE PCBB. THE T-11 WILL FILL A XMIT BUFFER WITH THE DATA PATTERN AND TRANSMIT THE DATAGRAM OVER THE LOOPBACK. THE T-11 PROCESSOR WILL VERIFY THE PATTERN IN THE RECEIVER BUFFER. IF THE T-11 FINDS AN ERROR, IT WILL WRITE THE FAILING PATTERN TO THE PCBB ALONG WITH THE OFFSET INTO THE RECEIVER BUFFER AT WHICH THE PATTERN WAS FOUND. IT WILL INFORM THE HOST OF THE ERROR BY SETTING PCSR1 TO AN ERROR CONDITION. THE PCBB IS FORMATTED AS FOLLOWS:

PCBB+0: DATA PATTERN

PCBB+2: RECEIVER STATUS WORD

PCBB+4: BAD DATA PATTERN

PCBB+6: OFFSET INTO RECEIVER BUFFER WHERE BAD DATA WAS FOUND

TEST 26: STATUS MUX VERIFICATION TEST

THE LINK WRITES STATUS IN LINK MEMORY AFTER EACH TRANSMIT ATTEMPT. THE STATUS GIVES INFORMATION ABOUT THE ATTEMPTED OPERATION. THE STATUS INFORMATION IS WRITTEN INTO THE FIRST TWO LOCATIONS OF THE TRANSMIT BUFFER. THIS INFORMATION IS ACCESSIBLE TO THE T-11 BY SIMPLY READING IT FROM LINK MEMORY.

THIS TEST WILL VERIFY THAT THE STATUS INFORMATION IS WRITTEN INTO THE FIRST LOCATION OF THE TRANSMIT BUFFER. THE 1EST WI'L ALSO CHECK THE SECOND WORD OF THE TRANSMIT BUFFER.

THIS TEST WILL USE MICROMODULE 'D' MICROTEST #6.
WHEN THE TEST IS STARTED, THE T-11 PROCESSOR WILL SET UP THE LINK FOR LOOPBACK
OF A DATA PATTERN. A BACKGRAOUND PATTERN WILL BE WRITTEN INTO THE FIRST WORD
OF THE TRANSMIT BUFFER. THIS WORD SHOULD BE OVER-WRITTEN BY THE STATUS WHEN
THE BUFFER IS TRANSMITTED. THE SECOND WORD OF THE TRANSMIT BUFFER CAN NOT BE
WRITTEN WITH A BACKGROUND BECAUSE IT MUST DESIGNATE THE TRANSMIT BYTE COUNT.

WHEN THE DATAGRAM HAS BEEN LOOPED BACK, THE T-11 PROCESSOR WILL PASS THE FIRST TWO WORDS OF THE TRANSMIT BUFFER TO THE HOST THRU THE PCBB+0 AND PCBB+2.

PCBB+0: FIRST WORD OF TRANSMIT BUFFER PCBB+2: SECOND WORD OF TRANSMIT BUFFER

THE CORRECT STATUS SHOULD BE:

TRANSMIT STATUS WORD 0 BITS 15,09:00 SHOULD BE ALL 0 AND BIT 13 SHOULD BE A 1

TRANSMIT STATUS WORD 1 BITS 15:13 SHOULD ALL BE 0

TEST 27: LINK BYTE COUNTER TEST

BYTE COUNTERS ARE INVOLVED BOTH WITH THE LINK TRANSMIT FUNCTION AND THE LINK RECEIVE FUNCTION. WHEN THE T-11 PREPARES A TRANSMIT BUFFER FOR TRANSMISSION OF A DATAGRAM, IT WRITES THE INTENDED BYTE COUNT IN THE SECOND WORD OF THE TRANSMIT BUFFER. WHEN TRANSMISSION OF THE TRANSMIT BUFFER BEGINS, THE BYTE COUNT VALUE IS USED TO LOAD THE TRANSMIT BYTE COUNTER. THIS COUNTER IS DECREMENTED BY THE TRANSMIT STATE MACHIN'S AS THE DATAGRAM IS TRANSMITTED. THE DATAGRAM TRANSMISSION WILL CONTINUE UNTIL THE BYTE COUNTER IS DECREMENTED

PRI CZI TO ZERO.

THE RECEIVER ALSO HAS A BYTE COUNTER. THIS COUNTER IS CLEARED AT THE START OF A DATAGRAM RECEPTION AND IS INCREMENTED BY THE RECEIVE STATE MACHINE AS THE DATAGRAM IS RECEIVED. THE VALUE IN THIS COUNTER IS WRITTEN INTO WORD TWO OF THE RECEIVE BUFFER AT THE END OF RECEPTION.

THIS TEST WILL USE MICROMODULE 'D' MICROTEST #7.
THIS TEST WILL VERIFY THE BYTE COUNT LOGIC BY LOOPING MESSAGES AND VERIFYING THAT THE BYTE COUNT APPEARING IN THE RECEIVE BUFFER CORPESPONDS TO THE BYTE COUNT THAT WAS WRITTEN TO THE TRANSMIT BYTE COUNTER. THE TEST WILL ALSO VERIFY THAT THE ACTUAL NUMBER OF BYTES TRANSFERRED TO THE RECEIVE BUFFER CORRESPONDS TO THE INTENDED BYTE COUNT.

THE TPANSMIT BYTE COUNT IS PASSED TO THE T-11 VIA THE PCBB+O. AFTER THE DATAGRAM LOOPBACK THE RECEIVE BYTE COUNT IS PLACED INTO PCBB+2 by THE T-11 PROCESSOR. PCBB+4 IS LOADED BY THE T-11 PROCESSOR WITH THE ACTUAL NUMBER OF BYTES THAT WERE TRANSFERRED TO THE RECEIVER BUFFER.

PCBB+0: TRANSMIT BYTE COUNT PCBB+2: RECEIVE BYTE COUNT

PCBB+4: ACTUAL NUMBER OF BYTES RECEIVED

TEST 28: ODD BYTE TEST

THIS TEST WILL VERIFY THAT THE LINK CAN TRANSMIT AND RECEIVE DATAGRAMS HAVING ONLY ODD BYTE COUNTS.

THIS TEST IS IDENTICAL TO THE PREVIOUS BYTE COUNTER TEST WITH THE ONLY EXCEPTION THAT IT PASSES ONLY ODD BYTE COUNTS TO THE MICROCODE. IT ALSO USES MICROMODULE 'D' MICROTEST #7

TEST 29: LINK MAXIMUM BYTE COUNTER TEST

THE RECEIVE BYTE COUNTER IS A 12 BIT BINARY COUNTER THAT COUNTS THE NUMBER OF BYTES THAT WERE RECEIVED DURING A DATAGRAM TRANSMISSION. THE BYTE COUNTER IS INCREMENTED AS EACH BYTE IS RECEIVED. THE RECEIVE BYTE COUNTER HAS LOGIC THAT DISABLES THE COUNTER IF THE MAXIMUM VALUE IS REACHED AND PREVENTS THE COUNTER FROM ROLLING OVER TO ZERO.

THIS TEST WILL CHECK THAT THE COUNTER 'TOPS OUT' AT THE MAXIMUM COUNTER VALUE. IT DO THIS MICROMODULE 'D' MICROTEST #9 IS USED. IT WILL TRANSMIT A DATAGRAM OF MAXIMUM COUNTER LENGTH OVER THE LOOPBACK. THE LINK CRC HARDWARE WILL BE ALLOCATED TO THE TRANSMIT SIDE SO THAT CRC BYTES WILL APPENDED TO THE DATAGRAM. THE LENGTH OF THE DATAGRAM WILL THEREFORE EXCEED THE LENGTH OF THE RECEIVE BYTE COUNTER. THE RECEIVE COUNTER WILL BE CHECKED TO INSURE THAT THE COUNTER HAS REMAINED AT THE MAXIMUM VALUE, IF NOT AN ERROR IS PASSED TO THE HOST.

TEST 30: FIFO TEST

THERE ARE TWO FIFO'S USED IN THE DEUNA TO KEEP TRACK OF RECEIVER BUFFERS. THE FIRST IS CALLED THE 'RECEIVER BUFFER AVAILABLE FIFO' AND THE SECOND IS CALLED THE 'RECEIVER BUFFER DONE FIFO'.

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THE T11 LOADS THE RECEIVER BUFFER AVAILABLE FIFO WITH A LIST OF UNUSED 1K BUFFERS IN LINK MEMORY. WHEN THE DEUNA SENSES THAT A PACKET IS COMING IN IT PULLS AN AVAILABLE BUFFER ADDRESS FROM THE OUTPUT OF THE RECFIVER BUFFER AVAILABLE FIFO AND USES IT TO ADDRESS LINK MEMORY FOR THE STORAGE OF THE RECEIVED DATA. AFTER THE DATA HAS BEEN LOADED THE RECEIVER STATE MACHINE PUTS THE USED BUFFER ADDRESS INTO THE RECEIVER BUFFER DONE FIFO WHERE AN INTERRUPT IS GENERATED TO THE T11 WHEN IT BUBBLES TO THE TOP OF THE FIFO.

THESE FIFO'S ARE 64 DEEP BY 4 BITS WIDE. THE OPERATIONAL MICROCODE ONLY FILLS THE FIFO TO A MAXIMUM OF 16. THE 4 BIT WIDTH REPRESENTS BITS 14-11 OF THE LINK MEMORY ADDRESS. THESE BITS ALLOW THE ADDRESSING OF A 1K BUFFER IN LINK MEMORY.

THIS TEST WILL VERIFY THAT THE RECEIVE BUFFER AVAILABLE FIFO AND THE RECEIVER BUFFER DONE FIFO OPERATE CORRECTLY. THIS WILL BE DONE BY LOADING THE RECEIVER BUFFER AVAILABLE FIFO WITH A 1K BUFFER ADDRESS THEN A PACKET WILL BE TRANSMITTED IN LOOPBACK MODE. AFTER THE RECEIVER INTERRUPT OCCURS THE RECEIVER BUFFER DONE FIFO IS READ AND THE ADDRESS IS COMPARED WITH WHAT WAS GIVEN THE RECEIVER BUFFER AVAILABLE FIFO. THEY SHOULD BE THE SAME IF EVERYTHING IS WORKING CORRECTLY. THE OPERATION IS PERFORMED WITH THE TRANSMITTER BUFFER SET TO 0 AND WILL BE REPEATED WITH RECEIVER BUFFERS 1-15. THIS TEST WILL USE MICROMODULE 'D' MICROTEST #10.

PARAMETERS PASSED TO THE MICROCODE WILL BE FORMATTED IN THE PCBB AS FOLLOWS:

PCBB+0: RECEIVE BUFFER ADDRESS

PCBB+2: RECEIVE BUFFER COMPLETED ADDRESS

TEST 31: RECEIVER LINK MEMORY ADDRESS TEST

THIS TEST WILL VERIFY THAT BUFFERS 1-15 OF LINK MEMORY CAN BE ADDRESSED CORRECTLY BY THE RECEIVER. THIS WILL BE DONE BY DIRECTING THE MICROCODE TO TRANSMIT A DATA PATTERN FROM BUFFER O AND TO RECEIVE THE DATA IN BUFFER X WHERE X = 1-15. THEN A CHECK WILL BE MADE TO SEE IF THE PATTERN NOT ONLY ARRIVED IN THE CORRECT RECEIVER BUFFER BUT THAT THE PATTERN DOES NOT SHOW UP ANYWHERE ELSE IN LINK MEMORY EXCEPT WHERE IT WAS SUPPOSE TO.

THIS TEST WILL USE MICROMODULE 'D' MICROTEST #11. THIS MICROTEST ACCEPTS ? PARAMETERS: THE TRANSMIT BUFFER AND THE RECEIVER BUFFER. IT WILL SET UP A DATA PATTERN IN THE TRANSMIT BUFFER AND TELL THE LINK TO TRANSMIT, IN LOOPBACK MODE, FROM THE TRANSMIT BUFFER GIVEN TO THE RECEIVER BUFFER GIVEN. AFTER THE RECEIVER INTERRUPT, THE DATA IS CHECKED IN THE EXPECTED RECEIVER BUFFER FOR THE CORRECT DATA PATTERN. THEN ALL OF LINK MEMORY (EXCEPT FOR THE TRANSMIT BUFFER) IS CHECKED TO SEE IF THE PATTERN ENDS UP ELSEWHERE. IF AN ERROR IS FOUND THE MICROCODE PASSES THE ADDRESS OF LINK MEMORY WHERE THE ERROR WAS FOUND, THE DATA THAT WAS FOUND THERE ALONG WITH THE DATA THAT SHOULD HAVE BEEN THERE.

THE PARAMETERS FOR THE MICROCODE ARE FORMATED IN THE PCBB AS FOLLOWS:

PCBB+0: RECEIVER BUFFER ADDRESS PCBB+2: TRANSMIT BUFFER ADDRESS

PCBB+4: LINK MEMORY ADDRESS (IF ERROR) PCBB+6: GOOD DATA PATTERN (IF ERROR)

PCBB+10: BAD DATA PATTERN (IF ERROR)

TEST 32: TRANSMITTER LINK MEMORY ADDRESS TEST

THIS TEST WILL VERIFY THAT BUFFERS 1-15 CAN BE CORRECTLY ADDRESSED BY THE TRANSMITTER. THIS TEST IS IDENTICAL TO THE RECEIVER ADDRESS TEST IN THAT IT USES THE SAME MICROCODE (MICROMODULE 'D' MICROTEST #11) EXCEPT IT FIXES THE RECEIVER BUFFER AT O AND VARIES THE TRANSMIT BUFFER FROM 1-15.

TEST 33: LINK MEMORY ARBITRATION TEST

THE LINK MEMORY CAN BE ACCESSED BY FOUR PROCESSES; THE T-11 PROCESSOR, THE DMA ENGINE. THE RECEIVE STATE MACHINE AND THE TRANSMIT STATE MACHINE. THE PORT MODULE HAS ARBITRATION CIRCUITRY TO MANAGE LINK MEMORY ACCESSES. THIS CIRCUITRY PREVENTS CONFLICKS BETWEEN PROCESSES AND ASSURES THAT HIGHER PRIORITY PROCESSES GET PRECEDENCE.

THIS TEST WILL VERIFY THE ABLILITY OF THE LINK MEMORY ARITRATOR TO HANDLE SIMULTANEOUS REQUESTS BY FOUR PROCESSES. EACH OF THESE PROCESSES WILL INVOLVE TASKS THAT REQUIRE HEAVY ACCESSES OF LINK MEMORY. DATA WILL BE MOVED INTO OR OUT OF LINK MEMORY BY EACH. WHEN THAT TASKS ARE FINISHED THE DATA WILL BE VERIFIED.

THE FOUR PROCESSES ARE:

1-TRANSMIT STATE MACHINE

WILL TRANSMIT A DATAGRAM OF MAXIMUM DATA LENGTH IN LOOPBACK MODE. THE DATA FIELD WILL CONTAIN A BIT PATTERN STRING OF TWO 1'S FOLLOWED BY TWO 0'S I.E. 31463 (OCTAL).

2-RECEIVE STATE MACHINE

WILL RECEIVE A DATAGRAM OF MAXIMUM DATA LENGTH OVER THE LOOPBACK. THE RECEIVE DATA BUFFLW WILL BE FILLED WITH O'S PRIOR TO THE RECEPTION.

3-T-11 MICROPROCESSOR DMA

A 1K BUFFER IN LINK MEMORY WILL BE FILLED WITH AN ALL 1'S DATA PATTERN PRIOR TO THE OPERATION THEN ALTERNATING 1'S AND 0'S DATA PATTERN WILL BE WRITTEN.

4-DMA ENGINE

WILL TRANSFER A 1K BLOCK OF DATA FROM LINK MEMORY TO UNIBUS MEMORY. THE DATA IN LINK MEMORY WILL A BIT PATTERN STRING OF FOUR 1'S FOLLOWED BY A STRING OF FOUR 0'S. THE BUFFER IN UNIBUS MEMORY WILL BE CLEARED PRIOR TO THE OPERATION.

THE FOUR PROCESSES WILL WORK OUT OF FOUR SEPARATE AREAS OF LINK MEMORY.

 THIS WILL ALLOW THE ARITRATION CIRCUITRY TO BE TESTED AND YET ALLOWS THE DATA TO BE VERIFIED EASILY AND ASSOCIATED WITH A SINGLE PROCESS.

A DATAGRAM WILL BE LOOPED BACK FROM THE TRANSMIT BUFFER TO THE RECEIVE BUFFER. AS THE DATAGRAM IS BEING TRANSFERRED, THE T-11 PROCESSOR WILL FILL IT'S BUFFER AND THE DMA ENGINE WILL TRANSFER IT'S BUFFER FROM LINK MEMORY TO UNIBUS MEMORY.

WHEN THE RECEIVE STATE MACHINE IS DONE, THE T-11 WILL VERIFY THE DATA IN THE RECEIVE BUFFER. IF AN ERROR IS FOUND POSR1 WILL BE SET TO INDICATE AN ERROR.

THE HOST WILL WAIT FOR THE MICROCODE TO FINISH AND WHEN DONE, IT WILL VERIFY THE DATA TRANSFERRED BY THE DMA ENGINE TO UNIBUS MEMORY.

THE FIRST 3 WORDS OF THE PCBB ARE USED FOR ERROR INFORMATION, THE REST WILL BE THE UNIBUS ADDRESS THAT THE DMA ENGINE WILL TRANSFER TO.

PCBB+0: EXPECTED PATTERN

PCBB+2: ACTUAL PATTERN

PCBB+4: LINK MEMORY ADDRESS

PCBB+6: DATA TRANSFERRED FROM LINK MEMORY
BY THE DMA ENGINE

PCBB+4000:

TEST 34: STATION ADDRESS PATTERN TEST

WITHOUT EITHER THE PROMISCUIOUS MODE OR THE MULTICAST MODE ENABLED, THE LINK LOGIC WILL RECOGNIZE DATAGRAM ADDRESSES ONLY IF THE ADDRESS IS CONTAINED IN THE STATION ADDRESS RAM.

WHEN A DATAGRAM ARRIVES, THE LINK LOGIC COMPARES THE DATAGRAM DESTINATION ADDRESS FIELD TO THE 12 ADDRESSES WRITTEN IN THE STATION ADDRESS RAM. IF THE INCOMING ADDRESS MATCHES ONE OF THESE, THEN THE DATAGRAM WILL BE ACCEPTED BY THE LINK. THE 'MATCH' BIT IS SET IN THE TRANSMIT BUFFER AND THE RECEIVING PROCESS BEGINS.

THIS TEST WILL VERIFY THAT THE LINK CAN RECOGNIZE A DATAGRAM WHEN THE DESTINATION ADDRESS OF THE DATAGRAM MATCHES ONE OF THE ADDRESSES STORED IN THE STATION ADDRESS RAM.

THIS TEST WILL USE MICROMODULE 'E' MICROTEST #1.

PATTERNS WILL BE USED FOR ADDRESSES IN CHECKING THE STATION ADDRESS LOGIC.

THE PATTERNS WILL BE SUPPLIED TO THE T-11 THROUGH THE PCBB. THE MICROCODE WILL BE RESTARTED FOR EACH DIFFERENT PATTERN TO BE TESTED. UPON START-UP, THE T-11 PROCESSOR WILL PICK UP THE CURRENT PATTERN/ADDRESS, LOAD THE SAME PATTERN INTO ALL 12 LOCATIONS OF THE STATION ADDRESS RAM, FORMAT THE TRANSMIT BUFFER AND LOGIC FOR A LOOPBACK, PRESET PCSR1 TO AN ERROR CONDITION, START THE LINK AND WAIT FOR THE MATCH BIT IN THE TRANSMIT BUFFER. IF THE MATCH BIT SETS THE PCSR1 ERROR CONDITION IS CLEARED AND THE T-11 WAITS FOR BOTH THE TRANSMITTER AND RECEIVER INTERRUPTS BEFORE IT SETS 'DNI' TO INDICATE THE TEST WAS SUCCESSFUL

THE PCBB WILL BE USED TO PASS THE 48 BIT STATION ADDRESS PATTERN:

PCBB+0: STATION ADDRESS LOW !
PCBB+2: STATION ADDRESS MIDDLE !
PCBB+4: STATION ADDRESS HIGH !

THE FOLLOWING PATTERNS WILL BE USED:

- -ALTERNATING 1'S AND 0'S
- -ALTERNATING 0'S AND 1'S
- -PAIR OF O'S FOLLOWED BY PAIR OF 1'S
- -FOUR O'S FOLLOWED BY FOUR 1'S
- -EIGHT O'S FOLLOWED BY EIGHT 1'S
- -SIXTEEN 1'S FOLLOWED BY SIXTEEN O'S FOLLOWED BY 16 1'S

-TWENTYFOUR 1'S FOLLOWED BY TWENTYFOUR O'S

TEST 35: STATION ADDRESS REJECTION TEST

THIS TEST WILL VERIFY THAT THE STATION ADDRESS DETECTION LOGIC DOES NOT RECOGNIZE A DATAGRAM WHEN THE DATAGRAM ADDRESS IS NOT CONTAINED IN THE STATION ADDRESS RAM.

THE MICROCODE WILL FILL THE STATION ADDRESS RAM WITH 0'S. THE DESTINATION FIELD OF THE TRANSMIT BUFFER IS FILLED WITH 1'S. A TRANSMISSION IS STARTED IN LOOPBACK MODE AND THE T-11 WILL WAIT FOR A RECEIVER INTERRUPT. OF COURSE, THE RECEIVER INTERRUPT SHOULD NEVER HAPPEN BECAUSE THE STATION ADDRESS LOGIC SHOULD NOT GET A SUCCESSFUL COMPARISON BETWEEN 0'S IN THE DESTINATION ADDRESS OF THE INCOMING DATAGRAM AND THE 1'S IN THE STATION ADDRESS RAM. THE T-11 WILL BE PUT INTO A LOOP WAITING FOR A RECEIVER INTERRUPT AND THE DEUNA TIMER IS STARTED. IF THE LOOP IS BROKEN BY THE RECEIVER INTERRUPT AN ERROR WILL BE PRESENTED IN PCSR1 BY THE MICROCODE. IF THE LOOP IS BROKEN BY THE TIMER THEN THE TEST WAS SUCCESSFUL.

TEST 36: STATION ADDRESS RAM POSITION TEST

THE STATION ADDRESS RAM CAN HOLD UP TO 12 STATION ADDRESSES. WHEN A DATAGRAM IS RECFIVED THE STATION ADDRESS COMPARISON LOGIC DOES A BIT-WISE COMPARISON OF ALL 12 RAM STATION ADDRESS WITH THE INCOMING DATAGRAM STATION ADDRESS.

GL CZI THIS TEST WILL VERIFY THAT THE DEUNA CAN RECOGNIZE A STATION ADDRESS REGARDLESS OF THE LOCATION OF THE ADDRESS IN THE STATION ADDRESS RAM.

THIS TEST WILL USE MICROMODULE 'E' MICROTEST #4. THE MICROCODE WILL WRITE A STATION ADDRESSES OF ALL 1'S INTO A SINGLE LOCATION OF THE STATION ADDRESS RAM. THE OTHER ELEVEN LOCATION WILL BE LOADED WITH O'S. A DATAGRAM WITH AN ALL 1'S DESTINATION ADDRESS WILL BE TRANSMITTED IN LOOPBACK MODE. THE TEST WILL VERIFY THAT THE DATAGRAM IS RECEIVED. THE TEST WILL BE REPEATED FOR ALL TWELVE LOCATIONS OF THE STATION ADDRESS RAM.

THE MICROTEST WILL BE REPEATED FOR EACH OF THE 12 TEST ITERATIONS. THE PCBB WILL BE USED TO PASS TO THE MICROCODE WHICH POSITION IS TO BE LOADED WITH 1'S. WHEN THE STATION ADDRESS IS LOADED, THE STATION ADDRESSES MUST BE ROTATED ORTHOGONALLY, I.E. BIT 0 OF ALL STATION ADDRESSES LOADED TOGETHER, THEN BIT 1, THEN BIT 2 ETC. THIS MAKES IT DIFFICULT TO DESCRIBE THE POSITION OF ANY SINGLE STATION ADDRESS IN TERMS OF AN OFFSET FROM THE RAM BASE ADDRESS.

THE PCBB IS FORMATTED AS FOLLOWS:

PCBR+0: ! RAM ADDRESS POSTION !

TEST 37: MULTICAST AUDRESS TEST

MULTICAST ADDRESSING PERMITS THE DEUNA TO RESPOND TO MESSAGES AIMED AT LOGICALLY RELATED DEVICES ON THE NETWORK. THE MSB OF THE DESTINATION ADDRESS OF THESE MESSAGES IS A 1. THIS BIT IS DETECTED BY THE ADDRESS RECOGNITION LOGIC.

THIS TEST WILL VERIFY THAT THE DEUNA CAN RECOGNIZE AND ACCEPT MESSAGES WITH THE MULTICAST BIT DESIGNATION.

THIS TEST WILL USE MICROMODULE 'E' MICROTEST #4.

THE MICROCODE WILL PREPARE A DATAGRAM WITH THE DESTINATION ADDRESS HAVING THE MULTICAST BIT SET. THE DEUNA WILL BE SETUP IN LOOPBACK MODE WITH 'ENABLE AL! MULTICAST'. THE DATAGRAM WILL BE TRANSMITTED AND THE T-11 WILL BE PUT IN A LOOP WAITING FOR A RECEIVER INTERRUPT. THE TIMER WILL INTERRUPT THE LOOP IF THE RECEIVER INTERRUPT DOES NOT OCCUR. IF THIS HAPPENS, PCSR1 WILL INDICATE AN ERROR, OTHERWISE WHEN THE RECEIVER INTERRUPT OCCURS IT WILL BREAK THE LOOP AND PCSR1 WILL INDICATE A SUCCESSFULL COMPLETION OF THE TEST.

TEST 38: CRC DATA PATTERN TEST

THE LINK MODULE HAS HARDWARE TO GUARANTEE THAT DATAGRAMS HAVE NOT BEEN CORRUPTED DURING TRANSMISSION AND PECEPTION. THE HARDWARE GENERATES A CRC FOR DATAGRAMS TRANSMITTED AND VERIFIES THE CRC FOR DATAGRAMS RECEIVED. THE CRC IS A 32 BIT NUMBER GENERATED BY DIVIDING THE DATAGRAM BIT STREAM BY "CRC POLYNOMIAL. THE DIVISION RESULTS IN A UNIQUE NUMBER THAT CAN ONLY BE REPRODUCED IN CRC CALCULATIONS IF THE BIT STREAM EXACTLY MATCHES THE ORIGINAL. THE CRC IS CALCULATED DURING DATAGRAM TRANSMISSION AND IS APPENDED TO THE PACKET. THE CRC IS TRANSMITTED AS PART OF THE PACKET. THE CRC IS AGAIN

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CALCULATED WHEN THE DATAGRAM IS RECEIVED AND THE CALCULATED IS COMPARED TO THE CRC TRANSMITTED. IF THE DATAGRAM HAS BEEN FAITHFULLY TRANSMITTED, THE CRC'S SHOULD MATCH EXACTLY.

THE DEUNA CALCULATES THE CRC WITH DEDICATED CRC LOGIC. THE LOGIC IS EITHER DEDICATED TO THE CALCULATION OF THE OUTGOING DATAGRAM OR THE CALCULATION OF THE INCOMING DATAGRAM, BUT NOT BOTH.

THIS TEST WILL VERIFY THE OPERATION OF THE CRC CALCULATION CIRCUITRY.
MICROMODULE 'F' MICROTEST #1 WILL BE USED.
THE MICROCODE WILL TRANSMIT DATAGRAMS IN LOOPBACK MODE. THE CRC HARDWARE WILL
BE DEDICATED TO THE TRANSMITTER. WHEN THE DATAGRAM IS RECEIVED THE T-11 WILL
CALCULATE A CRC ON THE DATA RECEIVED (INCLUDING THE TRANSMITTED CRC).
THE RESULT OF THIS CALCULATION WILL BE A 32 BIT CONSTANT. THIS CONSTANT IS
THEN COMPARED TO WHAT WAS EXPECTED AND IF THEY DO NOT MATCH. AN ERROR IS
PLACED IN PCSR1.

PATTERNS WILL BE PASSED TO THE MICROCODE THROUGH THE PCBB. THE MICROCODE WILL FILL THE TRANSMIT BUFFER WITH THIS PATTERN BEFORE EACH TRANSMISSION TAKES PLACE.

THE PCBB WILL BE FORMATTED AS FOLLOWS:

PCBB+0:

! DATA PATTERN !

TEST 39: CRC ERROR TEST

THIS TEST WILL VERIFY THAT THE LINK CRC CIRCUITRY CAN DETECT A BAD CRC.

MICROMODULE 'F' MICROTEST #2 WILL BE USED. THE MICROCODE WILL TRANSMIT DATAGRAMS IN LOOPBACK MODE. EACH DATAGRAM WILL HAVE AN ERRONEOUS CRC APPENDED TO THE DATA FIELD. THE DEUNA CRC LOGIC WILL BE SETUP SUCH THAT THE CRC LOGIC WILL BE DEDICATED TO THE RECEIVER. THIS IS EXPECTED TO CAUSE A CRC ERROR.

THE DATA FIELDS OF EACH DATAGRAM WILL CONSIST OF PATTERNS. THE PATTERNS WILL BE PASSED TO THE MICROCODE VIA THE PCBB.

AFTER THE RECEIVER INTERRUPT THE MICROCODE WILL PASS THE RECEIVER STATUS WORD O BACK VIA PCBB+2. THE CRC BIT IN THIS WORD IS CHECKED TO SEE IF IT IS SET.

THE PCBB IS FORMATTED AS FOLLOWS:

PCBB+0:

DATA PÄTTERN

P(BB+2:

RECEIVER STATUS WORD

TEST 40: CRC PATTERN LENGTH TEST

THIS TEST WILL VERIFY THAT THE RECEIVE CRC HARDWARE CAN CALCULATE CRC FOR

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DATAGRAMS OF VARYING LENGTHS.

DATAGRAMS WILL BE TRANSMITTED FOR THE TRANSMIT BUFFER TO THE RECEIVE BUFFER IN LOOPBACK MODE. THE TRANSMIT CRC WILL BE DISABLED WHICH WILL ASSIGN THE CRC LOGIC TO CALCULATION OF INCOMING DATAGRAMS. THE CRC FOR TRANSMIT DATAGRAMS WILL BE CALCULATED BY THE MICROCODE. IT IS EXPECTED THAT THE CRC LOGIC WILL VERIFY THE CRC APPENDED TO THE DATAGRAM AS IT IS BEING RECEIVED.

PATTERNS WILL BE USED TO FILL THE DATAGRAM DATA FIELD. THE PATTERNS WILL BE PASSED TO THE MICROCODE THROUGH THE PCBB ALONG WITH THE BYTE COUNT TO BE USED.

AFTER THE RECEPTION OF THE DATAGRAM THE RECEIVER STATUS WORD WILL BE PASSED BACK VIA THE PCBB SO IT CAN BE CHECKED

THE PCBB IS FORMATTED AS FOLLOWS:

PCBB+0: ! DATA PATTERN

PCBB+2: ! BYTE COUNT

PCBB+4: ! RECEIVE STATUS WORD

TEST 41: RECEIVER BUFFER RECOVERY - RUNT TEST

THIS TEST WILL CHECK THE ABILITY OF THE RECEIVE STATE MACHINE TO REJECT A DATAGRAM OF LESS THAN 64 BYTES AND TO RECOVER THE RECEIVER BUFFER.

THIS TEST WILL USE MICROMODULE 'F' MICROTEST #4.

EACH TRIAL WILL CONSIST OF TWO DATAGRAM TRANSMISSIONS IN LOOPBACK MODE. EACH TRANSMISSION WILL LOOPBACK A DATAGRAM FILLED WITH UNIQUE DATA. THE FIRST DATAGRAM WILL BE A RUNT OF LESS THAN 64 BYTES. THE SECOND WILL BE A DATAGRAM OF LEGAL SIZE.

EACH TRIAL WILL START WITH THE LINK BUFFER POINTER RESET TO THE FIRST LINK BUFFER. THE RUNT WILL BE TRANSMITTED, THEN THE VALID DATAGRAM. IF THE BUFFER RECOVERY IS WORKING CORRECTLY, THE SECOND DATAGRAM IS EXPECTED TO BE WRITTEN INTO THE SAME LINK MEMORY BUFFER AS WAS THE RUNT.

THIS TEST WILL BE REPEATED WITH VARIOUS RUNT PACKET SIZES.

THE BYTE COUNT FOR THE RUNT PACKET TRANSMISSION WILL BE PASSED VIA THE N'CBB. AFTER THE TWO TRANSMISSIONS, THE MICROCODE WILL PASS BACK THE CONTENTS OF THE BUFFER DONE FIFO, AND THE CONTENTS OF THE FIRST DATA WORD OF THE RECEIVER BUFFER.

THE PCBB WILL BE FORMATTED AS FOLLOWS:

PCBB+0: ! RUNT BYTE COUNT !
PCBB+2: ! BUFFER DONE F'FO CONTENTS !
PCBB+4: ! FIRST DATA WORD OF BUFFER !

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TEST 42: HALF-DUPLEX TEST

THE LINK INCLUDES A 'HALF DUPLEX' MODE OF OPERATION. THIS MODE CAN BE ENABLED OR DISABLED THROUGH THE LINK MODE REGISTER. THE OPERATIONAL MICROCODE NORMALLY USES HALF DUPLEX MODE.

IN THE HALF-DUPLEX MODE, THE LINK WILL NOT RECEIVE MESSAGES ADDRESSED TO ITSELF. INCOMING MESSAGES LOOPED BACK WILL BE IGNORED BY THE RECEIVE STATE MACHINE. THE STATE MACHINE WILL NOT ISSUE A "RECEIVER DONE" INTERRUPT AND THE BUFFER CAN BE RECOVERED FOR RECEIVING A LATER DATAGRAM.

THIS TEST USES MICROMODULE 'F' MICROTEST #5.
THIS TEST WILL VERIFY THE OPERATION OF HALF-DUPLEX MODE. A DATAGRAM WILL BE TRANSMITTED IN LOOPBACK MODE WITH THE HALF-DUPLEX BIT SET. THE MICROCODE WILL VERIFY THAT THE RECEIVER INTERRUPT DOES NOT OCCUR. THE MICROCODE WILL THEN CLEAR THE HALF-DUPLEX BIT AND LOOP A DATAGRAM AND VERIFY THAT THE ORIGINAL BUFFER WAS RECOVERED.

THIS TEST WILL USE THE PCBB TO PASS INFORMATION. PCBB+O WILL BE USED TO PASS THE CONTENTS OF THE BUFFER DONE FIFO AFTER THE SECOND DATAGRAM IS RECEIVED. PCBB+4 WILL BE USED TO PASS THE FIRST WORD OF DATA FROM THE RECEIVER BUFFER AFTER THE SECOND DATAGRAM IS TRANSMITTED.

PCBB+0: CONTENTS OF BUFFER DONE FIFO !
PCBB+2: FIRST DATA WORD OF BUFFER DONE!

THE CONTENTS OF THE BUFFER DONE FIFO SHOULD BE O AND THE FIRST DATA WORD SHOULD BE AN ALTERNATING 1'S AND O'S PATTERN.

TEST 43: COLLISION TEST

THE RECEIVE STATE MACHINE REACTS TO COLLISIONS ON THE WIRE BY ACTIVATING THE RETRY LOGIC. THE RETRY LOGIC WAITS AN INTERVAL OF TIME BEFORE ATTEMPTING TO RETRANSMIT THE DATAGRAM. THE INTERVALS ARE NOT UNIFORM BUT ARE OF GENERALLY INCREASING PSEUDO-RANDOM DURATION. THE RETRY LOGIC WILL ATTEMPT TO RETRANSMIT UP TO 15 ADDITIONAL TIMES BEFOR.

THIS TEST WILL VERIFY THAT THE RECEIVE STATE MACHINE RESPONDS TO A COLLISION AND THAT THE RETRY SEQUENCE IS REPORTED CORRECTLY IN THE TRANSMIT STATUS WORD.

THIS TEST WILL USE MICROMODULE 'G' MICROTEST #1.

THE LINK BOARD CONTATINS DIAGNOSTIC LOGIC THAT ALLOWS COLLSIONS TO BE SIMULATED. WITH THE FORCE COLLISIONS LOGIC ACTIVATED, THE RETRY HARDWARE CAN BE STEPPED THROUGH THE RETRY SEQUENCE. THAT IS, EVERY DATAGRAM LOOPED BACK WILL STEP THE RETRY LOGIC THROUGH ONE STEP OF THE RETRY SEQUENCE. THE RETRY SEQUENCE CAN BE VERIFIED BY CHECKING THE TRANSMIT BUFFER STATUS WORDS AFTER EACH RETRY STEP.

THE PCBB WILL BE USED TO PASS PARAMETERS BETWEEN THE MICROCODE AND THE HOST

24

PROCESSOR. PCBB+O WILL BE USED TO PASS THE DATA TO BE LOADED INTO THE LINK MODE WORD. PCBB+2 WILL BE PASSED BACK BY THE MICROCODE, IT IS THE FIRST WORD OF THE TRANSMIT BUFFER (TRANSMIT STATUS WORD 0). PCBB+4 WILL ALSO BE PASSED BACK, IT IS TRANSMIT STATUS WORD 1.

THE TRANSMIT STATUS WORDS SHOULD SHOW THE FOLLOWING STATUS:

STATUS BITS

| | WORD 0 | WORD 1 | | |
|--------------------|--------------|--------------|-------------|---------------|
| LOOPBALK STEP # | ËRRS (14) | MORE (12) | ONE (11) | RETRY (10) |
| 1 | 0 | 0 | 1 | 0 |
| 2-15 | 0 | 1 | 0 | 0 |
| 16 | 1 | 0 | 0 | 1 |

THE PCBB IS FORMATTED AS FOLOWS:

| PCBB+0: | ! LINK MODE WORD ! |
|---------|---------------------------|
| PCBB+2: | ! TRANSMIT STATUS WORD 0! |
| PCBB+4: | ! TRANSMIT STATUS WORD 1! |

TEST 44: TDR COUNTER TEST

THE DEUNA HAS A COUNTER DESIGNED TO HELP LOCATE FAULTS IN THE COAXIAL CABLE. THE COUNTER IS INITIALIZED WHEN A MESSAGE IS TRANSMITTED AND INCREMENTS AS THE DATAGRAM IS TRANSMITTED. COUNTING WILL STOP IF A COLLISION OCCURS OR THE CARRIER IS LOST. COUNTING ALSO STOPS IF THE 10 BIT COUNTER REACHES ITS MODULUS.

THIS TEST WILL DETERMINE TAHT THE TDR COUNTER VALUE WILL CHANGE AND THAT THE COUNTER IS NOT STUCK.

BECAUSE THE COUNTER COUNTS DURING TRANSMISSION OF A DATAGRAM AND WILL CONTINUE TO COUNT DURING THE TIME THAT THE TRANSMIT STATE MACHINE OPERATES, THE COUNT ACCUMULATED IN THE COUNTER DURING TRANSMISSION IS PROPORTIONAL TO THE LENGTH OF THE DATAGRAM. THIS TEST WILL USE THIS RELATION TO VERIFY THAT THE COUNTER IS NOT STUCK.

THIS TEST USES MICROMODULE 'G' MICROTEST #2.
THE TEST WILL SEND DATAGRAMS OVER THE LOOPBACK. THE LENGTH OF THE DATAGRAM WILL BE VARIED BY USING A INCREASING BYTE COUNT IN THE TRANSMIT BUFFER.

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AFTER EACH DATAGRAM HAS BEEN LOOPED BACK, THE TRANSMIT BUFFER WORD 1 WILL BE PASSED BACK TO THE HOST TO VERIFY THAT IT IS CORRECT. THE CRITERIA FOR CORRECTNESS WILL BE: INCREASING BYTE COUNTS SHOULD RESULT IN INCREASING TOR VALUES IN TRANSMIT STATUS WORD 1.

THE PCBB WILL BE FORMATED AS FOLLOWS:

PCBB+0: ! BYTE COUNT !
PCBB+2: ! TRANSMIT STATUS WORD 1!

TEST 45: RETRY LOGIC TEST

THE RETRY LOGIC IS ACTIVATED WHENEVER A COLLISION IS ENCOUNTERED DURING A TRANSMISSION ATTEMPT. THE LINK STOPS TRANSMISSION AND WAITS FOR A PERIOD OF TIME BEFORE ATTEMPTING TO RETRANSMIT.

THE WAIT TIME IS AN INTEGRAL NUMBER OF 'SLOT TIMES'. THE NUMBER COMES FROM A RANDOM NUMBER GENERATOR. THE NUMBER OF SLOT TIMES IS NOT EXACTLY RANDOM SINCE THE RETRY LOGIC WAITS A GENERALLY INCREASING NUMBER OF SLOT TIMES BEFORE TRYING TO RETRANSMIT. THIS TEST WILL VERIFY THAT THE RETRY LOGIC IS CAPABLE OF GENERATING VARIABILITY IN THE DURATION OF THE RETRY WIAT TIMES.

THIS TEST WILL USE MICROMODULE 'G' MICROTEST #3
THE LINK MODULE HAS A DIAGNOSTIC MAINTENANCE FACILITY MAKING IT POSSIBLE TO SINGLE STEP THE RETRY LOGIC THROUGH THE MAXIMUM SIXTEEN RETRY STEPS. THIS FEATURE WILL ALSO MAKE IT POSSIBLE TO MEASURE THE RETRY WAIT INTERVAL.

THE MICROCODE WILL SET THE COLLISION BIT IN THE LINK MODE REGISTER AND AND TRANSMIT A DATAGRAM IN LOOPBACK MODE. THE T-11 WILL COUNT WHILE WAITING FOR THE TRANSMIT STATE MACHINE TO INTERRUPT. THE ACCUMULATED COUNT SHOULD PROVIDE A MEASURE OF TIME TAKEN FOR THE TRANSMISSION ATTEMPT TO OCCUR. SINCE THE COLLISION BIT IS SET, THIS INTERVAL WILL INCLUDE THE RETRY WAIT INTERVAL. THE ACCUMULATED COUNT WILL BE WRITTEN BY THE MICROCODE TO THE PCBB.

THE MICROTEST WILL BE EXECUTED 16 TIMES. AFTER EACH EXECUTION, THE COUNT WILL BE READ FROM THE PCBB AND STORED IN A TABLE. THE TABLE WILL BE SCANNED TO VERIFY THAT THEY ARE NOT ALL THE SAME.

THE PCBB IS FORMATTED AS FOLLOWS:

PCBB+0: ! BYTE COUNT !
PCBB+2: ! TRANSMIT WAIT COUNT !

TEST 46: PRINT DEVICE PARAMETERS TEST

THIS TEST PRINTS THE DEFAULT PHYSICAL ADDRESS, THE MICROCODE REVISION AND THE SWITCH PACK SETTINGS.

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PROGRAM HEADER AND TABLES
                                     MACY11 30(1046) 11-JAN-83 10:13 PAGE 28
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  1387
                                               .TITLE PROGRAM HEADER AND TABLES
  1388
                                               .SBTTL PROGRAM HEADER
  1389
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                                               THE PROGRAM HEADER IS THE INTERFACE BETWEEN
  1395
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                                               : THE DIAGNOSTIC PROGRAM AND THE SUPERVISOR.
  1397
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         000040' 000124'
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PROGRAM HEADER AND TABLES
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                                                     PROGRAM HEADER
  1443 000046' 000000
          000050
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          0001141
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                 L$DVTYP
L$REPP::
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LSETP::
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LSCCP::
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JAN-85 10:13 PAGE
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| PROGRAM CZUAAA. | HEADER P11 1 | AND TABLES 1-JAN-83 09:29 | | | -83 10: E P-TABL | | AGE 32 | 2 |
|--|-------------------------------|------------------------------|--------------------------------|-----------|----------------------|--------------------|---|---|
| 1545 1546 | | | .SBTTL DEFAL | JLT | HARDWAR | P-TABL | ABLE | |
| 1546 1547 1548 1549 1550 1551 1552 1553 | | | : THE TEST-DE : IS IDENTICA | EVI Al | CE PARAM TO THE S | ETERS. TRUCTURE | LE CONTAINS DEFAULT VALUES OF . THE STRUCTURE OF THIS TABLE URE OF THE HARDWARE P-TABLES, "FOR BUILDING THE P-TABLES. | |
| 1553 1554 1555 1556 1557 1558 | 000262' 000262' 000262' | 000002 | BGNH | J | DFPTBL | | .WORD L10000-L\$HW/2 L\$HW:: DFPTBL:: | |
| 1559 1560 | 000262° | | .WORD | | 0 | :CSR ;VECTOR | TOR | |
| 1561 1562 1563 | 000266' | | ENDH | d | | | L13000: | |

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GLOBAL AREAS
CZUAAA.P11
                   MACY11_30(1046) 11-JAN-83 10:13 PAGE 34
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                                                 DEFAULT HARDWARE P-TABLE
  1565
1566
1567
                                                  .TITLE GLOBAL AREAS
                                                  SBITL GLOBAL EQUATES SECTION
  1568
  1569
  1570
  1571
1572
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1574
                                                  : THE GLOBAL EQUATES SECTION CONTAINS PROGRAM EQUATES THAT
                                                  : ARE USED IN MORE THAN ONE TEST.
  1575
         0002661
                                                           EQUALS
  1576
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1578
                                                   BIT DIFINITIONS
  1579
                    100000
                                                 BIT15== 100000
  1580
                    040000
                                                 BIT14== 40000
  1581
                    020000
                                                 BIT13== 20000
  1582
                    010000
                                                 BIT12== 10000
  1583
                    004000
                                                 BIT11== 4000
                                                 BIT10== 2000
BIT09== 1000
  1584
                    002000
  1585
                    001000
  1586
                    000400
                                                 BIT08== 400
                                                 BIT07== 200
BIT06== 100
  1587
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                                                 BIT05== 40
                                                 BIT04== 20
BIT03== 10
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                                                 BIT02== 4
BIT01== 2
  1592
                    000004
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                    000002
  1594
                                                 BIT00== 1
                   000001
  1595
  1596
                   001000
                                                 BIT9== BIT09
                                                 BIT8==
BIT7==
  1597
                   000400
                                                           BITO8
  1598
                   000200
                                                           BITO7
                                                 BIT6== BIT06
BIT5== BIT05
BIT4== BIT04
BIT3== BIT03
BIT2== BIT02
BIT1== BIT01
  1599
                   000100
  1600
                   000040
                   000020
  1601
                   000010
  1602
  1603
                   000004
                   000002
  1604
  1605
                   000001
                                                 B110== B1100
  1606
  1607
                                                   EVENT_FLAG_DEFINITIONS
  1608
                                                      EF32:EF17 RESCRVED FOR SUPERVISOR TO PROGRAM COMMUNICATION
  1609
                   000040
000037
  1610
                                                 EF.START==
                                                                     32.
31.
30.
                                                                                                               START COMMAND WAS ISSUED
                                                 EF.RESTART==
  1611
                                                                                                               RESTART COMMAND WAS ISSUED
                   000036
  1612
1613
                                                 EF.CONTINUE ==
                                                                                                              CONTINUE COMMAND WAS ISSUED A NEW PASS HAS BEEN STARTED
                                                                     29.
28.
                                                 EF.NEW==
  1614
                    000034
                                                 EF.PWR==
                                                                                                             : A POWER-FAIL/POWER-UP OCCURRED
  1615
  1616
  1617
                                                   PRIORITY LEVEL DEFINITIONS
  1618
                                                 PRIO7== 340
PRIO6== 300
                   000340
  1619
  1620
                    000300
```

```
GLOBAL AREAS
                       MACY11 30(1046) 11-JAN-83 10:13 PAGE 35
CZUAAA.P11
                    11-JAN-83 09:29
                                                           GLOBAL EQUATES SECTION
  1621
1622
1623
                       000240
                                                           PRIO5== 240
PRIO4== 200
                       000140
                                                           PRIO3== 140
  1624
                       000100
                                                           PRIO2== 100
PRIO1== 40
  1625
                       000040
   1626
                       000000
                                                           PRIO0== 0
   1627
  1628
                                                           OPERATOR FLAG BITS
   1629
  1630
                       000004
                                                           EVL ==
   1631
                       000010
                                                           101==
                       000020
   1632
                                                           ADR==
  1633
                       000040
                                                           IDU==
  1634
                       000100
                                                                           100
                                                           ISR==
  1635
                       000200
                                                                           200
                                                           UAM==
                       000400
                                                                            400
  1636
                                                           BOE ==
  1637
                       001000
                                                                          1000
                                                           PNT==
  1638
                       002000
                                                                          2000
                                                           PRI==
  1639
                       004000
                                                           IXE==
                                                                          4000
  1640
                       010000
                                                           IBE ==
                                                                        10000
                       020000
   1641
                                                           IER==
                                                                        20000
                       040000
   1642
                                                           LOE ==
                                                                        40000
  1643
                       100000
                                                           HOE ==
                                                                       100000
  1644
  1645
                       000077
                                                           SECOND==63.
                                                                                              :63 LINE CLOCK TICKS = APROX. 1 SECOND
   1646
                       000001
                                                           SET== 1
                       000001
000000
004000
010000
020000
040000
020000
   1647
                                                           CLEAR== 0
                                                           SIZ1K== 4000
SIZ2K== SIZ1K+2
   1648
                                                                                               :1K WORDS
   1649
                                                                                               :2K WORDS
                                                          S1Z4K== 51Z1K*2

S1Z4K== 51Z2K*2

S1Z8K== S1Z4K*2

WCSS1Z==S1Z4K

IOS1Z==S1Z4K

ROMS1Z==S1Z8K
  1650
                                                                                               :4K WORDS
   1651
                                                                                               :8K WORDS
  1652
1653
                                                                                               SIZE OF THE DEUNA WRITEABLE CONTROL STORE
                                                                                               SIZE OF THE DEUNA 1/0 PAGE
  1654
1655
                                                                                               SIZE OF THE DEUNA ROM IN WORDS
                       040000
                       077774
                                                           LINSIZ==$1Z8K+2-4
                                                                                               SIZE OF THE DEUNA LINK MEMORY
                                                                                              :INTERNAL BASE ADDRESS OF WCS
:INTERNAL BASE ADDRESS OF THE I/O PAGE FOR THE T11
   1656
                       000000
                                                           WCSADR==0
                       020000
   1657
                                                           IOADR==WCSADR+WCSSIZ
                       040000
100000
000100
177777
177777
                                                                                              INTERNAL BASE ADDRESS OF THE DEUNA ROM
INTERNAL BASE ADDRESS OF THE DEUNA LINK MEMORY
INTERRUPT ENABLE
   1658
                                                           ROMADR == IOADR + IOSIZ
   1659
                                                           LINADR==ROMADR+ROMSIZ
                                                           IE== BIT6
INITH== -1
   1660
                                                                                              INITIAL HIGH WORD FOR 32 BIT CRC CALCULATOR
INITIAL LOW WORD FOR 32 BIT CRC CALCULATOR
FUNCTION POLYNOMIAL HIGH WORD FOR 32 BIT CRC
FUNCTION POLYNOMIAL LOW WORD FOR 32 BIT CRC
FUNCTION POLYNOMIAL FOR 16 BIT CRC
DATA ERROR INDICATER FOR LINK MEMORY TESTS
ADDRESS ERROR INDICATOR FOR LINK MEMORY TESTS
   1661
                                                           INITL == -1
POLYH == 166670
POLYL == 101440
   1662
   1663
                       101440
   1664
   1665
                                                           PGLY16== 120001
                                                           DATERR==0
                       000000
   1666
   1667
                                                           ADRERR==1
                       002756
000100
                                                                                               MAXIMUM NUMBER OF BYTES RECEIVER CAN HANDLE MINIMUM NUMBER OF BYTES RECEIVER CAN HANDLE
   1668
                                                           MAXBYT == 1518.
   1669
                                                           MINBYT==64.
   1670
                       000004
                                                           CRCSIZ==4.
                                                                                               SIZE OF CRC
                       000001
                                                           INMON=1
                                                                                               ; IN MICROMONITOR STATE
   1671
                       000002
   1672
                                                           INTST=2
                                                                                               ; IN A TEST STATE
  1673
                                                                                              IN ERROR STATE
                       000003
                                                           INERR=3
   1674
```

```
GLOBAL AREAS
                  MACY11 30(1046) 11-JAN-83 10:13 PAGE 36
CZUAAA.P11
               11-JAN-83 09:29
                                             GLOBAL EQUATES SECTION
  1675
  1676
1677
                                                  RO - PORT CONTROL AND STATUS REGISTER O (OPERATIONAL MICROCODE DEFINITIONS)
                                                                                   STATUS ERROR INTERRUPT
PORT COMMAND ERROR INTERRUPT
RECEIVE RING INTERRUPT
TRANSMIT RING INTERRUPT
  1678
                  100000
                                             SER1
                                                      ==
  1679
                  040000
                                             PCEI
                                                               BIT14
                                                      ==
                  020000
  1680
                                                               BIT13
                                             RXI
                                                      ==
  1681
                  010000
                                             TXI
                                                               BIT12
                                                      ==
                                                                                   DONE INTERRUPT
RECEIVE BUFFER UNAVAILABLE
  1682
                  004000
                                             DNI
                                                               BITTI
                                                      ==
  1683
                  002000
                                             RCEI
                                                      = -
                                                               BIT10
  1684
                  000400
  1685
                                             FATI
                                                               BIT08
                                                                                   FATAL ERROR INTERERUPT
                                                      ==
                                                                                   INTERRUPT SUMMARY <15:08>
  1686
                  000200
                                             INTR
                                                               BITO7
                                                      ==
  1687
                  000100
                                             INTE
                                                               BITO6
                                                      ==
                                                                                   INTERRUPT ENABLE
  1688
                  000040
                                             RSET
                                                               BITOS
                                                      ==
                                                                                   UNA RESET
  1689
  1690
  1691
                                             PCSRO - PORT CONTROL AND STATUS REGISTER O (DIAGNOSTIC MICROCODE DEFINITIONS)
  1692
  1693
                  100000
                                             NPRERR
                                                      ==
                                                               BIT15
                                                                                  :T11 NPR TIMEOUT INTERRUPT OCCURRED
  1694
                  040000
                                                                                 :T11 NON-EXISTANT MEMORY TIMEOUT OCCURRED
                                             NXMERR
                                                               BIT14
                                                      ==
  1695
                  020000
                                             UNIERR ==
                                                               BIT13
                                                                                 ; T11 UNEXPECTED INTERRUPT OCCURRED
  1696
                  010000
                                             PARERR ==
                                                               BIT12
                                                                                  :T11 LINK MEMORY PARITY ERROR OCCURRED
  1697
  1698
                                              PORT COMMANDS <03:00>
  1699
                  000001
                                             GETPCB ==
                                                               BITOO
  1700
                  200000
                                             GETCMD
                                                               BIT01
                                                      ==
  1701
                  000006
                                             PNOP
                                                               BITO1!BITO2
                                                      ==
  1702
                                                               BIT00 BIT01
                  000003
                                             SLFT
                                                      ==
  1703
  1704
                                             PCSR1 - PORT CONTROL AND STATUS REGISTER 1
  1705
                  100000
                                             XPWR
                                                                                 : TRANSCEIVER POWER BAD
                                                      ==
                                                               BIT15
  1706
                  040000
                                             ICAB
                                                      ==
                                                               BIT14
                                                                                  : PORT/LINK CABLING OK
  1707
  1708
                                             :SELF TEST ERROR CODE <13:08>
  1709
  1710
                  000200
                                             PCTO
                                                               BITO7
                                                      ==
                                                                                 : PORT COMMAND TIMEOUT
  1711
  1712
                  000010
                                                               BIT03
                                             RMTC
                                                      ==
                                                                                  ; REMOTE CONSOLE RESERVED
 1713
                  000400
                                             SFTB0
                                                               BIT8
                                                                                  FIRST BIT OF SELF TEST FIELD
                                                      ==
                  001000
                                             SFTB1
                                                               BI19
                                                      ==
                                                                                  : SE COND
                  002000
                                             SFTB2
                                                      ==
                                                               BIT10
                                                                                  : THIRD
  1716
                  004000
                                             SFTB3
                                                      ==
                                                               BIT11
                                                                                  : FOURTH
  1717
                  01,000
                                                               BIT12
BIT13
                                             SFTB4
                                                      ==
                                                                                  FIFTH
                  020000
037400
  1718
                                             SFTB5
                                                      ==
                                                                                  SIXTH
  1719
                                                               BIT8:BIT9:BIT10:BIT11:BIT12:BIT13
                                             SFT
                                                                                                            :SELF TEST FIELD
  1720
  1721
1722
1723
1724
1725
1726
1727
1728
1729
1730
                                             :PORT STATE <02:00>
                  000007
                                             PSTATE ==
                                                               BIT00!BIT01!BIT02 ; PORT STATE BITS OF PCSR1
                  000000
                                             RESET
                                                               0
                                                                                  :RESET STATE (NOT REALLY A STATE)
                                                      ==
                                                               BIT00
                  000001
                                             PRILD
                                                      ==
                                                                                   PRIMARY LOAD STATE
                  000002
                                             READY
                                                               BITOI
                                                      ==
                                                                                  READY STATE
                  000003
                                                               B1100!B1101
                                             RUN
                                                      = =
                                                                                 RUNNING STATE
                  000005
                                             UNIHLT
                                                      = =
                                                               B1100!B1102
                                                                                 UNIBUS HALTED STATE
                  000006
                                             NIHLT
                                                      ==
                                                               B1101!B1102
                                                                                  INI HALTED STATE
                                                               BITOO BITOT BITOZ JUNIBUS AND NI HALTED STATE
                  000007
                                             NIUNI
                                                      ::
```

| GLOBAL AREAS CZUAAA.P11 | MA(Y11 30(1046) 11-JAN-83 09:29 | 11-JAN-83 10:13 PAGE 37 GLOBAL EQUATES SECTION |
|--|--|--|
| 1731 1732 1733 1734 1735 1736 1737 1738 | 100000 040000 001000 000400 | DESCRIPTOR RING DEFINITIONS OWN == BIT15 ERRS == BIT14 STP == BIT09 ENP == BIT08 PORT FUNCTION CODES |
| 1739 1740 1741 1742 1743 1744 1745 1746 1747 1748 1749 1750 1751 1752 1753 1754 1755 1756 1757 1758 1759 1760 1761 1763 1764 | 000000 000001 000002 000003 000004 000005 000006 000007 000010 000011 000012 000013 000014 000015 000016 000017 000020 000021 000023 000024 | PFNOP1 == 0 :NOP PORT FUNCTION #1 LASM == 1 :LOAD AND START MICROADDRESS RDPA == 2 :READ DEFAULT PHYSICAL ADDRESS PFNOP2 == 3 :NOP PORT FUNCTION #2 RPA == 4 :READ PHYSICAL ADDRESS WHAL == 5 :WRITE PHYSICAL ADDRESS RMAL == 6 :READ MULTICAST ADDRESS LIST WMAL == 7 :WRITE MULTICAST ADDRESS LIST RRF == 10 :READ RING FORMAT WRF == 11 :WRITE RING FORMAT RC == 12 :READ COUNTERS RACC == 13 :READ AND CLEAR COUNTERS RTM == 14 :READ THE MODE WTM == 15 :WRITE THE MODE RPS == 16 :READ PORT STATUS RACPS == 17 :READ AND CLEAR PORT STATUS DIM == 20 :DUMP INTERNAL MEMORY LIM == 21 :LOAD INTERNAL MEMORY RSIDP == 22 :READ SYSTEM ID PARAMETERS RLSA == 24 :READ LOAD SERVER ADDRESS WLSA == 25 :WRITE LOAD SERVER ADDRESS |

```
GLOBAL AREAS
                 MACY11 30(1046) 11-JAN-83 10:13 PAGE 38
CZUAAA.P11
               11-JAN-83 09:29
                                             GLOBAL EQUATES SECTION
  1765
  1766
  1767
                                              .SBTTL GLOBAL DATA SECTION
  1768
  1769
  1770
                                              THE GLOBAL DATA SECTION CONTAINS DATA THAT ARE USED
  1771
                                              : IN MORE THAN ONE TEST.
  1772
  1773
 1774 000266' 000000
1775 000270' 000000
                                             UNACSR::.WORD
                                                                         : CSR
                                                               Ŏ
                                                                         : VECTOR
                                             UNAVEC::.WORD
  1776
        000272' 000000
                                             UNAPRI::.WORD
                                                               Ŏ
                                                                         PRIORITY
  1777
 1778 000274'
1779 000274' 000000
1780 000276' 000000
1781 000300' 000000
                                             CLKTAB::
CLKCSR::.WORD
                                                               0
                                                                        :LINE CLOCK STATUS REGISTER
                                             CLKBR:: .WORD
                                                               Ò
                                                                        LINE CLOCK PRIORITY
                                             CLKVEC::.WORD
                                                               Ŏ
                                                                        LINE CLOCK VECTOR
        0003021 000000
  1782
                                             CLKFRE : : . WORD
                                                               0
                                                                         :LINE CLOCK FREQUENCY
  1783
        000304' 000000
000306' 000000
000310' 000000
000312' 000000
000314' 000000
  1784
                                             (SRNUM::.WORD
                                                               0
                                                                         : PCSR NUMBER
  1785
                                             BITNUM::.WORD
                                                                         BIT NUMBER
                                                               Ó
  1786
                                             BITNAM::.WORD
                                                               Õ
                                                                         POINTER TO BIT NAME ASCII STRING
  1787
                                             BITSTA::.WORD
                                                               0
                                                                         POINTER TO BIT STATUS ASCII STRING
  1788
                                                                         POINTER TO 'BEFORE' OR 'AFTER' ASCII STRING
                                             PWHEN:: .WORD
                                                               0
  1789
        000316' 000000
                                             PCOMND::.WORD
                                                               Ŏ
                                                                         POINTER TO PORT COMMAND ASCII STRING
  1790
        000320' 000000
                                             MICMOD::.WORD
                                                               0
                                                                         :POINTER TO MICROCODE MODULE # LOADED
  1791
  1792 000322' 000000
                                                               0
                                                                         :POINTER TO WORD CONTAINING SIZE OF FREE MEMORY
                                             FRESIZ::.WORD
  1793
        000324 000000
                                             FREMEM::, WORD
                                                               0
                                                                         :POINTER TO FREE MEMORY SPACE
  1794
  1795 000326 000000
                                             MICRO:: .WORD
                                                                         :CURRENT MICROCODE MODULE LOADED
  1796 000330 000000
                                             UNIT:: .WORD
                                                               0
                                                                         CURRENT UNIT NUMBER BEING TESTED
        0003321 000000
  1797
                                             METER:: . WORD
                                                               0
                                                                         :CLOCK TICKS
        0003341 021040
  1798
                                                               21040
                                             SWADDR::.WORD
                                                                        :INTERNAL ADDRESS OF SWITCH PACK
  1799
  1800 000336' 000000
                                             PCSRO:: .WORD
                                                                         :PORT CONTROL AND STATUS REGISTER O
        000340' 000000
  1801
                                             PCSR1:: .WORD
                                                               0
                                                                         PORT CONTROL AND STATUS REGISTER 1
  1802 000342 000000
1803 000344 000000
                                             PCSR2:: .WORD
                                                               0
                                                                         PORT CONTROL AND STATUS REGISTER 2
                                                               0
                                                                         PORT CONTROL AND STATUS REGISTER 3
                                             PCSR3:: .WORD
  1804
  1805 000346' 000000
                                             PCSROC::.WORD
                                                               0
                                                                         :PCSRO CONTENTS
  1806 000350 000000
                                                                         :PCSR1 CONTENTS
                                             PCSR1C::.WORD
                                                               0
        000352 000000
000354 000000
  1807
                                                                        PCSR2 CONTENTS
PCSR3 CONTENTS
                                             PCSR2C::.WORD
                                                               0
                                                               Ŏ
  1808
                                             PCSR3C::.WORD
  1809
  1810 0003561
                                             BNAMTO::
                                                                        :TABLE OF POINTERS TO BIT NAME MNEMONICS FOR PCSRO
  1811 000356' 001267'
                                                      SBITO
        000360' 001261'
  1812
                                                      SBITT
  1813 000362' 001253'
1814 000364' 001245'
1815 000366' 001237'
1816 000370' 001052'
                                                      $BIT2
                                                      $BIT3
                                                      $B114
                                                      SRSET
  1817 000372 001041 1818 000374 001030
                                                      SINTE
                                                      SINTR
  1819
        000376' 001017'
                                                      SFATI
        000400' 001201'
  1820
                                                      $8119
```

```
MACY11 30(1046) 11-JAN-83 10:13 PAGE 40
GLOBAL AREAS
CZUAAA.P11
                 11-JAN-83 09:29
                                                    GLOBAL DATA SECTION
         000546' 031463
000550' 031463
000552' 031463
000554' 007417
000556' 007417
000560' 007417
000564' 000377
000564' 000377
000566' 000377
000570' 177777
000572' 000000
000574' 177777
                                                                        *B0011001100110011
*B0011001100110011
*B0011001100110011
*B0000111100001111
*B0000111100001111
*B0000000011111111
*B0000000011111111
  1877
1878
                                                    SPAT3:: .WORD
                                                               .WORD
                                                               .WORD
  1879
  1880
                                                    SPAT4:: .WORD
  1881
                                                               .WORD
                                                               .WORD
  1882
  1883
                                                    SPAT5:: .WORD
  1884
                                                               .WORD
  1885
                                                               .WORD
                                                                         ^Biiiiiiiiiiiiiiiiiiiiiiii
                                                    SPAT6:: .WORD
  1886
                                                                         .WORD
  1887
  1888
                                                               .WORD
                                                    SPAT7:: .WORD
                                                                         ^B111111111111111111
  1889
          0005761 177777
  1890 000600 000377
                                                                         ^B0000000011111111
                                                               .WORD
                                                                         1891
          0006021 000000
                                                               .WORD
  1892
  1893 000604' 000000
1894 000606' 000000
                                                    P(88::
                                                               .WORD
                                                                                    :PORT CONTROL BLOCK
                                                                                   :+2
                                                               . WORD
                                                                         0
          000610' 000000
                                                                         Ō
  1895
                                                               .WORD
          000612' 000000
                                                               .WORD
                                                                         0
  1896
                                                                                    :+6
  1897
                                                                         0
                                                                                    JUNIBUS DATA BLOCK BASE
  1898 000614 000000
                                                               .WORD
                                                    UDBB::
  1899 000616' 000000
                                                               .WORD
                                                                         Ò
                                                                                    :+2
          000650, 000000
                                                                                    : +4
                                                                         Ŏ
                                                               .WORD
  1900
                                                                         Ŏ
                                                                                    :+6
  1901
                                                               .WORD
  1902
  1903
          0006241 000020
                                                    CNTTAB::.BLKW
                                                                         16.
                                                                                    :HOLDS THE 16 RETRY WAIT COUNTS FOR TEST 39
  1904
          000664' 000000
000666' 000000
000670' 000000
                                                                                    :NON-EXISTANT MEMORY FLAG
                                                                         0
  1905
                                                    NEXMEM::.WORD
                                                                         Ŏ
                                                                                    HOLDS PESRO INTERRUPT FLAG BITS FROM MICROCODE
                                                    ERRINT::.WORD
  1906
                                                                                    UNA INTERRUPT FLAG
                                                                         Ŏ
                                                    UNAINT::.WORD
  1907
          000672: 000000
000674: 000000
                                                                         Ŏ
                                                                                    FLAG INDICATING FIRST TIME THROUGH TESTS FOR ALL UNITS
                                                    FRSTIM::.WORD
  1908
                                                                                    CPU PRIORITY BEFORE INTERRUPT OCCURRED
                                                                         Ŏ
   1909
                                                    CPUPRI::.WORD
   1910
  1911
                                                    .EVEN
```

```
GLOBAL AREAS
                 MACY11_30(1046) 11-JAN-83 10:13 PAGE 41
CZUAAA.P11
               11-JAN-83 09:29
                                           GLOBAL DATA SECTION
 1912
1913
  1914
  1915
  1916
                                           .SBTTL GLOBAL TEXT SECTION
  1917
  1918
  1919
                                            THE GLOBAL TEXT SECTION CONTAINS FORMAT STATEMENTS,
  1920
                                             MESSAGES, AND ASCII INFORMATION THAT ARE USED IN
  1921
                                           : MORE THAN ONE TEST.
  1925
                                             NAMES OF DEVICES SUPPORTED BY PROGRAM
 1926
1927
1928
1929
1930
        0006761
                                                    DEVTYP <DEUNA>
        0006761
                                                                                                        LSDVTYP::
        000676 042504 047125 000101
                                                                                                                 .ASCIZ /DEUNA/
                                                                                                                 .EVEN
 1931
1932
1933
                                             TEST DESCRIPTION
 1934
 1935
        0007041
                                                   DESCRIPT
                                                                     <DEUNA REPAIR DIAGNOSTIC>
 1936
        000704
                                                                                                        L$DESC::
 1937
        0007041 042504
                         047125
                                                                                                                 .ASCIZ /DEUNA REPAIR DI
       000712 042522
 1938
                         040520
                                  051111
                         040511
 1939
                                  047107
 1940
       000726' 051517
                                  000103
 1941
                                                                                                                 .EVEN
 1942
1943
       000734' 042523
000742' 052111
000745' 120
                         044522
                                  041040 $SERI:: .ASCIZ /SERI BIT/
 1944
                            000
 1945
                         042503
                    120
                                  020111 SPCEI:: .ASCIZ /PCEI BIT/
       000752' 044502
000756' 054122
 1946
 1947
                         020111
                                  044502 $RXI:: .ASCIZ /RXI BIT/
       000764 000124
 1948
       000766' 054124
000774' 000124
 1949
                         020111
                                  044502 $TXI:: .ASCIZ /TXI BIT/
 1950
1951
       000776
                047104
                         020111 044502 $DNI:: .ASCIZ /DNI BIT/
 1952
1953
       001004
                000124
       001006
                041522
                         044505
                                  041040 $RCEI:: .ASCIZ /RCEI BIT/
 1954
1955
       001014
                052111
                            000
       0010171
                         052101
                    106
                                  020111 SFATI:: .ASCIZ /FATI BIT/
 1956
       0010241
                         000124
                044502
       001030
 1957
                047111
                                  041040 $INTR:: .ASCIZ /INTR BIT/
 1958
       001036
                052111
                            000
                         052116
000124
 1959
       001041'
                                  020105 $INTE:: .ASCIZ /INTE BIT/
 1960
       0010461
                044502
       0010521
 1961
                051522
                         052105
                                  041040 $RSET:: .ASCIZ /RSET BIT/
 1962
       001060
                052111
                            000
                         053520
000124
 1963
       0010631
                    130
                                  020122 $XPWR:: .ASCIZ /XPWR BIT/
 1964
       001070
                044502
       001074
                041511
 1965
                         041101
                                  041040 $I(AB:: .ASCIZ /ICAB BIT/
       0011021
 1966
                052111
                            000
 1967
       0011051
                    120
                         052103
                                  020117 $PCTO:: .ASCIZ /PCTO BIT/
```

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GLOBAL AREAS
                   MACY11 30(1046)
                                       11-JAN-83 10:13 PAGE 42
                11-JAN-83 09:29
CZUAAA.P11
                                                GLOBAL TEXT SECTION
                  044502
046522
052111
         00 112'
  1968
                            000124
  19.
                                      041040
                                                $RMTC:: .ASCIZ /RMTC BIT/
         001124'
  1970
                                000
  1971
                            052111
                  102
                                      030440
                                                $BIT15::.ASCIZ /BIT 15/
  1972
         0011341
                  044502
000
102
00063
044502
  1973
         0011361
                            020124
                                      032061
                                                $BIT14::.ASCIZ /BIT 14/
  1974
         0011441
  1975
         0011451
                            052111
                                      030440
                                                $BIT13::.ASCIZ /BIT 13/
         001152'
  1976
  1977
                            020124
                                      031061
                                                $BIT12::.ASCIZ
                                                                   /BIT 12/
         001162'
  1978
                      000
  1979
        001163

001170

001172

001200

001201

001206

001207

001214

001215

001223

001230

001231

001237

001244
                            052111
                                      030440
                                                $BIT11::.ASCIZ
                                                                   /BIT 11/
  1980
                  000061
  1981
                            020124
                                      030061
                                                $BIT16::.ASCIZ
                                                                   /BIT 10/
  1982
                      000
 1983
1984
1985
1986
1987
1988
                      102
                            052111
                                      034440
                                                $BIT9:: .ASCIZ
                                                                   /BIT 9/
                      000
                      102
                            052111
                                      034040
                                                $BIT8:: .ASCIZ
                                                                   /BIT 8/
                      000
                      102
                            052111
                                      033440
                                                $BIT7:: .ASCIZ
                                                                   /BIT 7/
                      000
  1989
                      102
                            052111
                                      033040
                                                $BIT6:: .ASCIZ
                                                                   /BIT 6/
  1990
                      000
  1991
                      102
                            052111
                                      032440
                                                $B175:: .ASC1Z
                                                                   /BIT 5/
 1992
1993
                      000
                      102
                            052111
                                      032040
                                               $BIT4:: .ASCIZ
                                                                  /BIT 4/
  1994
         0012441
                      000
 1995
         001,45
                      102
                            052111
                                      031440
                                               $B173:: .ASC12
                                                                  /BIT 3/
        0012521
 1996
                      000
 1997
                      102
                            052111
                                      031040
                                               $BIT2:: .ASCIZ
                                                                  /BIT 2/
 1998
         001.360*
                      000
 1999
         001261
                      102
                            052111
                                      030440
                                               $BIT1:: .ASCIZ
                                                                  /BIT 1/
  2000
         0012661
                      000
 2001
         0017671
                      102
                            052111
                                      030040
                                               $BITO:: .ASCIZ
                                                                  /BIT 0/
  2002
         0012741
                      000
  2003
         0012751
                      116
                            052117
                                      051440
                                               $NSET:: .ASCIZ
                                                                   /NOT SET/
  2004
         0013021
                  052105
        001,05°
001311°
                            052105
052117
051101
 2005
                                         000
                                               $SET::
                                                         .ASCIZ
 2006
                      116
                                      041440
                                               $NCLR:: .ASCIZ /NOT CLEAR/
 2007
         0013161
                  042514
                                         000
        001323°
001330°
001331°
 2008
                      103
                            042514
                                      051101
                                               $CLR::
                                                        .ASCIZ /CLEAR/
 2009
                      000
 2010
                            043105
                                     051117
        001331

001336

001340

001346

001355

001370

001370

001371
                                               $BEFOR::.ASCIZ
                                                                 /BEFORE/
 2011
                  000105
 2012
                  043101
                            042524
050124
                                     000122
041103
                                               $AFTER::.ASCIZ
                                                                   /AFTER/
  2013
                  042507
                                               $GTPCB::.ASCIZ
                                                                   /GETPCB/
  2014
                      000
                      107
                            052105
040515
 2015
                                      041440
                                               $GTCMD::.ASCIZ
                                                                 /GET COMMAND/
 2016
                  046517
                                     042116
 2017
                      000
                            046105
052123
050117
 2018
                      123
                                      020106
                                               $SLFT:: .ASCIZ /SELF TEST/
 2019
                  042524
                                         000
                      116
 2020
        0014331
                                         000
                                               $NOP:: .ASC17
                                                                   /NOP/
  2021
         0014071
                      123
                            040524
                                      052122
                                               $STRT:: .ASCIZ
                                                                   /START/
  2022
         0014141
                      000
         0014151
 2023
                      104
                                      047101 $PDNDM::.ASCIZ /DEMAND POLL/
                            046505
```

```
GLOBAL AREAS
                 MACY11 30(1046) 11-JAN-83 10:13 PAGE 44
CZUAAA.P11
               11-JAN-83 09:29
                                            GLOBAL TEXT SECTION
        002042'
                 047522 050115
                          020115
                                   052504
051505
                                            ROMDMP::.ASCIZ /ROM DUMP TEST FAILED/
  2081
        0020561
  2082
                 020124
                          040506
                                   046111
        002064
002067
002074
002102
  2083
                 042105
                             000
                          051503
027504
052040
  2084
                                   046040
                                            DATALD::.ASCIZ 'WCS LOAD/DUMP TEST FAILED'
  2085
                 040517
                                   051505
  2086
                 050115
  2087
        0021101
                 020124
                          040506
                                   046111
  2088
        0021161
                 042105
                             000
        002121
002126
002134
002142
  2089
                          040517
                    114
                                   020104
                                            LASFT:: .ASCIZ /LOAD AND START FUNCTION TEST FAILED/
  2090
2091
                                   052123
052506
                 047101
                          020104
                 051101
                          020124
                 041516
                          044524
  2092
                                   047117
        002150'
  2093
                 052040
                                   020124
  2094
                 040506
                          046111
                                   042105
  2095
        0021641
                    000
        002165'
  2096
                     127
                          051503
                                   046440
                                            WCSMEM::.ASCIZ /WCS MEMORY TEST FAILED/
  2097
                 046505
                          051117
                                   020131
  2098
        0022001
                 042524
                                   043040
                          052123
                          042514
042524
020124
  2099
        002206
                 044501
                                   000104
        0022141
  2100
                 047111
                                   051122
                                            INTVEC::.ASCIZ /INTERRUPT VECTOR TEST FAILED/
        002222
  2101
                 050125
                                   042526
        0022301
                          051117
  2102
                 052103
                                   052040
        0022361
  2103
                 051505
                          020124
                                   040506
        0022441
                          042105
  2104
                 046111
                                      000
        0022511
                          051503
  2105
                    120
                                   030122
                                            INTBIT::.ASCIZ /PCSRO INTERRUPT BIT TEST FAILED/
        0022561
  2106
                 044440
                          052116
                                   051105
        002264'
  2107
                 052522
                          052120
                                   041040
  2108
                 052111
                          052040
                                   051505
        002300
  2109
                 020124
                          040506
                                   046111
        0023061
  2110
                 042105
                             000
        0023111
  2111
                          046511
                                   051105
                                            TIMTST::.ASCIZ /TIMER TEST FAILED/
  2112
        0023161
                 052040
                          051505
                                   020124
        002324'
                 040506
                                   042105
                          046111
  2114
                    000
        002333'
  2115
                    114
                          047111
                                   020113
                                            LNKMEM::.ASCIZ /LINK MEMORY TEST FAILED/
        0023401
                          047515
                                   054522
                 042515
  2116
        0023461
                 052040
                          051505
  2117
                                   020124
  2118
        0023541
                 040506
                          046111
                                   042105
        005365.
  2119
                    000
  2120
        0023631
                                   023440 042101
                    104
                          040515
                                            DMATO:: .ASCIZ /DMA 'TO' ADDRESS REGISTER TEST FAILED/
        0023701
                 047524
                          020047
  2121
  2122
        0023761
                          051505
                                   020123
                 051104
                                   052123
  2123
        002404
                 042522
                          044507
        0024121
  2124
                 051105
                          052040
                                   051505
  2125
        0024201
                          040506
                 020124
                                   046111
        002426'
                 042105
  2126
                             000
  2127
                          040515
                     104
                                   023440
                                            DMAFRM::.ASCIZ /DMA 'FROM' ADDRESS REGISTER TEST FAILED/
                                   020047
  2128
        002436' 051106
                          046517
  2129
        0024441
                 042101
                          051104
                                   051505
        0024521
  2130
                 020123
                          042522
                                   044507
  2131
        0024601
                 052123
                          051105
                                   052040
                          020124
  2132
        002466*
                 051505
                                   040506
        0024741
                                      000
  2133
                 046111
        002501
                          040515
                                   041040
                     104
                                            DMARLK::.ASC12 /DMA BLOCK TRANSFER TEST FAILED/
  2135
         0025061
                 047514
                          045503
                                   052040
```

| GLCBAL AREAS MACY11 30(1046) CZUAAA.P11 11-JAN-83 09:29 | 11-JAN-83 10:13 PAGE GLOBAL TEXT SEC | 45 TION |
|---|---|--|
| 2136 002514' 040522 051516 2137 002522' 020122 042524 2138 002530' 043040 044501 | 042506 052123 042514 | |
| 2137 002522' 020122 042524 2138 002530' 043040 044501 2139 002536' 000104 2140 002540' 051124 047101 2141 002546' 052111 042040 2142 002554' 020105 042524 2143 002562' 043040 044501 2144 002570' 000104 2145 002572' 042522 042503 | 046523 TRNDON::.ASC12 047117 052123 042514 | /TRANSMIT DONE TEST FAILED/ |
| 2146 002600' 051105 042040 2147 002606' 020105 042524 2148 002614' 043040 044501 | 053111 RCVDON::.ASCIZ 047117 052123 042514 | /RECEIVER DONE TEST FAILED/ |
| 2150 002624' 040504 040524 2151 002632' 052131 020105 2152 002640' 046501 047111 2153 002646' 042524 052123 2154 002654' 044501 042514 | 041040 DBFRAM::.ASCIZ 051106 020107 043040 000104 | /DATA BYTE FRAMING TEST FAILED/ |
| 2155 002662' 040504 040524 2156 002670' 051117 020104 2157 002676' 046501 047111 2158 002704' 042524 052123 2159 002712' 044501 042514 | 053440 DWFRAM::.ASCIZ 051106 020107 043040 000104 | /DATA WORD FRAMING TEST FAILED/ |
| 2161 002726' 052101 020110 2162 002734' 052124 051105 2163 002742' C42524 052123 2164 002750' 044501 042514 | 050040 DPPAT:: .ASCIZ 040520 020116 043040 000104 | /DATA PATH PATTERN TEST FAILED/ |
| 2168 003000' 052101 047511 2169 003006' 042524 052123 | 051525 STAMUX::.ASCIZ 053040 041511 020116 043040 | /STATUS MUX VERIFICATION TEST FAILED/ |
| 2170 003014' 044501 042514 2171 003022' 044514 045516 2172 003030' 052131 020105 2173 003036' 047125 042524 2174 003044' 042524 052123 2175 003052' 044501 042514 2176 003060' 044514 045516 | 047503 020122 043040 | /LINK BYTE COUNTER TEST FAILED/ |
| 2172 003030' 052131 020105 2173 003036' 047125 042524 2174 003044' 042524 052123 2175 003052' 044501 042514 2176 003060' 044514 045516 2177 003066' 042104 041040 2178 003074' 020105 047503 2179 003102' 042524 020122 2180 003110' 052123 043040 | 000104 047440 ODDBYT::.ASCIZ 052131 047125 042524 044501 | /LINK ODD BYTE COUNTER TEST FAILED/ |
| 2170 003014' 044501 042514 2171 003022' 044514 045516 2172 003030' 052131 020105 2173 003036' 047125 042524 2174 003044' 042524 052123 2175 003052' 044501 042514 2176 003060' 044514 045516 2177 003066' 042104 041040 2178 003074' 020105 047503 2179 003102' 042524 020122 2180 003110' 052123 043040 2181 003116' 042514 000104 2182 003122' 044514 045516 2183 003130' 054101 046511 2184 003136' 041040 052131 2185 003144' 047503 047125 2186 003152' 042524 052123 2187 003160' 044501 042514 2188 003166' 044506 047506 2189 003174' 051505 020124 2190 003202' 046111 042105 2191 003207' 122 041505 | 046440 MAXCNT::.ASCIZ 046525 020105 020124 043040 | /LINK MAXIMUM BYTE COUNT TEST FAILED/ |
| 2187 003160' 044501 042514 2188 003166' 044506 047506 2189 003174' 051505 020124 2190 003202' 046111 042105 | 000104 | /FIFO TEST FAILED/ |
| 2191 003207 122 041505 | 044505 RLNKAD::.ASC12 | /RECEIVER LINK MEMORY ADDRESS TEST FAILED/ |

| GLOBAL AREAS MACY11 30(1046 CZUAAA.P11 11-JAN-83 09:29 |) 11-JAN-83 10:13 PAGE GLOBAL TEXT SEC | 46 TION |
|---|---|--|
| 2192 003214' 042526 020122 2193 003222' 045516 046440 2194 003230' 051117 020131 2195 003236' 051104 051505 2196 003244' 042524 052123 2197 003252' 044501 042514 2198 003260' 051124 047101 2199 003266' 052111 042524 2200 003274' 044514 045516 2201 003302' 046505 051117 2202 003310' 042101 051104 2203 0033316' 020123 042524 2204 003324' 043040 044501 2205 003334' 044514 045516 2207 0033342' 046505 051117 2208 003334' 044514 045516 2209 003356' 052101 047511 2210 003364' 042524 052123 2211 003372' 044501 042514 2212 003400' 052123 052101 2213 003406' 020116 042101 2214 003414' 051505 020123 2215 003422' 052124 051105 2216 003430' 042524 052123 2217 003436' 044501 042514 2218 003444' 052123 052101 2218 003444' 052123 052101 2218 003452' 020116 042101 | 0'4514 046505 0'2101 020123 043040 070104 046523 TLNKAD::.ASCIZ 020122 046440 020131 051505 052123 042514 | /TRANSMITTER LINK MEMORY ADDRESS TEST FAILED/ |
| 2205 003332' 000104 2206 003334' 044514 045516 2207 003342' 046505 051117 2208 003350' 051101 044502 2209 003356' 052101 047511 2210 003364' 042524 052123 2211 003372' 044501 042514 | 020131 051124 020116 043040 | /LINK MEMORY ARBITRATION TEST FAILED/ |
| 2209 003356' 052101 047511 2210 003364' 042524 052123 2211 003372' 044501 042514 2212 003400' 052123 052101 2213 003406' 020116 042101 2214 003414' 051505 020123 2215 003422' 052124 051105 2216 003430' 042524 052123 2217 003436' 044501 042514 | 051104 040520 020116 043040 | /STATION ADDRESS PATTERN TEST FAILED/ |
| 2218 003444' 052123 052101 2219 003452' 020116 042101 2220 003460' 051505 020123 2221 003466' 042512 052103 2222 003474' 020116 042524 2223 003502' 043040 044501 2224 003510' 000104 2225 003512' 052123 052101 | 000104 047511 STAREJ::.ASCIZ 051104 042522 047511 052123 042514 | /STATION ADDRESS REJECTION TEST FAILED/ |
| 2226 003520 020116 042101 2227 003526 051505 020123 2228 003534 020115 047520 2229 003542 044524 047117 2230 003550 051505 020124 | 047511 STAPOS::.ASC1Z 051104 040522 044523 052040 040506 000 | /STATION ADDRESS RAM POSITION TEST FAILED/ |
| 2231 003556' 046111 042105 2232 003563' 115 046125 2233 003570' 040503 052123 2234 003576' 042104 042522 2235 003604' 05204 051505 2236 003612' 040506 046111 2237 003620' 000 2238 003621' 103 041522 2239 003626' 052101 020101 2240 003634' 052124 051105 2241 003642' 042524 052123 2242 003650' 044501 042514 | 044524 MUCAST::.ASCIZ 040440 051523 020124 042105 | /MULTICAST ADDRESS TEST FAILED/ |
| 2238 003621' 103 041522 2239 003626' 052101 020101 2240 003634' 052124 051105 2241 003642' 042524 052123 2242 003650' 044501 042514 2243 003656' 051103 020103 | 040520 020116 043040 000104 | /CRC DATA PATTERN TEST FAILED/ /CRC ERROR TEST FAILED/ |
| 2243 003656° 051103 020103 2244 003664° 047522 020122 2245 003672° 052123 043040 2246 003700° 042514 000104 2247 003704° 051103 020103 | 042524 044501 | /CRC PATTERN LENGTH TEST FAILED/ |

| GLOBAL AREAS MACY11 30(1046 CZUAAA.P11 11-JAN-83 09:29 | O) 11-JAN-83 10:13 PAG GLOBAL TEXT SE | |
|--|---|---|
| 2248 003712' 052124 051105 2249 003720' 042514 043516 2250 003726' 052040 051505 2251 003734' 040506 046111 | 044124 020124 | |
| 2251 003734' 040506 046111 2252 003742' 000 2253 003743' 122 041505 2254 003750' 042526 041040 2255 003756' 042506 020122 2256 003764' 047503 042526 2257 003772' 026440 051040 2258 004000' 020124 042524 2259 004006' 043040 044501 2260 004014' 000104 2261 004016' 040510 043114 | 0 043125 0 042522 0 054522 0 047125 0 052123 | /RECEIVE BUFFER RECOVERY - RUNT TEST FAILED/ |
| 2262 004024' 050125 042514 2263 074032' 042524 052123 | 020130 043040 | /HALF-DUPLEX TEST FAILED/ |
| 2264 004040' 044501 042514 2265 004046' 047503 046114 2266 004054' 047511 020116 2267 004062' 052123 043040 2268 004070' 042514 000104 | 051511 | /COLLISION TEST FAILED/ |
| 2269 054074' 042124 020122 | 047503 TDRCNT::.ASCIZ 020122 043040 | /TDR COUNTER TEST FAILED/ |
| 2270 004102' 047125 042524 2271 004110' 042524 052123 2272 004116' 044501 042514 2273 004124' 042522 051124 2274 004132' 047514 044507 2275 004140' 042524 052123 | 000104 020131 RETLOG::.ASCIZ | /RETRY LOGIC TEST FAILED/ |
| 2276 004146' 044501 042514 2277 004154' 047125 041101 2278 004162' 052040 020117 2279 004170' 047111 020124 2280 004176' 044525 042503 2281 004204' 051101 046501 2282 004212' 051105 020123 2283 004220' 020122 044124 | 000104 042514 PRTPAR::.ASCIZ 051120 042504 050040 052105 047506 051511 | /UNABLE TO PRINT DEVICE PARAMETERS FOR THIS UNIT/ |
| 2284 004226' 052440 044516 2285 004234' 040445 041520 2286 004242' 042045 022461 2287 004250' 047504 051505 2288 004256' 052117 042440 | 051123 | /%APCSR%D1%A DOES NOT EXIST%N/ |
| 2287 004250' 047504 051505 2288 004256' 052117 042440 2289 034264' 052123 047045 2290 004271' 045 050101 2291 004276' 022522 030504 2292 004304' 041040 052111 2293 004312' 031132 040445 2294 004320' 020123 052045 2295 004326' 000 2296 004327' 045 050101 | 051503 FORM2:: .ASCIZ 040445 022440 044440 | /%APCSR%D1%A BIT %22%A IS %T%N/ |
| 2296 004327' 045 050101 2297 004334' 022522 030504 2298 004342' 043040 044501 2299 004350' 020104 040504 2300 004356' 050040 052101 2301 004364' 047122 052040 | 040445 042514 040524 042524 | /%APCSR%D1%A FAILED DATA PATTERN TEST%N/ |
| 2302 004372' 022524 000116 2303 004376' 040445 040504 | | /ZADATA WRITTEN: ZO6ZA DATA READ: ZO6ZN/ |

```
MACY11 30(1046) 11-JAN-83 10:13 PAGE 50
GLOBAL AREAS
CZUAAA.P11
                11-JAN-83 09:29
                                              GLOBAL TEXT SECTION
                            052040
052105
         0056041
                  051105
                                     030461
                                     022440
  2417
         0056121
                  051440
         005626'
005634'
005637'
                  022524
                            020101
  2418
  2419
                  050040
                            051503
                                     030122
  2420
                  047045
                               000
  2421
                            052101
                      045
                                     046511
                                              FORM20::.ASCIZ /%ATIMER DID NOT INTERRUPT T11%N/
         005644' 051105
                            042040
                                     042111
         0056521
                  047040
                            052117
                                     044440
                  052116
                                     052522
         0056601
                            051105
                  052120
047045
         0056661
                            052040
                                     030461
         0056741
  2426
                               000
         0056771
                      045
                            052101
                                     0/4511
                                              FORM21::.ASCIZ /%ATIMER DID NOT INTERRUPT WHEN EXPECTED%N/
         005704' 051105
  2428
                            042040
                                     042111
         005712' 047040
                            052117
                                     044440
  2430
         0057201
                  052116
                                     052522
                            051105
  2431
         0057261
                  052120
                            053440
                                     042510
         0057341
                  020116
                            054105
                                     042520
  2432
         0057421
  2433
                            042105
                  052103
                                     047045
  2434
         0057501
                      000
                           042501
042524
042524
020124
         0057511
                      045
                                     050130
                                              FORM22::.ASCIZ /%AEXPECTED INTERRUPT BETWEEN 8 AND 12 SECONDS%N/
         005756' 041505
  2436
                                     020104
  2437
         005764' 047111
                                     051122
  2438
2439
         0057721
                  050125
                                     042502
         006000
                            042505
                  053524
                                     020116
         006006' 020070
  2440
                                     020104
        006014' 031061
006022' 047117
006030' 000
                            051440
051504
  2441
                                     041505
  2442
2443
2444
2445
2446
2447
2448
                                     047045
         0060311
                            051101
                      045
                                     041505
                                              FORM23::.ASCIZ /%ARECIEVED INTERRUPT AT %D1%A SECONDS%N/
                           042526
042524
020124
         006036' 042511
                                     020104
         006044 047111
                                     051122
                                     052101
         0060601 022440
                            030504
                                     040445
         006066° 051440
006074° 051504
  2449
                            041505
                                     047117
  2450
2451
                            047045
                                         000
         006101'
                                     041511
                                              FORM24::.ASCIZ /%AMICRO TEST %D2%A HUNG%N/
                      045
                            046501
  2452
         0061061 047522
                            052040
                                     051505
         006114' 020124
006122' 020101
006130' 047045
                                     022462 043516
                            042045
  2454
                            052510
  2455
                               000
         0061331
  2456
                      045
                            042101
                                     052101
                                              FORM25::.ASCIZ /%ADATA WRITTEN TO "DMATO" REGISTER = %06%N/
  2457
         006140 020101
                            051127
                                     052111
                                     047524
         006146° 042524
006154° 023440
  2458
                            020116
                                     052101
  2459
                            046504
  2460
         006162' 023517
                                     043505
                            051040
         006170 051511
  2461
                            042524
                                     020122
  2462
         006176 020075
                            047445
                                     022466
   2463
         006204' 000116
                            040504
                                              FORM26::.ASCIZ /XADATA READ FROM "DMATO" REGISTER = X06XN/
   2464
         006206' 040445
                                     040524
   2465
         006214' 051040
                                     020104
         006222' 051106
006230' 046504
  2466
                            046517
                                     023440
                            052101
043505
  2467
                                     023517
         006236' 051040
  2468
                                     051511
         006244 042524
006252 022440
006260 000
                            020122
   2469
                                     036440
                            033117
   2470
                                     047045
```

```
GLOBAL AREAS
                  MACY11 30(1046) 11-JAN-83 10:13 PAGE 51
CZUAAA.P11
               11-JAN-83 09:29
                                              GLOBAL TEXT SECTION
        006261'
006266'
006274'
                  045
020101
                           042101
                                    052101 FORM27::.ASCIZ /%ADATA SHOULD BE: %06%A DATA WAS: %06%N/ 052517
  2473
                  042114
                           041040
                                    035105
        006302
  2475
                           033117
                                    040445
                 042040
  2476
                           052101
                                    020101
  2477
         0063161
                           035123
                                    022440
        006324°
006331°
  2478
                  033117
                           047045
                                        000
  2479
                                    000116
                           022524
                     045
                                             FORM28::.ASCIZ /%T%N/
        006336' 040445
006344' 051505
006352' 047445
  2480
                                    051104
                                             FORM29::.ASC12 /%AADDRESS = %06%S2/
                           020123
  2481
                                    020075
                  047445
                           022466
                                    031123
        006360
                     200
  2484
        006361
                     Õ45
                           051101
                                    041505
                                             FORM30::.ASCIZ /%ARECEIVER STATUS:%06%N/
        006366' 044505
006374' 052123
006402' 022472
                           042526
  2485
                                    020122
  2486
  2487
                           033117
                                    047045
         006410
  2488
                     000
        006411 045
006416 042506
006424 051506
006432 033117
  2489
                                    043125
                           041101
                                             FORM31::.ASCIZ /%ABUFFER OFFSET:%06%N/
                           020122
  2490
  2491
                           052105
                                    022472
  2492
                           047045
                                        000
  2493
         0064371
                                    040522
                     045
                           052101
                                             FORM32::.ASCIZ /XATRANSMIT STATUS WORD XD1XS1XTXA NOT CLEAR AFTER TRANSMITXN/
        006444 051516
006452 052123
006460 053440
  2494
                           044515
                                    020124
  2495
                           052101
                                    051525
  2496
                           051117
                                    020104
  2497
         006466' 042045
                           022461
                                    030523
        006474 052045
  2498
2499
                           040445
                                    047040
        006502' 052117
                           041440
                                    042514
        006510 051101
                           040440
  2500
                                    052106
        006516' 051105
                           052040
  2501
                                    040522
        006524' 051516
  2502
                           044515
                                    022524
        0065321 000116
  2503
        006534 040445
  2504
                           051124
                                    047101
                                             FORM33::.ASCIZ /%ATRANSMIT BYTE COUNT = %D4%N/
        006542° 046523
006550° 052131
                           052111
  2505
                                    041040
  2506
                           020105
                                    047503
        006556' 047125
                                    020075
  2507
                           020124
        006564' 042045
  2508
                           022464
                                    000116
        006572' 040445
006600' 053111
                           042522
  2509
                                    042503
                                             FORM34::.ASCIZ /XARECEIVE BYTE COUNT SHOULD BE: XD4%53%AWAS: %D4%N/
                                    054502
  2510
                           020105
  25 i i
         006606' 042524
                           041440
                                    052517
        006614' 052116
                                    047510
  2512
                           051440
        036622' 046125
006630' 020072
006636' 031523
  2513
                           020104
                                    042502
  2514
                           042045
                                    022464
  2515
                                    040527
                           040445
         006644' 035123
  2516
                           022440
                                    03,104
        0066521
  2517
                  047045
                              000
  2518
                           040501
                     045
                                    052103
                                             FORM35::.ASCIZ /%AACTUAL NUMBER OF BYTES RECEIVED SHOULD BE: %D4%A
                                                                                                                              WAS: 2042N/
         006662' 040525
006670' 041115
  2519
2520
                                    052516
                           020114
                           051105
         0066761 020106
                                    042524
  2521
                           054502
         006704' 020123
  2522
                           042522
  2523
         006712' 053111
                           042105
                                    051440
         006720 047510
                           046125
  2524
                                    020104
  2525
         006726' 042502
                                    042045
         0067341
  2526
                  022464
                           020101
                                    020040
         0067421
                  040527
                           035123
```

GLOBAL AREAS MACY11 30(1046) 11-JAN-83 10:13 PAGE 53 11-JAN-83 09:29 CZUAAA.F11 GLOBAL TEXT SECTION 007424' 040445 007432' 034064 007440' 042040 020105 FORM44::.ASCIZ /%ATHE 48 BIT DESTINATION ADDRESS PATTERN IS:%N/ 007446' 040516 007454' 040440 007462' 051523 007470' 042524 FORM45::.ASCIZ /%ALOWER ORDER = %06%N/ 007510' 051105 007516' 051105 FORM46::.ASCIZ /%AMIDDLE ORDER = %06%N/ 007536' 046104 007544 042504 007552 047445 007560' 040445 FORM47::.ASCIZ /%AUPPER ORDER = %06%N/ 007566' 020122 007574' 020122 007602' 033117 FORM48::.ASCIZ /%ADEUNA FAILED TO RECOGNIZE A STATION ADDRESS THAT MATCHES%N/ 007614' 040516 007622' 042514 007630' 051040 007636' 044516 007644' 051440 007652' 047117 007660' 042522 007666' 040510 007674' 041524 007702' 000116 007704' 040445 FORM49::.ASCIZ /%ATHE STATION ADDRESS IN RAM POSITION %D2%N/ 007712' 052123 007720' 020116 007726' 051505 007734 051040 007742' 051517 FORM50::.ASCIZ /%ARECEIVER STATUS WORD O SHOULD BE: %06%53%AWAS: %06%N/ 007766' 042122 047510 010024' 047445 010032 040445 FORM51::.ASCIZ /%ACRC ERROR BIT NOT SET%N/ 010054' 042440 010062' 041040 FORM52::.ASCIZ /XAERROR SUMMARY BIT NOT SETXN/ 010106 051117

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MACY11 30(1046) 11-JAN-83 10:13 PAGE 54
GLOBAL AREAS
CZUAAA.P11
                 11-JAN-83 09:29
                                                 GLOBAL TEXT SECTION
         010114'
010122'
010130'
010136'
010137'
010152'
010160'
010160'
010202'
010210'
010210'
010232'
010232'
010237'
010260'
010260'
010260'
010274'
010302'
                   040515
052111
                             054522
                                       041040 052117
  2640
  2641
  2642
2643
                   051440
                             052105
                                       047045
                       000
                             047101
020122
052101
                                       046525
  2644
                       045
                                                 FORM53::.ASCIZ /%ANUMBER OF DATA BYTES TRANSMITTED: %D4%N/
                   042502
  2645
                   042040
  2646
                                       020101
                             042524
047101
042524
032104
                   054502
                                       020123
  2647
                   051124
  2648
  2649
2650
                   052111
                                       035104
                   022440
                                       047045
  2651
                       000
                             042101
040520
035116
  2652
2653
                                       052101
052124
                       045
                                                 FORM54::.ASCIZ /%ADATA PATTERN: %06%N/
                   020101
                   051105
                                       022440
  2654
  2655
                   033117
                             047045
                                           000
                             042101
  2656
                       045
                                       052505
                                                 FORM55::.ASCIZ /%ADEUNA FAILED TO REJECT A RUNT PACKET%N/
                   040516
  2657
                                       044501
  2658
                             020104
                                       047524
  2659
                   051040
                             045105
                                       041505
                   020124
                             020101
  2660
                                       052522
                   052116
                             050040
                                       041501
  2661
                             022524
                   042513
  2662
                                       000116
                   040445
  2663
                                       047125
                                                 FORM56::.ASCIZ /%ADEUNA FAILED TO RECOVER RECEIVE BUFFER%N/
         010316'
010324'
010332'
010340'
010346'
010354'
                   020101
                             040506
   2664
                                       046111
                   042105
                             052040
  2665
                                       020117
                   042522
020122
053111
                             047503
                                       042526
  2666
                             042522
  2667
                                       042503
  2668
                                       052502
  2669
                   043106
                             051105
         010362'
  2670
                       000
  2671
                       045
                             047101
                                       046525
                                                 FORM57::.ASCIZ /%ANUMBER OF BYTES IN RUNT PACKET: %D2%N/
         010370 042502
  2672
2673
                             020122
                                       043117
                                       051505
         010404' 044440
010412' 052116
010420' 042513
010426' 031104
010433' 045
                             020116
  2674
                                       052522
                             050040
  2675
                                       041501
                             035124
                                       022440
  2676
  2677
                             047101
                                       046525
  2678
                                                 FORM58::.ASCIZ /%ANUMBER OF BYTES IN LEGITIMATE PACKET: %D4%N/
                             020122
  2679
         010440' 042502
                                       043117
  2680
         010446' 041040
                                       051505
  2681
         0104541
                   044440
                              $20116
                                       042514
         010462'
                   044527
                              044524
                                       040515
  2682
  2683
                             050040
                                       041501
         0104761
                   042513
                             035124
  2684
                                       022440
         0105041
  2685
                   032104
                             047045
                                           000
         010511'
  2686
                       045
                             051101
                                       041505
                                                 FORM59::.ASCIZ /%ARECEIVE BUFFER ADDRESS AVAILABLE BEFORE RECEPTION: %06%N/
   2687
         010516' 044505
                             042526
                                       041040
         010524 043125
                             042506
                                       020122
  2688
         010532' 042101
                             051104
   2689
                                       051505
         010540' 020123
  2690
                             053101
                                       044501
         0105461
   2691
                   040514
                                       020105
                              046102
         0105541
                   042502
                             047506
  2692
                                       042522
         010562' 051040
  2693
                             041505
                                       050105
         010570
                   044524
                              047117
                                       C20072
  2694
          0105761
                   047445
                              022466
                                        000116
```

| GLOBAL AREAS MACY11 30(1046) CZUAAA.P11 11-JAN-83 09:29 | 11-JAN-83 10:13 PAGE GLOBAL TEXT SEC | |
|---|--|--|
| 2696 010604' 040445 042522 2697 010612' 053111 020105 2698 010620' 043106 051105 2699 010626' 042104 042522 2700 010634' 041440 046517 2701 010642' 052105 042105 2702 010650' 052106 051105 2703 010656' 041505 050105 2704 010664' 047117 047045 2705 010671' 045 042101 2706 010676' 020101 047503 2707 010704' 051101 020105 2708 010712' 047522 020122 2709 010726' 051105 042105 | 052502 040440 051523 046120 040440 051040 044524 | /%ARECEIVE BUFFER ADDRESS COMPLETED AFTER RECEPTION%N/ |
| 2711 010734' 041505 044505 2712 010742' 041040 043125 | 000 052101 FORM61::.ASCIZ 050115 051105 047111 053117 051040 042526 042506 | /%ADATA COMPARE ERROR IN RECOVERED RECEIVE BUFFER%N/ |
| 2713 010750' 022522 000116 2714 010754' 052045 040445 2715 010762' 042111 047040 2716 010770' 041440 042514 2717 010776' 040440 052106 2718 011004' 053440 044522 2719 011012' 043516 030440 2720 011020' 020117 052111 2721 011026' 000 2722 011027' 045 051501 2723 011034' 020106 042524 2724 011042' 042440 051122 2725 011056' 020075 047445 2727 011064' 000116 2728 011066' 047045 040445 2729 011074' 020115 044515 2730 011102' 041517 042117 | 042040 FORM62::.ASCIZ 052117 051101 051105 044524 052040 047045 | /%T%A DID NOT CLEAR AFTER WRITING 1 TO IT%N/ |
| 2722 011027 045 051501 2723 011034 020106 042524 2724 011042 042440 051122 2725 011051 041440 042117 2726 011056 020075 047445 2727 011064 000116 | 046105 FORM63::.ASCIZ 052123 051117 020105 022462 | /XASELF TEST ERROR CODE = X02XN/ |
| 2728 011066' 047045 040445 2729 011074' 020115 044515 2730 011102' 041517 042117 2731 011110' 042526 051522 2732 011116' 020116 042050 2733 011124' 046511 046101 2734 011132' 022440 031104 2735 011137' 045 022516 2736 011144' 044527 041524 2737 011152' 040520 045503 | 047522 FORM64::.ASCIZ 051103 020105 047511 041505 035051 000 | /%n%arom MICROCODE VERSION (DECIMAL): %D2/ |
| 2735 011137' 045 022516 2736 011144' 044527 041524 2737 011152' 040520 045503 2738 011160' 022440 033117 | 051501 | /XNXASWITCH PACK = X06/ |
| 2731 011110' 042526 051522 2732 011116' 020116 042050 2733 011124' 046511 046101 2734 011132' 022440 031104 2735 011137' 045 022516 2736 011144' 044527 041524 2737 011152' 040520 04503 2738 011160' 022440 033117 2739 011165' 045 047101 2740 011172' 047111 042524 2741 011200' 050125 020124 2742 011206' 046517 052040 2743 011214' 051516 044515 2744 011222' 052123 052101 2745 011236' 020105 047524 2747 011244' 030455 022461 2748 011252' 040445 047516 2750 011266' 052120 043040 2751 011274' 020115 042522 | 051122 051106 040522 020124 020105 047111 | /XANO INTERRUPT FROM TRANSMIT STATE MACHINE TO T-11%N/ |
| 2748 011252' 040445 047516 2749 011260' 052116 051105 2750 011266' 052120 043040 2751 011274' 020115 042522 | 052040 000116 044440 FORM67::.ASCI7 052522 047522 042503 | /ZANO INTERRUPT FROM RECEIVE STATE MACHINE TO T-11ZN/ |

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GLOBAL AREAS
CZUAAA.P11
               11-JAN-83 09:29
                                            GLOBAL TEXT SECTION
                          030524
        011772'
                 040445
                                   020061
                                            FORM74::.ASCIZ /%AT11 NON-EXISTANT MEMORY TIMEOUT OCCURRED%N/
        C12000'
  2809
                 047516
                                   054105
  2810
        0120061
                 051511
                          040524
                                   052116
  2811
        0120141
                          046505
                                   051117
                 046440
                          044524
020124
051122
  2812
2813
        0120221
                 020131
                                   042515
        0120301
                 052517
                                   041517
  2814
        0120361
                 052503
                                   042105
  2815
        0120441
                 047045
  2816
        0120471
                          052101
                     045
                                   030461
                                            FORM75::.ASCIZ /%AT11 UNEXPECTED INTERRUPT OCCURRED%N/
                          042516
042524
042524
042524
020124
051122
        0120541
                                   050130
  2817
                 052440
        0120621
  2818
                                   020104
                 041505
  2819
        012070
                                   051122
                 047111
                                   041517
  2820
        0120761
                 050125
  2821
        0121041
                 052503
                                   042105
        012112'
012115'
  2822
2823
                 047045
                              000
                     045
                          046501
                                   052101
                                            FORM76::.ASCIZ /%AMATCH BIT FAILED TO SET%N/
        012122'
012130'
  2824
                          041040
                                   052111
                 044103
  2825
                 043040
                          044501
                                   042514
        0121361
                          047524
  2826
                                   051440
                 020104
                          047045
        0121441
  2827
                 052105
                                       000
        0121511
  2828
                          046501
                                   052101
                     045
                                            FORM77::.ASCIZ /%AMATCH BIT SET BUT NO RECEIVER INTERRUPT%N/
        0121561
                 044103
                          041040
                                   052111
  2829
        012164
  2830
                          052105
                 051440
                                   041040
                          047040
  2831
                 052125
                                   020117
        0122001
                          042503
  2832
                 042522
                                   053111
  2833
                                   052116
        0122061
                 051105
                          044440
  2834
        0122141
                 051105
                          052522
                                   052120
  2835
        0122221
                 047045
                              000
  2836
        0122251
                     045
                          051501
                                   047510
                                            FORM78::.ASCIZ /%ASHOULD BE: %06%S2%AWAS: %06%N/
                                   042502
022466
040527
033117
        0122321
  2837
                 046125
                          020104
        0122401
                          047445
  2838
        0122461
                 031123
                          040445
  2839
        012254'
                 035123
                          022440
  2840
  2841
                 047045
                              000
        0122651
  2842
2843
                          042101
                     045
                                   052505
                                            FORM79::.ASCIZ /%ADEUNA FAILED TO REJECT A DATAGRAM.%N/
        012272'
                                   044501
                 040516
                          043040
                          020104
  2844
                 042514
        0123061
                          045105
                                   041505
  2845
                 051040
        0123141
                          020101
  2846
                 020124
                                   040504
        0123221
  2847
                 040524
                          051107
                                   046501
        0123301
  2848
                 022456
                           000116
                                   052123
047511
        0123341
  2849
                 040445
                           042504
                                            FORM80::.ASCIZ /%ADESTINATION ADDRESS OF DATAGRAM IS ALL 1'S%N/
        0123421
  2850
                  047111
                           052101
        012350
                                   051104
  2851
                  020116
                           042101
  2852
2853
                           020123
        0123561
                 051505
                                   043117
                                   043501
        0123641
                 042040
                           052101
        0123721
                           020115
  2854
                 040522
                                   051511
  2855
        0124001
                 040440
                           046114
                                   030440
                           047045
  2856
        0124061
                  051447
                                       000
                                   040524
         0124131
                           051501
  2857
                                            FORM81::.ASCIZ /%ASTATION ADDRESS RAM IS ALL O'S%N/
  2858
         0124201
                 044524
                           047117
                                   040440
                                    051523
  2859
         0124261
                  042104
                           042522
                 Ŏ51040
  2860
         0124341
                           046501
                                    044440
         0124421
  2861
                  020123
                           046101
                                    020114
                                    000116
         0124501
                           022523
  2862
                  023460
                                            FORM82::.ASCIZ /%ATIMEOUT WAITING FOR MICROCODE TO ENTER MICROMONITOR%N/
                           044524
  2863
         0124561
                  040445
                                    042515
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GLOBAL AREAS MACY11 30(1046) 11-JAN-83 10:13 PAGE 58 CZUAAA.P11 11-JAN-83 09:29 GLOBAL TEXT SECTION

2864 012464' 052517 020124 040527 2865 012472' 052111 047111 020107 2866 012500' 047506 020122 044515 2867 012566' 051103 041517 042117 2868 012514' 020105 047524 042440 2869 012522' 052116 051105 046440 2870 012530' 041511 047522 047515 2871 012536' 044516 047524 J22522 2872 012544' 000116 2873 2874 2875
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| GLOBAL CZUAAA | | 30(1046) 11-J 09:29 | AN-83 10: GLOBAL | 13 PAGE ERROR RE | 59 PORT SECTION | | • |
|--|---|--|------------------------|---------------------------------|---|--|--|
| 2876 2877 | | | .SBTTL | GLOBAL | ERROR REPORT SECTION | | |
| 2878 2879 2880 2881 2882 2883 2884 2885 28867 2888 2889 2889 | | | THE G USED (BASI | LOBAL ER By More () AND P | ROR REPORT SECTION CONTAINS MESSAGE THAN TEST TO OUTPUT ADDITIONAL ERROF RINTX (EXTENDED) CALLS ARE USED TO (| PRINTING AREAS INFORMATION. PRI ALL PRINT SERVICES | NTB - |
| 2886 2887 2888 2889 2890 2891 2892 2893 2894 2895 2898 2898 | 012546' 012546' 012546' 012546' 013746 012552' 012746 012556' 012746 012562' 010600 012564' 104414 012566' 062706 012572' | 000304° 004234° 000002 | BGNMSG ENDMSG | RACMG1 PRINTB | #FORM1,CSRNUM | RACMG1:: MOV MOV MOV MOV TRAP ADD | CSRNUM, -(SP) WFORM1, -(SP) W2, -(SP) SP,RO C\$PNTB W6,SP |
| 2900 2901 2902 2903 2904 2905 2907 2908 2909 2910 2911 2912 | 012572' 104423 012574' 012574' 012574' 013746 012600' 013746 012604' 013746 012610' 012746 012614' 012746 012620' 010600 012622' 104414 012624' 062706 012630' 012630' 104423 | 000312: 000306: 000304: 004271: 000004 | BGNMSG | RACMG2 PRINTB | #FORM2,CSRNUM,BITNUM,BITSTA | RACMG2:: MOV MOV MOV MOV MOV TRAP ADD L10002: TRAP | C\$MSG BITSTA,-(SP) BITNUM,-(SP) C\$RNUM,-(SP) WFORM2,-(SP) W4,-(SP) SP,RO C\$PNTB W12,SP |
| 2914 2915 2916 2917 2918 2919 2921 2921 2923 2924 2925 2926 2927 2928 2930 | 012632' 012632' 012632' 012632' 013746 012636' 012746 012646' 010600 012650' 104414 012652' 062706 012656' | 000304° 004327° 000002 | BGNMSG | RACMG3 PRINTB | #FORM3,CSRNUM | RACMG3:: MOV MOV MOV MOV TRAP ADD | CSRNUM,-(SP) WFORM3,-(SP) W2,-(SP) SP,RO C\$PNTB W6,SP |
| 2924 2925 2926 2927 2928 2929 2930 2931 | 012656' 012656' 010446 012660' 010346 012662' 012746 012666' 012746 012672' 010600 012674' 104414 012676' 062706 | 004376° 000003 | | PRINTB | #FORM4,R3,R4 | MOV MOV MOV MOV TRAP ADD | R4,-(SP) R3,-(SP) #FORM4,-(SP) #3,-(SP) SP,RO (\$PN'B #10,SP |

| GLOBAL CZUAAA | | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN-83 10: GLOBAL | 13 PAGE ERROR RE | 60 PORT SECTION | | | 36. |
|--|---|--|---|-------------------------|---------------------|---------------------------------------|---------------|--|---|
| 2932 2933 2934 2935 2936 2937 2938 2939 2940 | 012702' 012702' 012702' | 104423 | | ENDMSG | | | L10003: | TRAP | C\$MSG |
| 2936 2937 2938 | 012704' 012704' 012704' | | | BGNMSG | RACMG4 PRINTB | #FORM5 | RACMG4: | : | |
| 2939 2940 2941 | 012704' 012710' 012714' | 012746 012746 010600 | 004445* | | | | | MOV MOV MCV | #FORM5,-(SP) #1,-(SP) SP,RO |
| 2941 2942 2943 2944 2945 2946 2948 | 012716' 012720' 012724' 012724' | 104414 062706 | 000004 | ENDMSG | | | L10004: | TRAP ADD | (\$PNTB #4,SP |
| 2946 2947 2948 | 012724' | 104423 | | BGNMSG | RACMG7 | | | TRAP | C\$MSG |
| 2949 2950 | 012726 ' 012726 ' | | | | PRINTB | #FORM8 | RACMG7: | : | |
| 2951 2952 2953 2954 | 012726' 012732' 012736' 012740' | 012746 012746 010600 104414 | 004650° 000001 | | | | | MOV MOV MOV TRAP | WFORM8,-(SP) W1,-(SP) SP,RO (\$PNTB |
| 2955 2956 | 012742° 012746° | 062706 | 000004 | ENDMSG | | | | ADD | #4,SP |
| 2957 2958 2959 | 012746' 012746' | 104423 | | | | | L10005: | TRAP | C\$MSG |
| 2960 2961 | 012750' 012750' | | | BGNMSG | MSG1 | | MSG1:: | | |
| 2959 2951 2952 2953 2953 2955 2955 2956 2961 2963 2964 2968 2968 2968 2968 2969 | 012754' 012760' 012764' 012770' 012774' | 013746 013746 013746 013746 012746 012746 010600 104414 | 000316' 000314' 000312' 000310' 004510' 000005 | | PRINTB | WFORM6, BITNAM, BITSTA, PWHEN, PCOMND | | MOV MOV MOV MOV MOV MOV TRAP | PCOMND,-(SP) PWHEN,-(SP) BITSTA,-(SP) BITNAM,-(SP) WFORM6,-(SP) W5,-(SP) SP,RO (SPNTB |
| 2971 2972 | 013004° 013010° | 062706 | 000014 | ENDMSG | | | | ADD | #14,SP |
| 2973 2974 2975 | 013010° 013010° | 104423 | | | | | L10006: | TRAP | C\$MSG |
| 2976 2977 | 013012° 013012° | | | BGNMSG | MSG2 | <u>-</u> | MSG2:: | | |
| 2968 2969 2970 2971 2973 2974 2975 2976 2978 2981 2981 2983 2984 2985 | 013012' 013012' 013016' 013022' 013024' | 012746 | 004566° 000001 | | PRINTB | #form7 | , 23 3 | MOV MOV MOV TRAP ADD | #FORM7,-(SP) #1,-(SP) SP,RO (\$PNTB #4,SP |
| 2984 2985 2986 2987 | 013032* 013032* 013034* 013040* | 010446 | 005216° 000002 | | PRINTB | #FORM13,R4 | | MOV MOV MOV | R4,-(SP) #FORM13,-(SP) #2,-(SP) |

| GLOBAL AREAS MACY11 30(1046) CZUAAA.P11 11-JAN-83 09:29 | 11-JAN-83 10:13 PAGE 61 GLOBAL EPROR REPORT SECTION | | 250 |
|---|--|--|---|
| 2988 013044' 010600 2989 013046' 104414 2990 013050' 062706 000006 2991 013054' 2992 013054' 2993 013054' 104423 2994 2995 013056' | ENDMSG | MOV TRAP ADD L10007: TRAP | SP,RO C\$PNTB #6,SP |
| 2996 013056' 2998 013056' 013746 000314' 2999 013062' 013746 000312' 3000 013066' 013746 000310' 3001 013072' 013746 000304' 3002 013076' 012746 004732' 3003 013102' 012746 000005 3004 013106' 010600 3005 013110' 104414 3006 013112' 062706 000014 3007 013116' 3008 013116' | BGNMSG MSG3 PRINTB #FORM9,CSRNUM,BITNAM,BITSTA,PWHEN ENDMSG | MSG3:: MOV MOV MOV MOV MOV MOV MOV IPAP ADL | PWHEN,-(SP) BITSTA,-(SP) BITNAM,-(SP) (SRNUM,-(SP) WFORM9,-(SP) W5,-(SP) SP,RO (\$PNTB W14,SP |
| 3009 013116' 104423 3010 3011 013120' 3012 013120' 3013 013120' 3014 013120' 012746 005010' 3015 013124' 012746 000001 3016 013130' 010600 3017 013132' 104414 3018 013134' 062706 000004 3019 013140' 3020 013140' 3021 013140' 104423 3022 | BGNMSG MSG4 PRINTB WFORM10 ENDMSG | MSG4:: MOV MOV MOV TRAP ADD L10011: TRAP | #FORM10,-(SP) #1,-(SP) SP.RO C\$PNTB #4,SP |
| 3023 013142' 3024 013142' 3025 013142' 3026 013142' 012746 005074' 3027 013146' 012746 000001 3028 013152' 010600 | BGNMSG MSG5 PRINTB #FORM11 PRINTB #FORM12,R1,(R4),(R1) | MSG5:: MOV MOV TRAP ADD MOV | #FORM11,-(SP) #1,-(SP) SP,R0 (\$PNTB #4,SP (R1),-(SP) |
| 3029 013154 104414 3030 013156 062706 000004 3031 013162 011146 3032 013162 011146 3033 013164 011446 3034 013166 010146 3035 013170 012746 005123 3036 013174 012746 000004 3037 013200 010600 3038 013202 104414 3039 013204 062706 000012 3040 013210 3041 013210 3042 013210 104423 | ENDMSG | MOV MOV MOV MOV TRAP ADD L10012: | (R4),-(SP) R1,-(SP) WFORM12,-(SP) W4,-(SP) SP.RO (\$PNTB W12,SP |

| GLOBAL AF | REAS | MACY11 3 | 30(1046) 09:29 | 11-JAN-83 10:1 GLCBAL E | 3 PAGE PROR REP | 62 PORT SECTION | | | |
|--|--|--|-----------------------------|----------------------------|--------------------|--------------------|---------|----------------------------------|--|
| 3044 | 013212 | | | BGNMSG | MSG6 | | MSG6:: | | |
| 3046 (3047 (3048 (3049 (| 013216' 013222' 013224' | 012746 012746 010600 104414 | 005074° 000001 000004 | | PRINTB | #FORM11 | | MOV MOV TRAP ADD | #FORM11,-(SP) #1,-(SP) SP,RO (\$PNTB #4,SP |
| 3053 3054 3055 3056 | 013234° 013240° 013244° | 062706 010146 012746 012746 010600 104414 C62706 | 000004 | | PRINTB | WFORM15,R1 | | MOV MOV MOV TRAP ADD | R1,-(SP) #FORM15,-(SP) #2,-(SP) SP,R0 (\$PNTB #6,SP |
| 3062 3063 | 013246' 013250' 013254' 013256' 013266' 013270' 013272' 013276' | 010246 012746 012746 010600 | 005343° 000002 000006 | | PRINTB | #FORM16,R2 | | MOV MOV MOV TRAP ADD | R2,-(SP) WFORM16,-(SP) W2,-(SP) SP,RO (\$PNIB W6,SP |
| 3067 | 013276' 013276' 013276' | | 00000 | ENDMSG | | | L10013: | TRAP | C\$MSG |
| 3071 3072 3073 3074 3075 3076 3077 3078 3080 | 013304' 013310' 013312' 013314' 013320' 013320' | 062706 | 005421° 000001 000004 | BGNMSG | MSG7 PRINTB | #FORM17 | MSG7:: | MOV MOV MOV TRAP ADD | #FORM17,-(SP) #1,-(SP) SP,RC (\$PNTB #4,SP |
| 3081 3082 3083 3084 3085 3086 3087 3088 3089 | 013322° 013322° 013322° 013322° 0133326° 0133336° 013336° | 012746 012746 010600 104414 062706 | 000001 | BGNMSG ENDMSG | PRINTB | #FORM18 | MSG8:: | MOV MOV TRAP ADD | #FORM18(SP) #1(SP) SP.RO (\$PNTB #4.SP |
| 3091 3092 3093 3094 3095 3096 3097 3099 | 013344 013344 013344 013344 013350 | ' 104423 ' | 164740 0055621 | BGNMSG | MSG9 PRINTB | #form19,abitnam | MSG9:: | MOV MOV MOV | abitham, -(SP) #form19, -(SP) #2, -(SP) |

| GLOBAL AREAS MACY11 30(104 CZUAAA.P11 11-JAN-83 09:29 | 46) 11-JAN-83 10:13 PAGE 63 GLOBAL ERROR REPORT SECTION | | 51 |
|---|--|---------------------------|---|
| 3100 013360° 010600 3101 013362° 104414 3102 013364° 062706 00000 3103 013370° 3104 013370° | D6 ENDMSG | MOV Trap ADD | SP.RO C\$PNTB #6,SP |
| 3104 013370° 104423 3106 | | TRAP | C\$MSG |
| 3107 013372' 3108 013372' 3109 013372' | BGNMSG MSG10 PRINTB #FORM20 MSG10:: | | |
| 3101 013362° 104414 3102 013364° 062706 00000 3103 013370° 3104 013370° 104423 3106 3107 013372° 3108 013372° 3110 013372° 012746 00563 3111 013376° 012746 00000 3112 013402° 010600 3113 013404° 104414 |)1 | MOV MOV MOV TRAP | #FORM20,-(SP) #1,-(SP) SP,R0 C\$PNTB |
| 3114 013406' 062706 00000 3115 013412' 3116 013412' 3117 013412' 104423 3118 | ~ 1 | ADD | #4,SP |
| 3117 013412' 104423 3118 3119 013414' | BGNMSG MSG!1 | TRAP | CSMSG |
| 3120 01341/1 3121 0134141 | PRINTB #FORM21 | | |
| 3122 013414' 612746 00567 3123 013420' 012746 00000 3124 013424' 010600 3125 013426' 104414 | | MOV MOV MOV TRAP | WFORM21,-(SP) W1,-(SP) SP,RO C\$PNTB |
| 3126 013430 062706 00000 3127 013434 7128 013434 012746 00575 | PRINTB #FORM22 | ADD MOV | #4,SP #FORM22,=(SP) |
| 3129 013440 012746 00000 3130 013444 010600 3131 013446 104414 3132 013450 062706 00000 |)1 | MOV MOV TRAP ADD | #1,-(SP) SP,R0 C\$PNTB #4,SP |
| 2125 012/56! 0127/6 00402 | /¶ P | MOV MOV | R1,-(SP) #FORM23 (SP) |
| 3136 013462' 012746 00000 3137 013466' 010600 3138 013470' 104414 3139 013472' 062706 00000 |)2 | MOV MOV TRAP ADD | #2,-(SP) SP,R0 (\$PNTB #6,SP |
| 3140 013476' 3141 013476' 3142 013476' 104423 | ENDMSG L10020: | | |
| 3144 U133UU | BGNMSG MSG12 | TRAP | C\$MSG |
| 3145 013500' | PRINTB #FORM24,R2 MSG12:: | | |
| 3147 013500' 010246 3148 013502' 012746 00610 3149 013506' 012746 00000 3150 013512' 010600 3151 013514' 104414 3152 013516' 062706 00000 3153 013522' 3154 013522' |)2 | MOV MOV MOV MCV | R2,-(SP) #FORM24,-(SP) #2,-(SP) SP,RO (\$PNTB |
| 3151 013514° 104414 3152 013516° 062706 00000 3153 013522° | | TRAP ADD | (SPNTB #6,SP |
| 3153 013522° 3154 013522° 3155 013522° 104423 | L10021: | TRAP | (\$MSG |

| GLOBAL CZUAAA | AREAS MAG | CY11 3 AN-83 | 30(1046) 09:29 | 11-JAN-83 10: GLOBAL | 13 PAGE EPROR RE | I 5 64 PORT SECTION | | | Si |
|--|--|--|-----------------------------|-------------------------|---|----------------------|------------------|---|---|
| 3156 3157 3158 | 013524' 013524' | | | BGNMSG | MSG13 | #F00#35 0.7 | MSG13:: | | |
| 3159 3160 3161 3162 3163 3164 3165 | 013526' 017 013532' 017 013536' 010 013540' 104 013542' 067 | 0346 2746 2746 0600 4414 2706 | 006133° 000002 000006 | | PRINTB | #FORM25,R3 | M M T | 10V 10V 10V 10V 1RAP | R3,-(SP) #FORM25,-(SP) #2,-(SP) SP,R0 (\$PNTB #6,SP |
| 3166 3167 3168 3169 3170 3171 | 013546' 013546' 010 013550' 010 013554' 010 013560' 010 013562' 104 | 0446 2746 2746 0600 4414 | 006206* | | PRINTB | #FORM26,R4 | M M M T | 10V 10V 10V 10V 1RAP | R4,-(SP) #FORM26,-(SP) #2,-(SP) SP,R0 (\$PNTB |
| 3172 3173 3174 3175 3176 | 013564' 067 013570' 013570' 013570' 104 | | 000006 | ENDMSG | | | L10022: | ADD TRAP | #6.SP C\$MSG |
| 3177 3178 3179 3180 | 013572' 013572' 013572' 013572' 010 | 0444 | | BGNMSG | MSG14 PRINTU | #FORM27,R3,R4 | MSG14:: | 4 0V | D/ -(SD) |
| 3181 3182 3183 3184 3185 | 013574' 010 013576' 012 013602' 012 013606' 010 013610' 104 | 0346 2746 2746 0690 4414 | 006261* | | | | M M M T | 90V 90V 90V 90V 10V 1RAP | R4,-(SP) R3,-(SP) #FORM27,-(SP) #3,-(SP) SP,R0 (\$PNIB |
| 3186 3187 3188 3189 3190 | 013616' 013616' | | 000010 | ENDMSG | | | L10023: | ADD IRAP | #10,SP (\$MSG |
| 3191 3192 3193 | 013620' 013620' 013620' | • > / 4 | | BGNMSG | MSG15 PRINTB | #FORM12,R2,(R1),(R2) | MSG15:: | 40 | (D2) (CD) |
| 3194 3195 3196 3197 3198 3199 3200 | 013626' 012 013632' 012 013636' 010 013640' 104 | 1146 0246 2746 2746 0605 4414 | 005123° 000004 | | | | M M M | 70V 10V 10V 10V 10V 10V | (R2),-(SP) (R1),-(SP) R2,-(SP) WFORM12,-(SP) W4,-(SP) SP,RO (\$PNIB |
| 3201 3202 3203 3204 3205 | 013642' 062 013646' 013646' 104 | 2706 | 000012 | ENDMSG | | | L10024: | ADD IRAP | #12,SP (\$MSG |
| 3205 3206 3207 3208 | 013650° 013650° 013650° | | | BGNMSG | MSG16 PRINTB | #FORM28,R2 | MSG16:: | | |
| 3209 3210 3211 | 013650* 010 013652* 017 013656* 017 | 0246 2746 2746 | 000002 | | , ,, ,, ,, , , , , , , , , , , , , , , | | M | 10 V 10 V 10 V | R2,-(SP) #FORM28,-(SP) #2,-(SP) |

| GLOBAL AREAS MACY11 30(1046) CZUAAA.P11 11-JAN-83 09:29 | 11-JAN-83 10:13 PAGE 65 GLOBAL ERROR REPORT SECTION | SE |
|--|---|--|
| 3212 013662' 010600 3213 013664' 104414 3214 013666' 062706 000006 3215 013672' | PRINTB #FORM29,R1 | MOV SP.RO TRAP (\$PNTB ADD #6.SP |
| 3214 013666' 062706 000006 3215 013672' 3216 013672' 010146 3217 013674' 012746 006336' 3218 013700' 012746 000002 3219 013704' 010600 3220 013706' 104414 3221 013710' 062706 000006 3222 013714' | PRINTB #FORM27,R3,R4 | MOV R1,-(SP) MOV #FORM29,-(SP) MOV #2,-(SP) MOV SP,RO TRAP (\$PNTB ADD #6,SP |
| 3223 013714' 010446 3224 013716' 010346 3225 013720' 012746 006261' 3226 013724' 012746 000003 3227 013730' 010600 3228 013732' 104414 3229 013734' 062706 000010 3230 013740' 3231 013740' | FRINID WYUMMZ/,R3,R4 | MOV R4,-(SP) MOV R3,-(SP) MOV WFORM27,-(SP) MOV W3,-(SP) MOV SP,RO TRAP (\$PNTB ADD #10,SP |
| 3230 013740' 3231 013740' 3732 013740' 104423 | ENDMSG | L10025: TRAP (\$MSG |
| 3233 013742' 3235 013742' | BGNMSG MSG17 | MSG17:: |
| 3212 013662* 010600 3213 013664* 104414 3214 013666* 062706 000006 3215 013672* 3216 013672* 010146 3217 013674* 012746 006336* 3218 013700* 012746 000002 3219 013704* 010600 3220 013706* 104414 3221 013710* 062706 000006 3222 013714* 3223 013714* 010446 3224 013716* 010346 3225 013720* 012746 006261* 3226 013724* 012746 000003 3228 013730* 010600 3228 013730* 010600 3228 013730* 104414 3229 013734* 062706 000010 3230 013740* 3231 013740* 3232 013740* 104423 3233 013742* 3236 013742* 3237 013742* 010446 3238 013742* 010446 3238 013742* 010446 3240 013756* 012746 006361* 3239 013750* 012746 000002 3241 013756* 104414 3242 013760* 062706 000006 3243 013764* 010146 3245 013766* 012746 006411* | PRINTB #FORM30,R4 | MOV R4,-(SP) MOV #FORM30,-(SP) MOV #2,-(SP) MOV SP,RO TRAP (\$PNTB ADD #6,SP |
| 3246 013772' 012746 000002 3247 013776' 010600 3248 014000' 104414 | PRINTB #FORM31,R1 | MOV R1,-(SP) MOV #FORM31,-(SP) MOV #2,-(SP) MOV SP,RO TRAP (\$PNTB ADD #6,SP |
| 3251 014006' 010346 3252 014010' 010246 3253 014012' 012746 006261' 3254 014016' 012746 000003 3255 014022' 010600 3256 014024' 104414 | PRINTB #FORM27,R2,R3 | MOV R3,-(SP) MOV R2,-(SP) MOV WFORM27,-(SP) MOV W3,-(SP) MOV SP,RO TRAP (\$PNTB ADD W10,SP |
| 3257 014026' 062706 000010 3258 014032' 3259 014032' 3260 014032' 104423 | ENDMSG | L10026: TRAP (\$MSG |
| 3232 014034° 3263 014034° | BGNMSG MSG18 | MSG18:: |
| 3264 014034' 3265 014034' 013746 000310' 3266 014040' 010146 3267 014042' 012746 006437' | PRINTB #FORM32,R1,BITNAM | MOV BITNAM(SP) MOV R1(SP) MOV WFORM32(SP) |
| | | |

| GLOBAL ARE | | MACY11 -JAN-83 | 30(1046) 09:29 | 11-JAN-83 10: GLOBAL | 13 PAGE ERROR RE | 66 PORT SECTION | | | 26 |
|--|--|--|-----------------------------|-------------------------|---------------------|---------------------|-----------------|---|---|
| 3268 01 3269 01 3270 01 3271 01 3272 01 | 14052' 14054' 14056' 14062' | 012746 010600 104414 062706 | 000003 | ENDMSG | | | | MOV MOV TRAP ADD | #3,-(SP) SP,R0 (\$PNTB #10,SP |
| 3274 01 3275 | 14062' 14062' | 104423 | | | | | L10027: | TRAP | C\$MSG |
| 3276 01 3277 01 3278 01 3279 01 3280 01 | 14066' | 010146 012746 | 006534* | BGNMSG | MSG19 PRINTB | #FORM33,R1 | 4 5G10:: | MOV MOV | R1,-(SP) #FORM33,-(SP) |
| 3282 01 3283 01 3284 01 3285 01 3286 01 | 14076' 14100' 14102' 14106' | 012746 010600 104414 062706 | 000002 | | PRINTB | #FORM34,R2,R3 | | MOV TRAP ADD | #2(SP) SP.RO (\$PNTB #6.SP |
| 3287 01 3288 01 3289 01 3290 01 3291 01 3292 01 | 14110' 14112' 14116' 14122' 14124' 14126' | 010246 012746 012746 010600 104414 062706 | 006572° 000003 | | | wa a a w 3 5 | | MOV MOV MOV MOV TRAP ADD | R3,-(SP) R2,-(SP) #FORM34,-(SP) #3,-(SP) SP,RO (\$PN18 #10,SP |
| 3295 01 3296 01 3297 01 3298 01 3299 01 | 14134 ' 14136' | 010446 010146 012746 012746 010600 104414 | 006655° 000073° | | PRINTB | #FORM35,R1,R4 | | MGV MOV MOV MOV TRAP | R4,-(SP) R1,-(SP) #FORM35,-(SP) #3,-(SP) SP,RO (\$PNIB |
| 3302 01 3303 01 | 14156' 14156' 14156' | | 000010 | ENDMSG | | | L10030: | ADD | #10,SP (\$MSG |
| | 14160' 14160' 14160' | | | BGNMSG | | #FORM11 | MSG20:: | | |
| 3308 01 3309 01 3310 01 3311 01 3312 01 | 14164' 14170' 14172' 14174' | 010600 104414 062706 | 005074° 000001 000004 | | DOINTO | #CODM74 D7 | | MOV MOV TRAP ADD | #FORM11,-(SP) #1,-(SP) SP,RO (\$PNTB #4,SP |
| 3306 01 3307 01 3308 01 3309 01 3310 01 3312 01 3313 01 3314 01 3316 01 3317 01 3318 01 3319 01 3320 01 3321 01 | 14200' 14200' 14202' 14206' 14212' | 010346 012746 012746 010600 104414 062706 | 006755* | | rainig. | #FORM36,R3 | | MOV MOV MOV TRAP | R3,-(SP) #FORM36,-(SP) #2,-(SP) SP,RO (\$PNIB |
| 3319 01 3320 01 3321 01 3322 01 3323 01 | 14664 | 062706 010246 010146 012746 | 000006 | | PRINTB | #FORM27,R1,R2 | | MOV MOV MOV | #6,SP R2,-(SP) R1,-(SP) #FGRM27,-(SP) |

| | | | | | | L | 5 | | | | |
|--|---|--|-------------------|-------------------------|---------------------|-----------------------|---------------------|------------|------------|----------------------------------|--|
| GLOBAL CZUAAA. | AREAS P11 1 | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN-83 10: GLCBAL | 13 PAGE EPROR RE | 67 PORT SECTION | | | | | SEQ 63 |
| 3324 3325 3326 3327 3328 | 014236' 014240' 014242' 014246' | 012746 010600 104414 062706 | 000003 | ENDMSG | | | | | | MOV MOV TRAP ADD | #3,-(SP) SP,R0 C\$PNTB #10,SP |
| 3329 3330 3331 | 014246' | | | | | | | | L10031: | TRAP | C\$MSG |
| 3332 3332 | 014250° 014250° | | | BGNMSG | MSG21 | | | | | | |
| 3334 3335 3336 3337 | 014250' 014250' 014254' | 012746 | 005074° 000001 | | PRINTB | #FORM11 | | | MSG21:: | MOV MOV | #FORM11,-(SP) |
| 3338 3339 3340 | 014262' 014264' 014270' | 104414 | 000004 | | PRINTB | #FORM29,R1 | | | | MOV Trap ADD | SP,RO C\$PNTB #4,SP |
| 33267 33227 333233 333333 333333 333333 333333 333333 | 014262' 014264' 014270' 014270' 014272' 014276' 014304' | 010146 012746 012746 010600 104414 | 000002 | | | WI ONLY | | | | MOV MOV MOV TRAP | R1,-(SP) #FORM29,-(SP) #2,-(SP) SP,R0 C\$PNTB |
| 3340 3347 | 014306 | 0627 | 000006 | | PRINTB | #FORM27,R2,R3 | | | | ADD | #6,SP |
| 3348 3349 3350 3351 3352 3353 3354 3355 | 014306' 014312' 014312' 014314' 014316' 014322' 014330' 014332' 014336' | 012746 | 006261° 000003 | | | w on it is a second | | | | MOV MOV MOV MOV IRAP | R3,-(SP) R2,-(SP) #FORM27,-(SP) #3,-(SP) SP,RO C\$PNTB |
| 3355 | 014336' | 002700 | 000010 | ENDMSG | | | | | | ADD | #10,SP |
| 555/ | 014336 | 104423 | | | | | | | L10032: | TRAP | C\$MSG |
| 3358 3359 3361 3361 3363 3364 3365 3366 3368 3371 3372 3377 3377 3377 | 014340' 014340' 014340' 014342' | 010146 | | BGNMSG | MSG22 MOV | R1,-(SP) | | | MSG22:: | | |
| 3362 3363 | 0143421 | 010246 | | | PRINTB | WFORM37,R2 | | | | *** | 22 (62) |
| 3364 3365 | 014342' 014344' 014350' 014356' 014366' 014366' | 012746 | 007013° 000002 | | | | | | | MOV MOV | R2,-(SP) #FORM37,-(SP) |
| 3366 3366 | 014354 | 010600 | 000002 | | | | | | | MOV MOV | #2,-(SP) SP,RO |
| 3368 3368 | 014360 | 062706 | 000006 | | | -4 | | | | TRAP ADD | CSPNTB #6,SP |
| 3370 | 014366 | 005001 | | | (LR PRINTB | R1 #FORM38,R1,R3,F | ;TRANSMIT PCBB+2 | STATUS WOR | D 0 | | |
| 55/1 3372 | 014366' | 013746 010346 | 000606 | | | | | | | MOV MOV | P(BB+2,-(SP) R3(SP) |
| 3373 3374 | 014374° 014376° | 010146 012746 | 0071241 | | | | | | | MOV MOV | R3,-(SP) R1,-(SP) #FORM38,-(SP) |
| 3375 3376 | 014402' | 012746 010600 | 000004 | | | | | | | MOV MOV | #4(SP) |
| 3377 3378 3379 | 014366' 014372' 014374' 014376' 014402' 014406' 014410' 014416' | 104414 062706 005201 | 000012 | | INC | R1 | ;TRANSMIT | STATUS WOR |) 1 | TRAP ADD | SP.RO CSPNTB #12.SP |

| GLOBAL AREAS MACY11 30(1046) CZUAAA.P11 11-JAN-83 09:29 | 11-JAN-83 10:13 PAGE 68 GLOBAL ERROR REPORT SECTION | |
|--|--|--|
| 3380 014420' 013746 000610' 3381 014420' 013746 000610' 3382 014424' 010446 3383 014426' 010146 3384 014430' 012746 007124' 3385 014434' 012746 000004 3386 014440' 010600 3387 01442' 104414 3388 014444' 062706 000012 3389 014450' 012601 3390 014452' 3391 014452' 3392 014452' 3393 014454' 3397 014454' 012746 007215' 3398 014460' 012746 000001 3399 014464' 010600 3400 014466' 104414 3401 014470' 062706 000004 3402 014474' 3403 014474' 3404 014474' 3404 014474' 3405 3406 014476' | PRINTB #FORM38,R1,R4,PCBB+4 | MOV P(BB+4,-(SP) MOV R4,-(SP) MOV R1,-(SP) MOV WFORM38,-(SP) MOV W4,-(SP) MOV SP,RO |
| 3388 014444 062706 000012 3389 014450 012601 3390 014452 3391 014452 3391 014452 | MOV (SP)+,R1 ENDMSG | TRAP (SPNTB ADD #12,SP |
| 3392 014452' 104423 3393 3394 014454' 3395 014454' 3396 014454' | BGNMSG MSG23 PRINTB #FORM39 | TRAP C\$MSG MSG23:: |
| 3397 014454' 012746 007215' 3398 014460' 012746 000001 3399 014464' 010600 3400 014466' 104414 3401 014470' 062706 000004 | | MOV #FORM39,-(SP) MOV #1,-(SP) MOV SP,RO TRAP C\$PNTB |
| 3402 014474' 3403 014474' 3404 014474' 104423 3405 | ENDMSG | ADD #4,SP L10034: TRAP C\$MSG |
| 3406 014476' 3407 014476' 3408 014476' 3409 014476' 012746 007256' 3410 014502' 012746 000001 | BGNMSG MSG24 PRINTB #FORM40 | MSG24:: MOV |
| 3411 014506' 010600 3412 014510' 104414 3413 014512' 062706 000004 3414 014516' | PRINTB #FORM41 | MOV #1,-(SP) MOV SP,RO TRAP C\$PNTB ADD #4,SP |
| 3416 014522 012746 000001 | | MOV #FORM41,-(SP) MOV #1,-(SP) MOV SP.RO TRAP (\$PNTB ADD #4,SP |
| 3418 014530' 104414 3419 014532' 062706 000004 3420 014536' 012701 000001 3421 014542' 012702 000624' 3422 014546' 012203 3423 014550' | MOV #1,R1 MOV #CNTTAB,R2 10\$: MOV (R2)+,R3 PRINTB #FORM42,R1 | |
| 3424 014550' 010146 3425 014552' 012746 007407' 3426 014556' 012746 000002 3427 014562' 010600 3428 014564' 104414 | | MOV R1,-(SP) MOV #FORM42,-(SP) MOV #2,-(SP) MOV SP,RO TRAP C\$PNTB |
| 3417 014526' 010600 3418 014530' 104414 3419 014532' 062706 000004 3420 014536' 012701 000001 3421 014542' 012702 000624' 3422 014546' 012203 3423 014550' 3424 014550' 010146 3425 014552' 012746 007407' 3426 014556' 012746 000002 3427 014562' 010600 3428 014564' 104414 3429 014566' 062706 000006 3430 014572' 3431 014572' 010346 3432 014574' 012746 007416' 3433 014600' 012746 000002 3434 014604' 010600 3435 014606' 104414 | PRINTB #FORM43,R3 | MOV R3,-(SP) MOV #FORM43,-(SP) MOV #2,-(SP) MOV SP,RO TRAP (\$PNTB |
| | | INAT COTATION |

| GLOBAL CZUAAA | | MACY11 1-JAN-83 | 30(1046) 309:29 | 11-JAN | -83 10: GLO ^r AL | 13 PAGE EPROR RE | 69 PORT SECTION | | | | 36 |
|--|--|--|---------------------------------------|--------|--------------------------------|--------------------------------|-----------------------------------|------------------------------------|---------|----------------------------------|--|
| 3436 3437 3438 3449 3441 3442 | 014610' 014614' 014616' 014622' 014624' | 005201 | 000006 000021 | | ENDMSG | INC CMP BNE | R1 R1 #17. 10\$ | | L10035: | ADD | #6,SP |
| 3442 3443 | 014624 | 104423 | | | | | | | [1003]. | TRAP | C\$MSG |
| 3444 3445 3446 3447 3449 3450 | 014626' 014626' 014626' 014634' 014636' | 122777 001011 | 000003 | 163504 | BGNMSG | MSG25 CMPB BNE PRINTB | WINERR, apcsr1 10\$ WFORM76 | :WAS MATCH BIT SET? :YES :NO | MSG25:: | | |
| 3449 3450 3451 3452 | 0146361 | 012746 | 012115' | | | r Kileio | WYOKHYO | ,110 | | MOV MOV TRAP | #FORM76,-(5P) #1,-(SP) SP,RO C\$PNTB |
| 3451 3452 3453 3454 3455 3456 | 014656' 014660' 014664' | 012746 | 000004 012151* 000001 | | 10\$: | BR PRINTB | 20\$ #FORM77 | | | MOV MOV | #4,SP #FORM77,-(SP) #1,-(SP) |
| 3457 3458 3459 3460 3461 3462 3463 | 014670' 014672' 014674' 014700' | 010600 104414 062706 | 000004 | | 20\$: | PRINTB | #FORM44 | | | MOV TRAP ADD | SP,RO (\$PNIB #4,SP |
| 3464 3465 3466 | 014710' 014712' 014714' | 012746 | 007424° 000001 000004 | | | | | | | MOV MOV TRAP ADD | #FORM44,-(SP) #1,-(SP) SP,RO C\$PNTB #4,SP |
| 3467 3468 3469 3470 3471 3472 3473 | 014720' 014720' 014722' 014726' 014732' 014736' | 012746 010600 104414 | 007503° 000002 000006 | | | PRINTB | #f0RM45,(R1) | | | MOV MOV MOV TRAP ADD | (R1),-(SP) #FORM45,-(SP) #2,-(SP) SP,R0 (\$PNTB #6,SP |
| 3474 3475 3476 3477 3478 3479 | 014742' 014746' 014752' 014756' 014760' | 016146 012746 012746 | 000002 007531 000002 | | | PRINTB | #FORM46,2(R1) | | | MOV MOV MOV TRAP | 2(R1),-(SP) #FORM46,-(SP) #2,-(SP) SP,RO (\$PNIB |
| 3480 3481 3482 3483 3484 3486 | 014766' 014772' 014776' 015002' 015004' | 016146 012746 012746 010600 104414 | 000006 000004 007560° 000002 | | | PRINTB | #FORM47,4(R1) | | | ADD MOV MOV MOV TRAP | #6,SP 4(R1),=(SP) #FORM47,=(SP) #2,=(SP) SP,R0 C\$PNIB |
| 3487 3488 3489 3490 3491 | 015006' 015012' 015012' | | 000006 | | ENDMSG | | | | L10036: | TRAP | #6,SP (\$MSG |

| GLOBAL CZUAAA. | AREAS P11 11 | MACY11 -JAN-83 | 30(1046) 09:29 | 11-JAN-83 10: GLOBAL | 13 PAGE ERROR RE | 70 PORT SECTION | | | 350 |
|--|---|--------------------------------------|-------------------|-------------------------|---------------------|--------------------|-----------|----------------------------------|---|
| 3492 3493 3494 | 015014' 015014' 015014' | | | BGNMSG | MSG26 PRINTB | #FORM48 | MSG26:: | | |
| 3494 3495 3496 3497 3498 | 015014' 015020' 015024' 015026' | 010600 104414 | 007607' | | rkivio | WF UNPINO | | MOV MOV MOV TRAP | WFORM48,-(SP) W1,-(SP) SP,RO C\$PNTB |
| 3500 3501 | 0150541 | 062706 010146 | 000004 | | PRINTS | #FORM49,R1 | | ADD | #4,SP |
| 3497 3498 3499 3501 3502 3503 3504 3506 3507 3508 3510 3511 3512 | 015036' 015042' 015046' | 012746 012746 010600 104414 | 007704° 000002 | | | | | MOV MOV MOV TRAP | R1,-(SP) #FORM49,-(SP) #2,-(SP) SP,RO C\$PNTB |
| 3506 3507 | 015056 | 062706 | 000006 | ENDMSG | | | | ADD | #6,SP |
| 3508 3509 3510 | 015056' 015056' | 104423 | | | | | Li0037: | TRAP | C\$MSG |
| 3511 3512 | 015060° 015060° | | | BGNMSG | MSG27 | | MSG27:: | | |
| 3513 3514 3515 3516 | 015070' | 012746 010600 | 010047' 000001 | | PRINTB | #FORM51 | 11362711 | MOV MOV MOV | WFORM51,-(SP) W1,-(SP) SP,RO |
| 3519 3519 3510 | 015074* | 104414 062706 | 000004 | | ODIALID | MEDDMED BY DZ | | TRAP ADD | (\$PNTB #4,SP |
| 3515 3516 3517 3518 3519 3520 3521 3522 3523 3526 | 015100' 015100' 015102' 015104' 015110' 015116' 015116' | บาบกบบ | 007760° 000003 | | PRINTB | #FORM50,R4,R3 | | MOV MOV MOV MOV TRAP | R3,-(SP) R4,-(SP) WFORM50,-(SP) W3,-(SP) SP,RO (\$PNIB |
| 3527 3528 | 015124' 015124' | | 000010 | ENDMSG | | | լ 10040 : | ADD | #10,SP |
| 3529 3530 | 015124' | 104423 | | Delimee | wa c 2 0 | | | TRAP | C\$MSG |
| 3532 3533 | 015126' 015126' 015126' | | | BGNMSG | MSG28 PRINTB | #FORM52 | MSG28:: | | |
| 3527 3528 3530 3531 3533 3535 3537 3538 3539 3540 | 015126' 015126' 015132' 015136' 015140' 015146' | 012746 012746 010600 | 010101° 000001 | | | WY OKTITE | | MOV MOV MOV TRAP | #FORM52,-(SP) #1,-(SP) SP,RO |
| 3538 3539 | 015142° 015146° | 062706 | 000004 | | PRINTB | #FORM50,R4,R3 | | ADD | C\$PNTB #4,SP |
| 3541 3542 3543 3544 | 015150' 015152' 015156' 015162' | 010446 012746 012746 010600 | 007760° 000003 | | - · · - | | | MOV MOV MOV MOV | R3,-(SP) R4,-(SP) WFORM50,-(SP) W3,-(SP) SP.RO |
| 3545 3546 354 | 015164* 015166* 015172* | 062706 | 000010 | ENDMSG | | | | TRAP ADD | C\$PNTB #10,SP |

| GLOBAL CZUAAA. | | MACY11 I-JAN-83 | 30(1046) 09:29 | 11-JAN-83 10: GLOBAL | 13 PAGE ERROR RE | 71 PORT SECTION | | | 26 |
|--|--|--|--|-------------------------|---------------------|--------------------|----------|---|---|
| 3548 3549 3550 | 015172' 015172' | 104423 | | | | | L10041: | TRAP | C\$MSG |
| 3551 3552 | 015174' 015174' | | | BGNMSG | MSG29 | | MSG29:: | | |
| 3550 35552 35553 35556 35567 35560 3560 3563 | 015174' 015174' 015200' 015204' 015210' 015214' | 013746 012746 012746 012746 010600 104414 062706 | 000610° 000000 007760° 000003 | | PRINTB | #FORM50,#0,FCBB+4 | 7130271. | MOV MOV MOV MOV TRAP ADD | PCBB+4,-(SP) #0,-(SP) #FORM50,-(SP) #3,-(SP) SP,R0 C\$PNTB #10,SP |
| 3561 3562 | 015224 | 013746 | 000606 | | PRINTB | #FORM53,PCBB+2 | | MOV | PCBB+2,-(SP) |
| 3564 3565 3566 | 015230' 015234' 015240' 015242' | 012746 012746 010600 104414 062706 | 010137' | | | | | MOV MOV MOV TRAP ADD | WFORM53,-(SP) W2,-(SP) SP,RO (\$PNTB W6,SP |
| 3568 3569 | 015244* 015250* 015250* | 013746 | 0005041 | | PRINTB | #FORM54,PCBB | | MOV | PCBB,-(SP) |
| 3567 3568 3569 3570 3571 3572 3573 3574 3575 | 015254' 015260' 015264' 015266' 015270' | 012746 012746 010600 104414 062706 | 010211' | | | | | MOV MOV TRAP ADD | <pre>#FORM54,-(SP) #2,-(SP) SP,R0 C\$PNT3 #6,SP</pre> |
| 55// | 015274' 015274' 015274' | 104423 | | ENDMSG | | | L10042: | TRAP | C \$ MSG |
| 3578 3579 | 015276 | | | BGNMSG | MSG30 | | w 70 | | |
| 3580 3581 3582 | 015276' 015276' 015276' | 0127/4 | 0102771 | | PRINTB | WF ORM55 | MSG30:: | MOV | #F00MEE _/CD) |
| 3583 | 015302' 015306' 015310' | 012746 010600 104414 | 0102371 000001 | | | | | MOV MOV TRAP | WFORM55,-(SP) W1,-(SP) SP,RO C\$PNTB |
| 3586 3587 | 015312' 015316' 015316' | 062706 | 000004 | | PRINTB | WFORM57,PCBB | | ADD | #4.SP |
| 3584 3586 35887 35889 3599 3599 3599 3599 3599 3600 | 015326' 015332' | 013746 012746 012746 010600 104414 | 000604° 010363° 000002 | | | | | MOV MOV MOV TRAP | PCBB,-(SP) WFORM57,-(SP) W2,-(SP) SP,RO C\$PNTB |
| 3593 3594 | 0155561 | 062706 | 000006 | ENDMSG | | | | ADD | M6.SP |
| 3595 3596 3597 | 015342' 015342' 015342' | 104423 | | ENDITIO | | | L10043: | TRAP | C\$MSG |
| 3598 3599 | 015344° 015344° | | | BGNMSG | MSG31 | | MSG31:: | | |
| 3600 3601 3602 3603 | 015344' 015344' 015350' 015354' | 012746 012746 010600 | 010310° 000001 | | PRINTB | #FORM56 | | MOV MOV MOV | #FORM56,-(SP) #1,-(SP) SP,R0 |

| GLOBAL AREAS MACY11 30(104 CZUAAA.P11 11-JAN-83 09:29 |) 11-JAN-83 10:13 PAG GLOBAL ERROR R | E 72 EPORT SECTION | | SEQ |
|--|---|------------------------|---|---|
| 3604 015356° 104414 3605 015360° 062706 00000 3606 015364° | PRINTB | WFORM57,R1 | TRAP ADD | (\$PNTB #4,SP |
| 3605 015360' 062706 00000 3606 015364' 010146 3607 015366' 012746 01036 3608 015366' 012746 00000 3610 015372' 012746 00000 3611 015400' 104414 3612 015402' 062706 00000 | | | MOV MOV MOV MOV TRAP | R1,-(SP) #FORM57,-(SP) #2,-(S) SP,RO C \$ PNTB |
| 3612 015402° 062706 00000 3613 015406° | PRINTB | #FORM58,#104. | ADD | #6,SP |
| 3611 015400' 104414 3612 015402' 062706 00000 3613 015406' 3614 015406' 012746 00015 3615 015412' 012746 01043 3616 015416' 012746 00000 3617 015422' 010600 3618 015424' 104414 | • | | MOV MOV MOV MOV TRAP | #104.,-(SP) #FORM58,-(SP) #2,-(SP) SP,R0 (\$PNTB |
| 3619 015426° 062706 00000 3620 015432° | PRINTB | #FORM59,#100000 | ADD | #6,SP |
| 3617 015422' 010600 3618 015424' 104414 3619 015426' 062706 00000 3620 015432' 3621 015432' 012746 10000 3622 015436' 012746 01051 3623 015442' 012746 00000 3624 015446' 010600 3625 015450' 104414 | | | MOV MOV MOV MOV TRAP | #100000,-(SP) #FORM59,-(SP) #2,-(SP) SP,R0 C\$PNTB |
| 3626 015452 062706 00000 3627 015456 3628 015456 013746 00060 | PRINTE | #FORM60,#100000,PCBB+2 | ADD MOV | #6,SP PCBB+2,-(SP) |
| 3629 015462' 012746 10000 3630 015466' 012746 01060 3631 015472' 012746 00000 3632 015476' 010600 | • | | MOV MOV MOV MOV TRAP | #100000,-(SP) #FORM60,-(SP) #3,-(SP) SP,R0 C\$FN'B |
| 3633 015500° 104414 3634 015502° 062706 000019 3635 015506° | ENDMSG | | ADD | #10,SP |
| 3636 015506' 3637 015506' 104423 3638 | | | L10044: TRAP | C\$MSG |
| 3639 015510° 3640 015510° | BGNMSG MSG32 | WF 0 D W 4 | MSG32:: | |
| 3641 015510' 3642 015510' 012746 01067 3643 015514' 012746 00000 3644 015520' 010600 3645 015522' 104414 3646 015524' 062706 00000 | | | MOV MOV MOV TRAP ADD | <pre>#FORM61,-(SP) #1,-(SP) SP,R0 C\$PNTB #4,SP</pre> |
| 3644 015520 010600 3645 015522 104414 3646 015524 062706 00000 3647 015530 013746 00061 3649 015534 012746 05252 3650 015540 012746 00626 3651 015544 012746 00000 3652 015550 010600 3653 015552 104414 3654 015554 062706 00001 3655 015560 013746 00060 | • | | MOV MOV MOV MOV TRAP ADD | PCBB+4,-(SP) #52525,-(SP) #FORM27,-(SP) #3,-(SP) SP,R0 C\$PNTB #10,SP |
| 3655 015560° 3656 015560° 013746 00060 3657 015564° 012746 01036 3658 015570° 012746 00000 3659 015574° 010600 | PRINTE | #FORM57,PCBB | MOV MOV MOV MOV | PCBB,-(SP) #FORM57,-(SP) #2,-(SP) SP,R0 |

| GLOBAL AREAS MACY11 30(1046 CZUAAA.P11 11-JAN-83 09:29 | 11-JAN-83 10:13 PAGE 7 GLOBAL ERROR REPO | 73 ORT SECTION | | SEC |
|---|--|--|----------------------------------|--|
| 3660 015576' 104414 3661 015600' 062706 000006 3662 015604' | ENDMSG | | TRAP ADD | CSPNTS #6,SP |
| 3663 015604° 3664 015604° 104423 3665 | | ι | 10045: TRAP | C\$MSG |
| 3666 015606° 3667 015606° 3668 015606° | BGNMSG MSG33 | MATTER STATE OF THE STATE OF TH | ISG33:: | |
| 3669 015606' 017746 162476 5570 015612' 012746 010754 3671 015616' 012746 000002 3672 015622' 010600 3673 015624' 104414 3674 015626' 062706 000006 3675 015632' | | FORM62, abitnam | MOV MOV MOV TRAP ADD | abitnam,-(SP) #form62,-(SP) #2,-(SP) SP,R0 (\$PNTB #6,SP |
| 3676 015632' 3677 015632' 104423 | ENDMSG | Ĺ | 10046: | C\$MSG |
| 3676 015632' 3677 015632' 104423 3678 3679 015634' 3680 015634' 3681 015634' | BGNMSG MSG34 PRINTB # | rFORM63,R4 | ISG34:: | |
| 3681 015634' 3682 015634' 010446 3683 015636' 012746 011027 3684 015642' 012746 000002 3685 015646' 010600 3686 015650' 104414 3687 015652' 062706 000006 3688 015656' 3689 015656' 013746 024202 | | | MOV MOV MOV TRAP ADD | R4,-(SP) #FORM63,-(SP) #2,-(SP) SP,R0 (\$PNTB #6,SP |
| 3688 015656' 013746 024202 3689 015656' 013746 024202 3690 015662' 012746 006331 3691 015666' 012746 000002 3692 015672' 010600 3693 015674' 104414 3694 015676' 062706 000006 | | FORM28,STMSG | MOV MOV MOV TRAP ADD | STMSG,-(SP) #FORM28,-(SP) #2,-(SP) SP,RO (\$PNTB #6,SP |
| 3695 015702' 3696 015702' | ENDMSG | ι | 10047: | C\$MSG |
| 3697 015702' 104423 3698 3699 015704' 3700 015704' 370' 015704' | BGNMSG MSG35 PRINTB # | MFORM59.PCBB | ISG 3 5 : : | |
| 3702 015704 015746 000604 3703 015710 012746 010511 | | | MOV MOV MOV TRAP ADD | PCBB,-(SP) #FORM59,-(SP) #2,-(SP) SP,RO (\$PNTB #6,SP |
| 3709 015730' 012746 010604 3710 015734' 012746 000001 3711 015740' 010600 3712 015742' 104414 | | FORM60 | MCV MOV MOV TRAP | WFORM60,-(SP) W1,-(SP) SP,RO (\$PNIB |
| 3713 015744 062706 000004 3714 (115750 013746 000606 | | FORM78,PCBB,PCBB+2 | ADD MOV | #4,SP P(BB+2,=(SP) |

| 3716 | GLOBAL AREAS MACY11 30(1046) ZUAAA.P11 11-JAN-83 09:29 | 11-JAN-83 10:13 PAGE 74 GLOBAL ERROR REPORT SECTION | | SE |
|--|---|---|---|---------------|
| 377-1 016024* 012746 0112746 000001 377-2 016030* 0102746 0000001 377-3 016034* 0104000 377-4 016036* 104414 377-5 016040* 062706 000004 377-7 016044* 104423 37-8 016044* 104423 37-8 016044* 104423 37-8 016046* 37-75 016056* 0104000 | 3717 015760' 012746 012225' 3718 015764' 012746 000003 3719 015770' 010600 | ENDMSG | MOV #FORM78,-(SP MOV #3,-(SP) MOV SP.RC TRAP (\$PNTB ADD #10,SP | >) |
| 377-1 016024* 012746 0112746 000001 377-2 016030* 0102746 0000001 377-3 016034* 0104000 377-4 016036* 104414 377-5 016040* 062706 000004 377-7 016044* 104423 37-8 016044* 104423 37-8 016044* 104423 37-8 016046* 37-75 016056* 0104000 | 3724 016000 104423 3725 3726 016002' 3727 016002' 3728 016002' | | TRAP C\$MSG | |
| 377-1 016024* 012746 0112746 000001 377-2 016030* 0102746 0000001 377-3 016034* 0104000 377-4 016036* 104414 377-5 016040* 062706 000004 377-7 016044* 104423 37-8 016044* 104423 37-8 016044* 104423 37-8 016046* 37-75 016056* 0104000 | 3730 016006 012746 000001 3731 016012 010600 3732 016014 104414 3733 016016 062706 000004 3734 016022 | FNDMSG | MOV #1,-(SP) MOV SP.RO TRAP (\$PNTB | ') |
| 377-1 016024* 012746 0112746 000001 377-2 016030* 0102746 0000001 377-3 016034* 0104000 377-4 016036* 104414 377-5 016040* 062706 000004 377-7 016044* 104423 37-8 016044* 104423 37-8 016044* 104423 37-8 016046* 37-75 016056* 0104000 | 3735 016022' 3736 016022' 104423 3737 3738 016024' 3739 016024' | | TRAP (\$MSG | |
| 3750 016046' | 3761 01602/1 0127/4 011251 | | MOV #FORM67,-(SP MOV #1,-(SP) MOV SP,RO TRAP (\$PNTB | ') |
| 3752 016046' 012746 011336' 012746 000001 | 3750 016046' | | TRAP CSMSG | |
| 3758 016066' 3760 016066' 3760 016066' 3761 | 3752 016046' 3753 016046' 012746 011336' 3754 016052' 012746 000001 3755 016056' 010600 3756 016060' 104414 3757 016062' 062706 000004 | PRINTB #FORM68 | MOV #FORM68,-(SP) MOV #1,-(SP) MOV SP,RO TRAP C\$PNTB |) |
| 3763 016070' 3764 016070' 3765 016070' 012746 011433' 3766 016074' 012746 000001 3767 016100' 010600 3768 016102' 104414 3769 016104' 062706 000004 3770 016110' ENDMSG MSG39:: MSG39:: MOV | 3758 016066' 3759 016066' 3760 016066' 104423 3761 3762 016070' | | L10053: | |
| 3769 016104 062706 000004 3770 016110' ENDMSG ENDMSG ADD #4,SP | 3764 016070' 3764 016070' 3765 016070' 012746 011433' 3766 016074' 012746 000001 3767 016100' 010600 | | MOV #FORM69,-(SP) MOV #1,-(SP) |) |
| 5771 016110° L10054: | 3769 016102° 104414 3769 016104° 062706 000004 3770 016110° 3771 016110° | ENDMSG | TRAP (\$PNTB ADD #4,SP | |

| 3772 016110' 104423 3773 3774 016112' BGNMSG MSG40 3775 016112' PRINTB #FORM56 3776 016112' 012746 010310' MOV #FORM56 3778 016116' 012746 000001 3779 016122' 010600 3780 016124' 104414 3781 016126' 062706 000004 3782 016132' PRINTB #FORM59,#100000 3784 016136' 012746 010511' 3785 016136' 012746 010511' 3786 016140' 012746 000002 3787 016150' 104414 3788 016152' 062706 000006 3788 016152' 062706 000006 3789 016156' 013746 000006 3789 016156' 013746 000006 3789 016156' 013746 000000 | |
|---|-------|
| 3774 016112' BGNMSG MSG40 3775 016112' PRINTB #FORM56 3777 016112' 012746 010310' MOV #FORM56 3778 016116' 012746 000001 MOV #1,-(SP) 3780 016124' 104414 3781 016126' 062706 000004 3782 016132' PRINTB #FORM59,#100000 3784 016132' 012746 100000 3784 016136' 012746 010511' 3785 016142' 012746 000002 3786 016142' 012746 000002 3787 016150' 104414 3788 016152' 062706 000006 3789 016156' 013746 000006 3789 016156' 013746 000006 3790 016156' 013746 000000 | |
| 3776 016112' 3777 016112' 012746 010310' 3778 016116' 012746 000001 3779 016122' 010600 3780 016124' 104414 3781 016126' 062706 000004 3782 016132' 3783 016132' 012746 100000 3784 016136' 012746 010511' 3785 016142' 012746 010511' 3786 016150' 104414 3788 016150' 104414 3788 016150' 062706 000006 3789 016150' 104414 3789 016150' 104414 3789 016150' 104414 3789 016150' 104414 3789 016150' 012746 000006 3789 016156' 013746 000604' 3791 016166' 013746 000604' 3791 016162' 012746 100000 | |
| 3778 | |
| 3785 016142' 012746 000002 3786 016146' 010600 3787 016150' 104414 3788 016152' 062706 000006 3789 016156' 013746 000604' 3790 016156' 013746 000604' 3791 016162' 012746 100000 MOV PCBB, -(S | •(SP) |
| 3785 016142' 012746 000002 3786 016146' 010600 3787 016150' 104414 3788 016152' 062706 000006 3789 016156' 013746 000604' 3790 016156' 013746 000604' 3791 016162' 012746 100000 MOV PCBB, -(S | |
| 3785 016142' 012746 000002 3786 016146' 010600 3787 016150' 104414 3788 016152' 062706 000006 3789 016156' 013746 000604' 3790 016156' 013746 000604' 3791 016162' 012746 100000 MOV PCBB, -(S | (65) |
| 3787 016150' 104414 3788 016152' 062706 000006 3789 016156' 013746 000604' 3790 016156' 012746 100000 PCBB MOV PCBB MOV PCBB MOV PCBB MOV W100000 PCBB | |
| 3791 016162 012746 100000 MOV #100000. | |
| 3791 016162 012746 100000 MOV #100000. | |
| 7700 64/4// 6 64/5// 6 64/4/ | P) |
| 3792 010100 012740 010004° 3793 016172' 012746 000003 | -(SP) |
| 3794 016176' 010600 mov sp ph | |
| 3795 016200' 104414 3796 016202' 062706 000010 3797 016206' ENDMSG ENDMSG | |
| 5/98 016206' | |
| 3800 3801 016210' BGNMSG MSG41 | |
| 3802 016210' MSG41:: 9RINTR #FORM61 | |
| 3804 016210' 012746 010671' 3805 016214' 012746 000001 MOV #FORM61, | •(SP) |
| 3806 016220' 010600 MÔY SP RÔ 3807 016222' 104414 | |
| 3808 016224' 062706 000004 ADD #4,SP | |
| 5810 016230' 013746 000606' Mov prepa2 - | |
| 3811 016234' 012746 052525 3812 016240' 012746 006261' 3813 016244' 012746 000003 MOV #3(SP) | ·(SP) |
| 3814 016250' 010600 MOV SP.RO 3815 016252' 104414 TRAP (\$PNTB | |
| 3816 016254 062706 000010 3817 016260 ENDMSG | |
| 3818 016260' 3819 016260' 104423 TRAP (\$MSG | |
| 3815 016252' 104414 3816 016254' 062706 000010 3817 016260' 3818 016260' 3819 016260' 104423 3820 3821 016262' BGNMSG MSG42 3822 016262' PRINTB #FORM70,PCBB+2 3824 016262' 013746 000606' 3825 016266' 012746 011551' 3826 016272' 012746 000002 | |
| 3822 016262' 3823 016262' PRINTB #FORM70,PCBB+2 | |
| 3824 016262' 013746 000606' 3825 016266' 012746 011551' 7824 016273' 013746 000003 | (SP) |
| 3825 016266' 012746 011551' 3826 016272' 012746 000002 3827 016276' 010600 MOV SP.RO | |

| GLOBAL AREAS MACY11 30(1046) CZUAAA.P11 11-JAN-83 09:29 | 11-JAN-83 10:13 PAG GLOBAL ERROR R | E 76 EPORT SECTION | | | SEC |
|---|---------------------------------------|------------------------|-------------------------------|------------------------------------|---|
| 3828 016300' 104414 3829 016302' 062706 000006 3830 016306' | PRINTB | #FORM71_PCBB | | TRAP ADD | CSPNTB #6,SP |
| 3829 016302' 062706 000006 3830 016306' 3831 016306' 013746 000604' 3832 016312' 012746 011613' 3833 016316' 012746 000002 3834 016322' 010600 3835 016324' 104414 3836 016326' 062706 000006 3837 016332' 3838 016332' 010146 3839 016334' 012746 006534' 3840 016340' 012746 000002 | PRINTB | | | MOV MOV MOV TRAP ADD | P(BB,-(SP) WFORM71,-(SP) W2,-'SP) SP,R() (\$PNTB W6,SP |
| 3838 016332' 010146 3839 016334' 012746 006534' 3840 016340' 012746 000002 3841 016344' 010600 3842 016346' 104414 3843 016350' 062706 000006 3844 016354' | PRINTB | | | MOV MOV MOV TRAP ADD | R1,-(SP) #FORM33,-(SP) #2,-(SP) SP,RO (\$PNTB #6,SP |
| 3845 016354' 013746 000610' 3846 016360' 012746 006755' 3847 016364' 012746 000002 3848 016370' 010600 3849 016372' 104414 3850 016374' 062706 000006 3851 016400' 013746 000614' 3853 016404' 013746 000612' | | | | MOV MOV MOV TRAP ADD | P(BB+4,-(SP, WFORM36,-(SP) W2,-(SP) SP,RO (\$PNTB W6,SP |
| 3855 016414' 012746 000003 3856 016420' 010600 3857 016422' 104414 | PRINTE | #FORM27,PCBB+6,PCBB+10 | | MUV MOV MOV MOV TRAP | P(BB+10,-(SP) P(BB+6,-(SP) WFORM27,-(SP) W3,-(SP) SP,RO (SPNTB |
| 3858 016424° 062706 000010 3859 016430° 3860 016430° 3861 015430° 104423 3862 | ENDMSG | | L10057: | TRAP | #10,SP C\$MSG |
| 3863 016432' 3864 016432' | BGNMSG MSG43 | | MSG43:: | | |
| 3865 016432' 012746 011655' 3866 016432' 012746 000001 3868 016442' 010600 3869 016444' 104414 3870 016464' 062706 000004 3871 016452' 3872 016452' 3873 016452' 104423 3874 3875 016454' 3876 016454' 3877 016454' 032'37 100000 3878 016462' 001410 3879 016464' | PRINTB | #i ORM72 | | MOV MOV TRAP ADD | WFORM72,-(SP) W1,-(SP) SP,RO (\$PNTB W4,SP |
| 3871 016452' 3872 016452' 3873 016452' 104423 3874 | ENDMSG | | լ10060։ | TRAP | C\$MSG |
| 3875 016454° 3876 016454° 3877 016454° 032°37 100000 3878 016462° 001410 | BGNMSG MSG44 000666' BIT BEQ | #NPRERR, ERRINT | MSG44:: :NPR ERROR OCCUR? :NO | | |
| 3879 016464° 3880 016464° 012746 011727° 3881 016470° 012746 000001 3882 016474° 010600 3883 016476° 104414 | PRINTB | | ; YES, PRINT NPR ERROR ME | SSAGE MOV MOV MOV TRAP | WFORM73,-(SP) W1,-(SP) SP,RO (\$PNTB |

| GLOBAL CZUAAA. | | MA(Y11 1-JAN-83 | 30(1046) 09:29 | 11-JAN | | 13 PAGE EPROR REI | 77 PORT SECTION | | | 31 |
|--|---|--------------------------------------|-----------------------------|--------|--------------------------|----------------------|--------------------|---------------------------|---------------------------|---|
| 3884 3885 3886 | 016500' 016504' 016512' | 062706 032737 001410 | 000004 040000 | 000666 | 10\$: | BIT BEQ | #NXMERR, ERRINT | ;NON-EXISTANT MEMORY OCC | | #4,SP |
| 3886 3887 3888 3889 3890 3891 | 016514' 016514' 016520' | 012746 | 011772° 000001 | | | PRINTB | WFORM74 | ; YÉS, PRINT NON-EXISTANT | MOV MOV MOV | MESSAGE #FORM74,-(SP) #1,-(SP) SP,RO (\$PNTB |
| 3891 3892 3893 3894 3895 3896 | 016524' 016526' 016530' 016534' 016542' | 062706 032737 001410 | 000004 02000u | 000666 | 20\$: | BIT BEQ | WUNIERR, ERRINT | :UNEXPECTED INTERRUPT OF | ADD CCUR? | #4,SP |
| 3898 3899 | 016550' 016554' 016556' | 012746 012746 010600 104414 | 012047' 000001 | | | PRINTB | #FORM75 | ; YES, PRINT UNEXPECTED | MOV | #FORM75,-(SP) #1,-(SP) SP,RO C\$PNTB |
| 3900 3901 3902 | 016560° 016564° 016572° | 062706 032737 001410 | 000004 010600 | 000666 | 30\$: | BIT BEQ | #PARERR, ERRINT | :PARITY ERROR OCCUR? | ADD | #4,SP |
| 3903 3904 3905 3906 | 016574' 016574' 016600' 016604' | 012746 012746 010600 | 011655° 000001 | | | PRINTB | #FORM72 | ; YES, PRINT PARITY ERROF | MOV MOV MOV | WFORM72,-(SP) W1,-(SP) SP,RO |
| 3907 3908 3909 3910 | 016606' 016610' 016614' 016614' | 104414 062706 | 000004 | | 40 \$: ENDMSG | | | | ADD | CSPNTB #4,SP |
| 3911 3912 3913 | 016614' 016614' | 104423 | | | ENDMOG | | | L10061: | TRAP | C\$MSG |
| 3914 3915 3916 | 016616' 016616' 016616' | | | | BGNMSG | MSG45 PRINTB | #FORM79 | MSG45:: | | |
| 3917 3918 3919 | 016616 | 012746 012746 010600 104414 | 012265' | | | , K1410 | wi Okili y | | MOV MOV TRAP | #FORM79,-(SP) #1,-(SP) SP,RO (\$PNTB |
| 3921 3922 | 016636" | | 000004 | | | PRINTB | #FORM80 | | ADD | #4,SP |
| 3920 3921 3922 3923 3924 3925 3926 3927 3928 3930 | 016642' 016646' 016650' | 104414 | 012334* | | | | | | MOV MOV MOV TRAP | #FORM80,-(SP) #1,-(SP) SP,RO (\$PNIB |
| 3927 3928 | 016652 ' 016656 ' | | 000004 | | | PRINTB | #FORM81 | | ADD | #4,SP |
| 3929 3930 3931 3932 3933 | 016656' 016662' 016666' 016672' | 010600 | 012413° 000001 000004 | | | | | | MOV MOV TRAP ADD | WFORM81,-(SP) W1,-(SP) SP RO (\$PNTB W4,SP |
| 3931 3932 3933 3934 3935 3936 3937 3938 | 016676 ' 016676 ' | 104423 | | | ENDMSG | | | ι 10062: | TRAP | C\$MSG |
| 5937 5938 3939 | 016700° 016700° | | | | BGNMSG | MSG46 | | MSG46:: | | |

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| GLOBAL (ZUAAA | | MACY11 11-JAN-83 | 30(1046) 09:29 | 11-JAN-83 10:13 PAGE 78 GLOBAL EPROR REPORT SECTION | |
|--------------------------------------|--|----------------------------------|-------------------|---|--|
| 3940 3941 3942 3943 | 016700 016700 016704 016710 016712 | 1 012746 1 012746 1 010600 | 012456° 000001 | PRINTB #FORM82 | |
| 3945 3946 3947 3948 3949 | 016714 016720 016720 016720 | 062706 | 000004 | ENDMSG | |

MOV #FORM82.-(SP)
MOV #1.-(SP)
MOV SP.RO
TRAP (\$PNTB
ADD #4.SP

L10063:

TRAP CSMSG

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MACY11 30(1046) 11-JAN-83 10:13 PAGE 79
11-JAN-83 09:29 GLOBAL SUBROUTINES
GLOBAL AREAS
CZUAAA.P11
                                               GLOBAL SUBROUTINES SECTION
  3950
3951
                                               .SBTTL GLOBAL SUBROUTINES SECTION
  3952
3953
                                               : THE GLOBAL SUBROUTINES SECTION CONTAINS THE SUBROUTINES
  3954
                                               : THAT ARE USED IN MORE THAN ONE TEST.
  3955
  3956
                                               SBTTL 32 BIT CRC CALCULATOR
  3957
  3958
                                                 FUNCTIONAL DESCRIPTION:
  3959
  3960
                                                     SUBROUTINE TO CALCULATE A 32 BIT CRC ON A BLOCK OF DATA
  3961
  3962
                                                 INPUTS:
  3963
                                                        RO = ADDRESS OF DATA BLOCK
  3964
                                                         R2 = BYTE COUNT
  3965
  3966
                                                 IMPLICIT INPUTS: NONE
  3967
  3968
                                                 OUTPUTS:
  3969
                                                        R4 = CRC HIGH WORD
  3970
                                                         R5 = CRC LOW WORD
  3971
  3972
                                                 SUBORDINATE ROUTINES USED: GETCRC
  3973
  3974
                                                 FUNCTIONAL SIDE EFFECTS: NONE
  3975
  3976
                                                 CALLING SEQUENCE. PUT ADDRESS OF DATA TO PERFORM CRC ON IN RO
  3977
                                                                  PUT NUMBER OF BYTES TO CHECK IN R2
  3978
                                                                           PC,BLKCRC
  3979
  3980
  3981
                                               CRC32::
  3982
         0167221
         016722' 010046
016724' 010146
  3983
                                                                  R0,-(SP)
                                                                                     :SAVE REGISTERS 0-3
                                                                  R1,-(SP)
  3984
                                                         MOV
                                                                  R2,-(SP)
         016726' 010246
  3985
         016730' 010346
  3986
                                                         MOV
                                                                  R3,-(SP)
        016732' 012704
016736' 012705
016742' 112001
016744' 004737
                                                                                     :INITIAL CRC HIGH WORD :INITIAL CRC LOW WORD
  3987
                                                                  WINITH, R4
                            177777
                                                         MOV
  3988
                            177777
                                                         MOV
                                                                  WINITL.RS
  3989
                                               10$:
                                                         MOVB
                                                                                     GET NEXT BYTE OF DATA
                                                                  (R0) + R1
                                                                  PC, GETCRC
  3990
                            0167641
                                                                                     : CALCULATE THE CRC
                                                         JSR
  3991
         016750' 077204
                                                                  R2.10$
                                                                                     LOOP TILL DONE
                                                         SOB
         016752' 012603
016754' 012602
                                                                  (SP)+,R3
  3992
                                                                                     RESTORE REGISTERS
                                                         MOV
                                                                  (SP)+,R2
  3993
                                                         MOV
        016756' 012601
016760' 012600
  3994
                                                                  (SP)+,R1
                                                         MOV
  3995
                                                                  (SP) + RO
                                                         MOV
         016762' 000207
  3996
                                                         RTS
                                                                  PC
                                                                                     : RETURN
  3997
  3998
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GLOBAL AREAS
                       MACY11 30(1046) 11-JAN-83 10:13 PAGE 80
CZUAAA.P11
                    11-JAN-83 09:29
                                                          32 BIT CAC CALCULATOR
   3999
  4000
4001
4002
4003
4004
4005
4006
4007
4008
4009
4010
                                                          BYTE WISE 32-BIT CRC CALCULATOR
                                                           INPUTS:
                                                                     R1 = NEW BYTE TO ADD TO CRC
R4.R5 = CURRENT PARTIAL CRC CODE
                                                          :OUTPUTS:
                                                                     R4_R5 = UPDATED CRC
                                                          :NOTE: THIS ROUTINE IS ONLY USED BY BLKCRC
                                                          ;--
  4012
          016764'
016764' 010146
016766' 010246
016770' 010346
016772' 042701
016776' 074105
                                                          GETCRC:
                                                                                R1,-(SF)
R2,-(SP)
R3,-(SP)
W^(377,R1
  4014
                                                                     MOV
                                                                                                        :SAVE R1-3
  4015
                                                                     MOV
  4016
                                                                     MOV
  4017
                                  177400
                                                                     BIC
                                                                                                        CLEAR HIGH BYTE
  4018
          016776' 074105
017000' 012702
017004' 012703
017010' 012701
017014' 000241
017016' 006004
017020' 006005
017022' 103002
017024' 074204
017026' 074305
                                                                     XOR
                                                                                 R1,R5
                                                                                                        :MERGE NEW BYTE WITH OLD CRC
  4019
                                  166670
                                                                     MOV
                                                                                 #POLYH,R2
                                                                                                         GET CRC POLYNOMIAL HIGH WORD
  4020
                                  101440
                                                                     MOV
                                                                                 #POLYL,R3
                                                                                                        GET CRC POLYNOMIAL LOW WORD
  4021
                                  000010
                                                                     MOV
                                                                                 #6.,R1
                                                                                                        ;LOOP COUNT
  4022
                                                          15:
                                                                     CFC
                                                                                                        CLEAR THE CARRY
                                                                                R4
R5
2$
R2,R4
R3,R5
R1,1$
  4023
                                                                                                        SHIFT RIGHT THE CRC
32 BITS WORTH
                                                                     ROR
  4024
                                                                     ROR
  4025
                                                                     BCC
                                                                                                         SKIP IF BIT O NOT SET
                                                                     XOR
                                                                                                        EXCLUSIVE OR IN THE POLY
  4027
                                                                     XOR
                                                                                                        :BOTH HIGH AND LOW WORDS
  4028
           0170301
                      077107
                                                         25:
                                                                     SOB
                                                                                                        ; AND LOOP ON ALL 8 BITS
  4029
           017032
                      012603
                                                                                 (SP)+,R3
(SP)+,R2
                                                                     MOV
                                                                                                        RESTORE REGISTERS
          017034' 012602
017036' 012601
  4030
                                                                     MOV
  4031
                                                                                 (SP)+,R1
                                                                     MOV
           017040
  4032
                      000207
                                                                     RIS
                                                                                                        : RETURN
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GLOBAL AREAS MACY11 30(1046) 11-JAN-83 10:13 PAGE 81 CZUAAA.P11 11-JAN-83 09:29 32 BIT CRC CALCULATOR
   4034
                                                                               .SBTTL 16 BIT CRC CALCULATOR
    4035
    4036
   4037
4038
                                                                                               SUBROUTINE - CRC16
    4039
    4040
                                                                                              THIS SUBROUTINE CALCULATES A 16 BIT CRC
    4041
                                                                                              ON A BLOCK OF DATA.
    4042
    4043
                                                                                                                              RO = ADDRESS OF DATA BLOCK
R2 = BYTE COUNT
                                                                                               INPUTS:
    4044
    4045
                                                                                                                              R4 = INITIAL CRC VALUE
    4046
    4047
                                                                                              OUTPUTS:
                                                                                                                              R4 = CRC
    4048
    4049
                                                                                              CALLING SEQUENCE:
    4050
                                                                                                              JSR PC, CRC16
    4051
   4052
              017042'
017042' 010046
017044' 010146
017046' 010246
017050' 010346
017052' 010546
017054' 010203
017056' 010002
017060' 012705
017066' 042700
017072' 074004
017100' 000241
017102' 006004
017104' 103001
017106' 074504
017110' 077105
017112' 077314
017114' 012605
017116' 012603
017126' 012600
017126' 000207
    4053
   4054
4055
4056
4057
                                                                              CRC16::
                                                                                                                                            SAVE RO
SAVE R1
SAVE R2
SAVE R3
SAVE R5
R3 = BYTE COUNT
R2 = ADDRESS OF DATA BLOCK
CRC POLYNOMIAL
GET NEXT BYTE
CLEAR HIGH BYTE
MERGE BYTE WITH OLD CRC
LOOP COUNT
CLEAR CARRY
SHIFT RIGHT THE CRC
SKIP IF BIT ZERO NOT SET
EXCLUSIVE OR IN THE POLY
AND LOOP ON ALL 8 BITS
                                                                                                              RO,-(SP)
R1,-(SP)
                                                                                              MOV
                                                                                               MOV
                                                                                                             R2,-(SP)
R3,-(SP)
R5,-(SP)
                                                                                               MOV
    4058
                                                                                               MOV
   4059
4060
                                                                                               MOV
                                                                                               MOV
                                                                                                               R2,R3
   4061
4062
4063
4064
4065
4066
4067
4068
4069
4070
                                                                                               MOV
                                                                                                              RO, R2
                                                                                                              #PÓLY16,R5
                                               120001
                                                                                               MOV
                                                                                                              (R2)+,R0
#^C377,R0
                                                                               15:
                                                                                               MOVB
                                              177400
                                                                                               BIC
                                                                                                              RO,R4
                                                                                               XOR
                                               000010
                                                                                               MOV
                                                                                                              #8.,R1
                                                                               2$:
                                                                                               CLC
                                                                                               ROR
                                                                                                               38
                                                                                               BCC
                                                                                                              R5,R4
                                                                                               XOR
                                                                                                              R1,2$
R3,1$
   4071
                                                                               3$:
                                                                                               SOB
   4072
                                                                                               SOB
                                                                                                                                                     RESTORE RS
RESTORE R3
RESTORE R2
RESTORE R1
RESTORE R0
                                                                                               MOV
                                                                                                               (SP)+RS
   4074
                                                                                              MOV
                                                                                                               (SP)+R3
                                                                                              MOV
                                                                                                               (SP)+R2
    4076
                                                                                              MOV
                                                                                                               (SP)+R1
   4077
                                                                                                               (SP)+R0
               017126' 000207
    4078
                                                                                              RIS
                                                                                                                                                              : AND RETURN
    4079
```

```
GLOBAL AREAS
                MACY11 30(1046) 11-JAN-83 10:13 PAGE 82
11-JAN-83 09:29 16 BIT CRC CALCULA
CZUAAA.P11
                                                 16 BIT CAC CALCULATOR
  4080
  4081
                                                  .SBTTL HEXIDECIMAL CONVERTER FOR DEFAULT PHYSICAL ADDRESS
  4082
4083
  4084
  4085
                                                           SUBROUTINE - HEXDPA
  4086
  4087
                                                           THIS SUBROUTINE LOADS DEFADR WITH THE ASCII HEX VALUE
  4088
                                                           FOR THE DEFAULT PHYSICAL ADDRESS DPA.
  4089
  4090
                                                           INPUTS:
                                                                               NONE
  4091
  4092
                                                           IMPLICIT
  4093
                                                           INPUTS:
                                                                               DPA = DEFAULT PHYSICAL ADDRESS
  4094
  4095
                                                           OUTPUTS:
                                                                               DEFADR = ASCII HEX VALUE FOR DPA
  4096
  4097
                                                           CALLING SEQUENCE:
  4098
                                                                     JSR PC.HEXDPA
  4099
  4100
                                                  4101
  4102
4103
         0171301
                                                 HEXDPA::
         017130' 010046
017132' 010346
017134' 010546
                                                                     RQ,-(SP)
                                                           MOV
                                                                                                   ; SAVE RO
  4104
                                                           MOV
                                                                     R3,-(SP)
                                                                                                   ; SAVE R3
  4105
                                                                     R5,-(SP)
                                                           MOV
                                                                                                   : SAVE R5
  4106
         017136' 012700
017142' 012703
017146' 012705
                                                                                                  : DO LOOP = 6 BYTES
: POINT TO ASCII MESSAGE
: POINT TO DEFAULT PHYSICAL ADDR
  4107
                             000006
                                                           MOV
                                                                     #6.RO
                                                                     #DEFADR,R3
  4108
                             053033'
                                                           MOV
  4109
                             0527501
                                                           MOV
                                                                     #DPA,R5
  4110
        017152' 112537
017156' 004737
017162' 113723
017166' 004737
017172' 113723
017176' 105723
017200' 077014
                                                                                                  : LOAD BYTE FOR CONVERSION
  4111
                                                 10$:
                                                           MOVB
                             0527661
                                                                     (R5)+,HEXDAT
                                                                                                   CONVERT HIGH NIBBLE
                             0172121
                                                                     PC, HEXH
  4112
                                                           JSR
                                                                                                   ; LOAD INTO ASCII MESSAGE
                             0527671
  4113
                                                           MOVB
                                                                     HEXVAL, (R3)+
                                                                                                  CONVERT LOW NIBBLE
LOAD INTO ASCII MESSAGE
SKIP USER HYPHEN IN MESSAGE
LOOP TIL ALL 6 BYTES ARE DONE
  4114
                             0172501
                                                           JSR
                                                                     PC, HEXL
  4115
                             0527671
                                                           MOVB
                                                                     HEXVAL, (R3)+
  4116
                                                           TSTB
                                                                     (R3)+
  4117
                                                           SOB
                                                                     RO.10$
  4118
                                                                                                  : RESTORE R5
  4119 017202° 012605
4120 017204° 012603
4121 017206° 012600
                                                                     (SP) + R5
                                                           MOV
                                                                                                  RESTORE RO
                                                           MOV
                                                                     (SP)+R3
                                                           MOV
                                                                     (SP)+RO
  4122 017210 000207
                                                           RTS
                                                                     PC
                                                                                                   : AND RETURN
```

| | 8 7 |
|--|--|
| GLOBAL AREAS MACY11 30(1046) 11- CZUAAA.P11 11-JAN-83 09:29 | JAN-83 10:13 PAGE 83 HEXIDECIMAL CONVERTER FOR DEFAULT PHYSICAL ADDRESS |
| 4123 4124 4125 4126 4127 4128 4129 4130 4131 4132 4133 4134 4135 4136 4137 | SUBROUTINE - HEXH THIS SUBROUTINE LOADS HEXVAL WITH THE ASCII HEX VALUE FOR THE HIGH NIBBLE IN HEXDAT INPUTS: NONE IMPLICIT INPUTS: HEYDAT = BYTE TO BE CONVERTED OUTPUTS: HEXVAL = ASCII HEX VALUE FOR THE HIGH NIBBLE CALLING SEQUENCE: |
| 4140 4141 4142 4143 017212' 4144 017212' 010146 4145 4146 017214' 013701 052766' 4147 017220' 042701 177417 4148 4149 017224' 006201 4150 017230' 006201 4151 017230' 006201 4152 017232' 006201 4153 4154 017234' 062701 053057' 4155 017240' 111137 052767' 4156 | HEXH:: MOV R1,-(SP) ; SAVE R1 MOV HEXDAT,R1 ; LOAD DATA FOR CONVERSION BIC #177417,R1 ; MASK HIGH NIBBLE ASR R1 ASR R1 ASR R1 ASR R1 ASR R1 ASR R1 ADD #HEXTBL,R1 ; GET ANDEX INTO HEYTBL MOVB (R1), HEXVAL ; AND LOAD HEXVAL |
| 4157 017244' 012601 4158 017246' 000207 | MOV (SP)+,R1 ; RESTORE R1 RTS PC ; AND RETURN |

| GLOBAL AREAS MACY11 30(1046) CZUAAA.P11 11-JAN-83 09:29 | 11-JAN-83 10:13 PAGE 8 HEXIDECIMAL CONVE | 84 ERTER FOR DEFAULT PHYSICA | L ADDRESS |
|--|--|--|--|
| 4159 4160 4161 4162 4163 4164 4165 4166 4167 4168 4169 4170 4171 4172 4173 4176 | THIS SUBF FOR THE I INPUTS: IMPLICIT INPUTS: OUTPUTS: | NE - HEXL ROUTINE LOADS HEXVAL WITH LOW NIBBLE IN HEXDAT NONE HEXDAT = BYTE TO HEXVAL = ASCII HE SEQUENCE: JSR PC, HEXL | |
| 4177 4178 4179 017250' 4180 017250' 010146 4181 4182 017252' 013701 052766' 4183 017256' 042701 177760 4184 4185 017262' 062701 053057' 4186 017266' 111137 052767' 4187 4188 017272' 012601 4189 017274' 000207 | MOV BIC ADD MOVB | HEXDAT,R1 #177760,R1 #HEXTBL,R1 (R1),HEXVAL (SP)+,R1 | SAVE R1 LOAD DATA FOR CONVERSION MASK LOW NIBBLE GET INDEX INTO HEXTBL AND LOAD HEXVAL RESTORE R1 AND RETURN |

M

| GLOBAL CZUAAA. | | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN | | | 85 IVERTER FOR DEFAULT | PHYSICAL ADDRESS | | |
|--|-------------------------------|----------------------------|-------------------|--------|---------|----------------|---------------------------|---|-----------|--------------------|
| 4190 4191 4192 | | | | | .SBTTL | TURN ON | THE CLOCK | | | |
| 4193 4194 4195 4196 4197 | | | | | THIS R | DUTINE T | URNS ON THE CLOCK | | | ••• |
| 4198 4199 4200 4201 | 017276' 017276' | 012700 | 000240 | | TIMON:: | SETPRI | #PRI05 | ;SET PROCESSOR PRIORITY | MOV | #PR105,R0 |
| 4201 4202 4203 4204 4205 4206 | 017302' 017304' 017312' | 104441 012777 000207 | 000100 | 160762 | | MOV | #IE, aclkcsr PC | ;ENABLE CLOCK INTERRUPTS | TRAP S | C\$SPRI |
| 4207 4208 4209 | | | | | THIS R | OUTINE T | URNS THE CLOCK OFF | · • • • • • • • • • • • • • • • • • • • | | **** |
| 4210 4211 4212 4213 4214 | 017314' 017320' 017320' | 012700 | 160/5く 000340 | | TIMOFF: | :CLR SETPRI | aclkcsr #PRIO7 | CLEAR INTERRUPT ENABLE ; PUT PRIORITY BACK UP | MOV | #PR1 0 7.RO |
| 4215 4216 | 017324' 017326' | 104441 | | | | RTS | PC | | TRAP | C\$SPRI |

| GLOBAL AREAS MACY11 30 CZUAAA.P11 11-JAN-83 (| 0(1046) 11-JAN- 09:29 | -83 10:13 PAGE CHECK FOR DONE | | |
|--|--|--|--|---|
| 4217 4218 4219 4220 4221 4222 4223 4224 4225 4226 4227 4228 4228 4230 4231 4232 4233 4234 4235 4238 4239 4240 017330°004737 4241 017334°032777 | | FUNCTIONAL DES ROUTINE INPUTS: NONE IMPLICIT INPUT OUTPUTS: C BIT C BIT SUBORDINATE RO | E TO WAIT FOR THE 'DONE I S: METER SET IN PSW IF 'DNI' NOT CLEAR IN PSW IF 'DNI' S OUTINES USED: TIMON, TIMO DE EFFECTS: PSW CHANGED, | SET ET FF LINE CLOCK INTERRUPTS ARE ENABLED TICKS TO WAIT FOR IN>METER |
| 4242 017342 001010 4243 017344' 4244 017344' 104422 4245 017346' 005737 (4246 017352' 001370 4247 017354' 004737 (4248 017360' 000261 4249 017362' 000403 | 017276° 004000 160774 000332° 017314° | CHKDNI::JSR 10\$: BIT BNE BREAK TST BNE JSR SEC BR 20\$: JSR CLC 30\$: RTS | PC,TIMON WDNI, aPCSRO 20\$ METER 10\$ PC,TIMOFF 30\$ PC,TIMOFF | :TURN ON THE LINE CLOCK :IS 'DNI' SET? :YES :RETURN TO THE DRS FOR A MOMENT TRAP (\$BRK :HAS THE TIME EXPIRED? :NO, KEEP WAITING :TURN THE CLOCK OFF :INDICATE 'DNI' DID NOT SET :LEAVE :STOP THE CLOCK :INDICATE 'DNI' SET |

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GLOBAL AREAS
                     MACY11 30(1046) 11-JAN-83 10:13 PAGE 87
CZUAAA.P11
                   11-JAN-83 09:29
                                                       CLEAR DONE INTERRUPT
  425567
425567
42559
42661
42664
42667
4277
4277
4277
4277
                                                        .SBTTL CLEAR DONE INTERRUPT
                                                        FUNCTIONAL DESCRIPTION:
                                                                  ROUTINE TO CLEAR THE 'DNI' BIT IN PCSRO
                                                        INPUTS: NONE
                                                        :IMPLICIT INPUTS: PCSRO
                                                        OUTPUTS: C BIT SET IN PCSW IF 'DNI' WILL NOT CLEAR
C BIT CLEAR IN PSW IF 'DNI' CLEARED SUCCESFULLY
                                                        SUBORDINATE ROUTINES CALLED: NONE
                                                        FUNCTIONAL SIDE EFFECTS: PSW CHANGED
                                                       CALLING SEQUENCE: JSR PC, CLRDNI
  4275 017374' 012777 004000 160734 CLRDNI::MOV 4276 017402' 032777 004000 160726 BIT 4277 017410' 001402 BEQ 4278 017412' 000261 SEC 4279 017414' 000401 BR 4280 017416' 000241 10$: CLC
                                                                              #DNI, aPCSRO
                                                                                                               ; CLEAR 'DNI' BIT
                                                                                                               ;DID IS CLEAR?
                                                                              #DNI, aPCSRO
                                                                              10$
                                                                                                               ; YES
                                                                                                               :NO, INDICATE ERROR
                                                                              20$
                                                                                                               ; YES, INDICATE SUCCESS
  4281 017420 000207
                                                       205:
                                                                  RTS
                                                                              P(
```

```
GLOBAL AREAS
                 MACY11 30(1046) 11-JAN-83 10:13 PAGE 88
CZUAAA.P11
               11-JAN-83 09:29
                                           CLEAR OUTSTANDING INTERRUPT BITS
  4282
4283
                                           .SBTTL CLEAR OUTSTANDING INTERRUPT BITS
  4284
4285
  4286
4287
                                            FUNCTIONAL DESCRIPTION:
                                                   ROUTINE TO CLEAR ALL INTERRUPT BITS IN POSRO
  4288
  4289
4290
4291
4292
4293
                                            INPUTS: NONE
                                            IMPLICIT INPUTS: NONE
                                            OUTPUTS: C BIT SET IF UNABLE TO CLEAR A INTERRUPT 31T
  4294
                                                      C BIT CLEARED IF SUCCESSFUL
  4295
  4296
4297
                                            SUBORDINATE ROUTINES USED: NONE
  4298
                                            FUNCTIONAL SIDE EFFECTS: ANY OUTSTANDING INTERRUPT IS CLEARED
  4299
  4300
                                            CALLING SEQUENCE: JSR PC_CLRINT
  4301
  4302
  4303
                                                                                      :IS 'SERI' BIT SET?
  4304
        017422' 032777
                         100000 160706 CLRINT: BIT
                                                            #SERI, aPCSRO
        017430' 001413
  4305
                                                   BEQ
                                                            10$
                                                                                      : NC
  4306
        0174321
                 012777
                          100000
                                  160676
                                                            #SERI . aPCSRO
                                                                                      :WRITE ONE TO CLEAR 'SERI'
                                                   MOV
        017440' 032777
  4307
                          100000
                                  160670
                                                                                      ;DID IT CLEAR?
                                                   BIT
                                                            #SERI, aPCSRO
  4308
        0174461
                 001404
                                                   BEQ
                                                            10$
                                                                                      :YES
  4309
        0174501
                                                            #SSERI, BITNAM
                 012737
                         000734' 060310'
                                                   MOV
                                                                                      NO GET POINTER TO BIT NAME STRING
  4310
        0174561
                 000531
                                                   BR
                                                            70$
                                                                                      :LEAVE
  4311
        0174601
                032777
                          040000 160650 10$:
                                                   BIT
                                                            #PCEI, aPCSRO
                                                                                      IS 'PCEI' BIT SET?
  4312
        017466*
                 001413
                                                   BEQ
                                                            20$
                                                                                      :NO
                                                                                      YES, WRITE ONE TO CLEAR 'PCEI'; DID IT CLEAR?
  4313
        0174701
                 012777
                                                            WPCE1, aPCSRO
                          040000 160640
                                                   MOV
  4314
        017476
                 032777
                         040000
                                                            #PCEI, aPCSRO
                                  160632
                                                   BIT
  4315
        0175041
                 001404
                                                   BEQ
                                                            20$
                                                                                      :YES
  4316
        0175061
                 012737
                          000745' 000310'
                                                            #SPCEI, BITNAM
                                                   MOV
                                                                                      :NO, GET POINTER TO BIT NAME STRING
  4317
        0175141
                 000512
                                                   BR
                                                            70$
                                                                                      :LEAVE
        017516*
                                                                                      IIS 'RXI' BIT SET?
  4318
                 032777
                          020000
                                                            WRXI, aPCSRO
                                  160612 20$:
                                                   BIT
  4319
        0175241
                 001413
                                                   BEO
                                                            30$
                                                                                      : NO
        017526
  4320
                                                                                      :YES, WRITE ONE TO CLEAR 'RXI'
                 012777
                          020000
                                  160602
                                                   MOV
                                                            WRXI, aPCSRO
  4321
        017534' 032777
                          020000
                                  160574
                                                   BIT
                                                            #RXI, aPCSRO
                                                                                      :DID IT CLEAR?
  4322
        0175421
                 001404
                                                   BEQ
                                                            30$
                                                                                      :YES
        017544
  4323
                 012737
                          000756' 000310'
                                                   MOV
                                                            #SRXI,BITNAM
                                                                                      NO. GET POINTER TO BIT NAME STRING
        0175521
  4324
                 000473
                                                   BR
                                                            70$
                                                                                      :LEAVE
  4325
        017554' 032777
                                                                                      LIS 'TXI' BIT SET?
                          010000
                                 160554 30$:
                                                   BIT
                                                            #TXI, aPCSRO
  4326
        0175621
                                                   BEQ
                 001413
                                                            40$
                                                                                      : NO
  4327
        0175641
                 012777
                                                                                      :YES, WRITE ONE TO CLEAR 'TXI'
                          010000
                                                            #TXI, aPCSRO
                                  160544
                                                   MOV
        0175721
  4328
                 032777
                          010000
                                                   BIT
                                                                                      :DID IT CLEAR?
                                  160536
                                                            #TXI, aPCSRO
        017600' 001404
  4329
                                                   BEQ
                                                            405
                                                                                      :YES
  4330
        0176021
                 012737
                          000766' 000310'
                                                            #STX1,BITNAM
                                                   MOV
                                                                                      :NO, GET POINTER TO BIT NAME STRING
        017610' 000454
  4331
                                                            70$
                                                   BR
                                                                                      :LEAVE
        0176121
                                                            #DNI, aPCSRO
                 032777
                                                   BIT
                                                                                      IS 'DNI' BIT SET?
  4332
                          004000
                                  160516 40$:
        017620 001413
  4333
                                                   BEQ
                                                            50$
                                                                                      : NO
        0176221
                                                                                      YES, WRITE ONE TO CLEAR 'DNI'
  4334
                 012777
                          004000
                                  160506
                                                   MOV
                                                            #DNI, apcsro
        0176301
                 032777
  4335
                          004000 160500
                                                   BIT
                                                            #DNI, apcsro
                                                                                      DID IT CLEAR?
  4336
        0176361
                 001404
                                                            50$
                                                   BEQ
  4337
        0176401
                012737
                          000776' 000310'
                                                            #SDNI BITNAM
                                                                                      INO. GET POINTER TO BIT NAME STRING
                                                   MOV
```

| GLOBAL AREAS CZUAAA.P11 | MA(Y11 11-JAN-83 | 30(1046) 1 09:29 | 1-JAN-83 1 CLEAR | | 89 NG INTERRUPT BITS | | SE |
|---|--|---|-------------------------------------|--|---|--|------------|
| 4339 01765 4340 01765 4341 01766 4342 01766 4343 01767 4344 01776 4345 01777 4348 01777 4349 01777 4350 01777 4351 01777 4352 01777 4353 01777 4355 01777 | 0' 012777 6' 032777 4' 001404 6' 012737 4' 000416 6' 032777 4' 001426 6' 012777 2' 001417 4' 012737 2' 013746 6' 012746 | 002000 16 002000 16 001006° 00 000400 16 | 0422 60 \$: 0412 0404 | BR BEQ MOV BIT BEQ MOV BR BEQ MOV BIT BEQ MOV PRINTF | 70\$ #RCEI, aPCSRC 60\$ #RCEI, aPCSRO #RCEI, aPCSRO 60\$ #\$RCEI, BITNAM 70\$ #FATI, aPCSRO #FATI, aPCSRO #FATI, aPCSRO #FATI, aPCSRO #FATI, aPCSRO #FATI, BITNAM #FORM62, BITNAM | LEAVE IS 'RCEI' BIT SET? NO WRITE ONE TO CLEAR 'RCEI' DID IT CLEAR? YES NO, GET POINTER TO BIT NAME STRING LEAVE IS 'FATI' BIT SET? NO WRITE ONE TO CLEAR 'FATI' DID IS CLEAR? YES NO, GET POINTER TO BIT NAME STRING PRINT ERROR MESSAGE MOV BITNAM,-(SP) MOV #FORM62,-(SP) MOV #2,-(SP) MOV SP.RO | ') |
| 4356 01775 4357 01776 4358 01776 4359 01776 4360 01777 4361 01777 4362 01777 | 62. 062706 6. 000261 0. 000401 2. 000241 | 000006 | 80\$: 100 \$: | SEC BR CLC RTS | 100 \$ PC | MOV SP,RO TRAP (\$PNTF ADD #6,SP ;INDICATE ERROR TO CALLER ;LEAVE ;INDICATE SUCCESS | |

| GLOBAL AREAS CZUAAA.P11 | S MA(Y11 11-JAN-83 | 30(1046) 09:29 | | 3 PAGE | | |
|--|--|-------------------|--|---|--|--|
| 4364 4365 4366 4368 4368 4369 4371 4371 4375 4377 4378 4378 4378 4381 4383 4384 4385 | | | FUNCTION INPUTS: IMPLICATION INPUTS SUBORDA FUNCTION | DNAL DESCROUTINE : NONE IT INPUT: S: C BIT C BIT INATE ROO DNAL SIDE | S: PCSR1 SET IN PSW IF TIMEOUT W CLEAR IN PSW IF MICROCO UTINES CALLED: TIMON, TI | MOFF LINE CLOCK INTERRUPTS ARE ENABLED |
| 4386 017 4387 0200 4388 0200 4389 0200 4391 0200 4391 0200 4392 7200 4393 0200 4394 0200 4395 0200 4396 0200 4397 0200 4398 0200 4399 | 776' 012737 004' 004737 010' 122777 016' 001410 020' 020' 104422 022' 005737 026' 001370 030' 004737 034' 000261 036' 009403 040' 004737 044' 000241 | 0172761 | CHKMON:: 10\$: 20\$: 30\$: | :MOV JSR CMPB BEQ BREAK TST BNE JSR SEC BR JSR CLC | #1 * SECOND, METER PC, TIMON #INMON, aPCSR1 20\$ METER 10\$ PC, TIMOFF 30\$ PC, TIMOFF | TIMEOUT PERIOD IS 1 SECOND TURN ON THE CLOCK IS THE MICROCODE IN THE MICROMONITOR? YES RETURN TO DRS FOR A MOMENT TRAP (\$BRK HAS THE TIMER EXPIRED? NOT YET, KEEP CHECKING MICROCODE TIMER HAS EXPIRED TURN OFF THE TIMER INDICATE ERROR TO CALLER LEAVE STOP THE CLOCK INDICATE TO CALLER MICROCODE IS IN MICROMONITOR |

| GLOBAL AREA | S MACY11 11-JAN-83 | 30(1046) 09:29 | 11-JAN | -83 10: CHECK I | 13 PAGE NTERRUPT | 91 ERROR BITS |
|--|---|----------------------------|------------------------------|---|---|--|
| 4403 4403 4405 4405 4406 4409 4410 4411 4413 4415 4417 4418 4419 4421 4423 | | | | FUNCTI INPUTS IMPLIC OUTPUT SUBORD FUNCTI | ONAL DES ROUTINE : NONE IT INPUT S: C BIT C BIT ERRI INATE RO | CRIPTION: TO CHEC: FOR ANY T11 INTERRUPT ERROR BITS IN PCSRO S: PCSRO SET IN PSW IF AN INTERRUPT BIT IS SET CLEAR IN NO INTERRUPT BITS ARE SET NT' CONTAINS COPY OF PCSRO UTINES CALLED: NONE E EFFECTS: ANY INTERRUPT BIT SET IS CLEARED CE: JSR PC, CHKINT |
| 4424 020 4425 020 4426 020 4427 020 4428 020 4429 020 4430 020 | 050' 017737 056' 032737 064' 001405 066' 012777 074' 000261 076' 000401 100' 000241 | 160262 170000 170000 | 000666° 000666° 160242 | 10\$: 20\$: | :MOV BIT BEQ MOV SEC BR (LC RTS | apcsro, errint ; GET PCSHO CONTENTS #NPRERR!NXMERR!UNIERR!PARERR, ERRINT ; ANY INTERRUPT ERRORS SFT? 10\$ #NPRERR!NXMERR!UNIERR!PARERR, apcsro ; CLEAR ANY ERROR INTERRUPT ; INDICATE ERROR P(|

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MACY11 30(1046) 11-JAN-83 10:13 PAGE 92
GLOBAL AREAS
               11-JAN-83 09:29 CHECK INTERRUPT ERROR BITS
CZUAAA.P11
 4433
4433
4435
4436
4437
4438
                                             .SBTTL RESET UNA
                                             FUNCTIONAL DESCRIPTION:
  4440
                                                     ROUTINE TO RESET DEUNA
  4441
  4442
                                             :INPUTS: NONE
  4444
                                             :IMPLICIT INPUTS: NONE
  4445
  4446
                                             OUTPUTS: C BIT SET IF ERROR OCCURRED
  4447
                                                       C BIT CLEARED IF SUCCESS
  4448
  4449
                                             SUBORDINATE ROUTINES USED: CHKDNI, CLRDNI
  4450
  4451
                                             FUNCTIONAL SIDE EFFECTS: PSW CHANGED, LINE CLOCK IS TURNED ON, OPERATIONAL
  4452
                                             MICROCODE IS STARTED.
  4453
  4454
                                             CALLING SEQUENCE: JSR PC, REUNA
  4455
                                              4456
  4457
                                                                                         :RESET DEUNA BACK TO OPERATIONAL MICRO :PUT SOME TIME ON THE METER :WAIT FOR 'DNI'
        020104' 012777 000040 160224 REUNA:: MOV 020112' 012737 000770 000332' MOV
                                                              #RSET, aPCSRO
#10*SECOND, METER
  4458
  4459
  4460
        020120 004777
                          0173301
                                                      JSR
                                                              PC, CHKDNI
  4461
        0201241 103035
                                                              10$
                                                                                         ;OK
                                                     BCC
                                                                                         ERROR DNI NOT SET AFTER RESET!
  4462
  4464
                                                                                         SETUP ERROR MESSAGE
        020126' 012737
                           000776' 000310'
                                                     MOV
                                                              #SDNI,BITNAM
                          001275' 000312'
001340' 000314'
         0201341 012737
                                                              #$NSET,BITSTA
                                                     MOV
  4465
4466
4467
4468
         0201421 012737
                                                     MOV
                                                              #SAFTER, PWHEN
                          000304
        02015)' 005037
                                                     CLR
                                                               CSRNUM
        0201541
                                                     PRINTE WFORM9, CSRNUM, BITNAM, BITSTA, PWHEN
        MOV
                                                                                                                             PWHEN, - (SP)
                           000314
  4469
4470
4471
4472
                                                                                                                             BITSTA, - (SP)
                           0003121
                                                                                                                    MOV
        020164 013746
                                                                                                                    MOV
                                                                                                                             BITNAM, - (SP)
                           0003101
        020170' 013746
020174' 012746
020200' 012746
                                                                                                                             (SRNUM, - (SP)
                                                                                                                    MOV
                           000304
                           0047321
                                                                                                                    MOV
                                                                                                                             WFORM9, - (SP)
                                                                                                                             #5,-(sP)
                                                                                                                    MOV
                           000005
        020204' 010600
020206' 104417
020210' 062706
                                                                                                                             SP,RO
  4474
                                                                                                                    MOV
                                                                                                                    TRAP
                                                                                                                             CSPNTF
                                                                                                                    ADD
                                                                                                                             #14,SP
                           000014
  4476
        020214' 000261
  4477
                                                      SEC
                                                                                         :INDICATE ERROR
        020216' 000414
020220' 004737
  4478
                                                      BR
                           0173741
                                            105:
                                                               PC, CLRDNI
                                                                                         :GO CLEAR DNI
  4479
                                                      JSR
        020224 103011
                                                               20$
                                                                                          :OK
  4480
                                                      BCC
        050556,
                                                      PRINTE #FORM8
  4481
                                                                                                                             #FORM8, - (SP)
        020226° 012746
020232° 012746
                                                                                                                    MOV
  4482
                           0046501
                                                                                                                             #1,-(SP)
SP,RO
                                                                                                                    MOV
                           000001
  4483
         0202361 010600
                                                                                                                    MOV
  4484
                                                                                                                    TRAP
                                                                                                                             CSPNTF
         020240' 104417
  4485
                                                                                                                             #4,5P
                                                                                                                    ADD
         0202421 062706
  4486
                           900004
         020246' 000261
                                                      SE(
  4487
```

GLOBAL AREAS MACY11 30(1046) 11-JAN-83 10:13 PAGE 93 CZUAAA.P11 11-JAN-83 09:29 RESET UNA

4488 020250 000207

20\$: RTS PC

H/ C2

| UAAA. 4489 4490 | AREAS MACY1 P11 11-JAN- | 1 30(1046) 83 09:29 | 11-JAN | -83 10: RESET U | NA | 94 CROMODULE | |
|---|---|------------------------------|--------------------|--------------------|-----------------------------|---|---|
| 4491 4492 4493 4494 4495 4496 | | | | THIS S MICROC | | | DULE FOR TESTS THAT REQUIRE CUSTOM |
| 4498 4499 4500 4501 4502 4503 4504 | 020252' 01273 020260' 00473 020264' 10301 020266' 020266' 01374 020272' 01274 020276' 01274 020302' 01060 020304' 10441 | 000320° 001515° 000002 | 000320 | LODMIC: | MOV JSR BCC PRINTF | #MICRO,MICMOD PC,REUNA 5\$ #UNLOD,MICMOD | ;POINT TO MICRO MODULE NAME ;GO START OPERATION MICROCODE ;OK ;PRINT ERROR MESSAGE MOV MICMOD,-(S MOV MUNLOD,-(S MOV M2,-(SP) MOV SP,RO TRAP C\$PNTF |
| 4506 4507 4508 4509 4510 4511 4512 4513 4514 | 020306' 06270 020312' 00026 020314' 00013 020320' 02372 020326' 00100 | 1 7 021106' 7 000326' | 000101 | 5\$: | SEC JMP CMP BNE | 200\$ MICRO.#'A 10\$ | ;INDICATE ERROR OCCURRED;LEAVE;LOAD MICROCODE MODULE A? |
| 4514 4515 4516 4517 | 020330' 01373 020336' 01273 020344' 00047 | 7 000000G | 000614° 000616° | | MOV MOV BR | MICASZ,UDBB #MICROA,UDBB+2 70\$ | :YES :SIZE OF MODULE A :BASE ADDRESS OF MODULE A |
| 517 518 4519 4520 521 | 020346' 02372 020354' 00100 | 7 000326 ° | 000102 | 10\$: | (MP BNE | MICRO,#'B 20\$ | ;LOAD MICROCODE MODULE B? |
| 522 | 020356' 01373 020364' 01273 020372' 00046 | 7 000000G | 200614' 000616' | | MOV MOV BR | MICBSZ,UDBB #MICROB,UDBB+2 70\$ | :YES :SIZE OF MODULE B :BASE ADDRESS OF MODULE B |
| 525 526 | 020374' 02372 020402' 00100 | 7 000326 ' | 000103 | 20\$: | CMP BNE | MICRO,#°C 30\$ | ; NO |
| 527 528 529 530 | 020404' 01373 020412' 01273 020420' 00044 | 7 0000ú0G | 000614' 000616' | | MOV MOV BR | MICCSZ,UDBB #MICROC,UDBB+2 70\$ | :YES :SIZE OF MODULE C :BASE ADDRESS OF MODULE C |
| 532 | 020422' 02372 020430' 00100 | 7 000326 ' | 000104 | 30\$: | CMP BNE | MICRO,#°D 40\$ | :LOAD MICROCODE MODULE D? |
| 525 525 527 527 533 533 533 533 533 533 533 533 533 53 | 020432° 01373 020440° 01273 020446° 00043 | 7 000000G 7 000000G | 000614° 000616° | | MOV MOV BR | MICDSZ,UDBB #MICROD,UDBB+2 70\$ | :YES :SIZE OF MODULE D :BASE ADDRESS OF MODULE D |
| 539 | 020450' 02372 020456' 00100 | 7 000326 ' 7 | 000105 | 40\$: | CMP BNE | MICRO,#ºE 50\$ | ;LOAD MICROCODE MODULE E? |
| 4542 4543 4544 | 020460° 01373 020466° 01273 020474° 00042 | 7 000000G | 000614° 000616° | | MOV MOV BR | MICESZ,UDBB #MICROE,UDBB+2 70\$ | :YES :SIZE OF MODULE E :BASE ADDRESS OF MODULE E |

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| GLOBAL CZUAAA. | AREAS P11 1 | MACY11 I-JAN-83 | 30(1046) 09:29 | 11-JAN | -83 10: LOAD MI | 13 PAGE CROMODULI | 96 E | | | J |
|--|--|--------------------------------------|------------------------------|------------------------------|--------------------|--------------------------|---|---|---------------------------|--|
| 4601 4602 4603 4604 | 020740' 020742' 020746' 020750' | 062706 | 000006 | | 90\$: | SEC BR | 200\$ | ;INDICATE ERROR | TRAP ADD | C\$PNTF #6,SP |
| 4606 4607 4608 4609 | 020750' 020752' 020752' 020760' 020766' 020772' | 012777 012737 004737 103014 | 000002 000770 017330 | 157356 | 703 : | MOV MOV JSR BCC | #GETCMD.@PCSRO #10*SECOND.METER PC.CHKDNI 100\$ | :ISSUE <get command=""> POR :SETUP TIMER :WAIT FOR 'DNI' :OK</get> | RT COMMA | ND |
| 46000000000000000000000000000000000000 | 020774' 020774' 021000' 021004' 021010' | 012746 012746 010600 | 000320° 001515° 000002 | | | PRINTF | #UNLOD,MICMOD | ¿ERROR 'DNI' NOT SET: ;PRINT MESSAGE | MOV MOV MOV MOV | MICMOD,-(SP) #UNLOD,-(SP) #2,-(SP) SP,R0 C\$PNTF |
| 4616 4617 4618 4619 4620 | 021012' 021014' 021020' 021022' 021024' | 104417 | 000006 | | 100\$: | SEC BR | 200\$ | ;INDICATE ERROR | TRAP ADD | C\$PNTF #6,SP |
| 4621 4622 4623 4624 4625 | 021030' 021032' 021032' | 105014 | 017374' | | | JSR BCC PRINTF | PC, CLRDNI 110\$ #UNLOD, MICMOD | GO CLEAR 'DNI' OK ERROR 'DNI' NOT CLEAR PRINT ERROR MESSAGE | MOV | MICMOD,-(SP) |
| 4626 4627 4628 4629 | 021036' 021042' 021046' 021050' | 012746 012746 010600 104417 | 001515* | | | | | | MOV MOV MOV TRAP | WUNLOD,-(SP) W2,-(SP) SP,RO (SPNTF |
| 4630 4631 4632 4633 | 0210621 | 062706 000261 000412 | 000006 | | 110\$: | SEC BR | 200\$ | ;INDICATE ERROR | ADD | #6,SP |
| 4634 4635 4636 4637 | 021062' 021070' 021076' 021104' | 012737 | 000001 010000 000002 | 000604° 000606° 157232 | | MOV MOV CLC | #LASM,PCBB #WCSADR+ <wcssiz 2="">,PCBB #GETCMD,@PCSRO</wcssiz> | :LOAD PCBB WITH 'LOAD A >2 :SIARTING MICROADDRES :ISSUE <get command=""> PO :INDICATE SUCCESS</get> | ND START S RT COMMA | NO |
| 4639 4640 | 021105' | 000207 | | | 200\$: | RTS | PC | ; RETURN | | |

```
MISCELLANEOUS SECTIONS MACY11 30(1046) 11-JAN-83 10:13 PAGE 97 (ZUAAA.P11 11-JAN-83 09:29 LOAD MICROMODULE
                                                            .TITLE MISCELLANEOUS SECTIONS .SBTTL REPORT CODING SECTION
   4641
   4642
          021110'
021110'
021110'
021110' 000167
021112' 000000
021114'
021114'
                                                                        BGNRPT
   4644
                                                                                                                                               L$RPT::
   4645
                                                                                    RPT
                                                                        EXIT
   4646
4647
4648
                                                                                                                                                            .WORD
                                                                                                                                                                        JSJMP
                                                                                                                                                                       L10064-2-.
                                                                                                                                                            .WORD
                                                                        ENDRPT
   4649
                                                                                                                                               110064:
   4650
          021114' 104425
                                                                                                                                                           TRAP
                                                                                                                                                                        CSRPT
   4651
4652
4653
                                                            .SBTTL PROTECTION TABLE
   4654
   4655
                                                            THIS TABLE IS USED BY THE RUNTIME SERVICES TO PROTECT THE LOAD MEDIA.
   4656
   4657
   4658
   4659
   4660
           021116'
                                                                        BGNPROT
   4661
           0211161
                                                                                                                                               L$PROT::
  4662
4663 021116' 177777
4664 021120' 177777
4665 021122' 177777
                                                                                                OFFSET INTO P-TABLE FOR CSR ADDRESS OFFSET INTO P-TABLE FOR MASSBUS ADDRESS
                                                                        -1
                                                                        -1
                                                                                                OFFSET INTO P-TABLE FOR DRIVE NUMBER
   4666
   4667
           0211241
                                                                        ENDPROT
   4668
```

| MISCELL CZUAAA. | ANEOUS P11 | SECTIONS 11-JAN-83 | MACY11 09:29 | 30(1046) | 11-JAN- INITIAL | -83 10:1 12E SECT | 3 PAGE | 98 | | | | 310 |
|--|--|----------------------------------|-------------------|--------------------|--------------------|-----------------------|-------------------------------|-------------------------|--|--------------|------------------------|---|
| 4669 4670 | | | | | .SBTTL | INITIAL | ZE SECTI | ON | | | | |
| 4671 4672 4673 4674 | | | | | THE IN | NITIALIZI E BEGINN | SECTION ING OF EA | CONTAINS THE CALL PASS. | ODING THAT IS | PER: ORMED | | |
| 4675 4676 4677 4678 4679 | 021124 021124 | | | | | BGNINIT | | | | LSINIT: | : | |
| 4680 4681 4682 4683 | 021124 021124 021130 | 1 012700 | 000036 | | | READEF | WEF.CONT | | ;WAS A CONTI | | ENTERED MOV TRAP | #EF.CONTINUE,RO |
| 4684 4685 4686 | 021132 021132 | 104447 | | | | BCOMPLE | i E | 30\$ | ; YES, LEAVE | INIT CODE | BCS | 30\$ |
| 4686 4687 4688 4689 | 021134 021134 021140 | 1012700 104447 | J00034 | | | READEF | MEF.PWR | | ;WAS THERE A | POWER FAILU | | WEF.PWR,RO (SREFG |
| 4689 4690 | 021142 | 1 103551 | | | | BCOMPLE | TE | 30\$ | ; YES. LEAVE | INIT CODE | BCS | 30\$ |
| 4691 4692 4693 | 021144 021144 021150 | · 012700 · 104447 | 000035 | | | READEF | | | ;IS THIS A N | | MOV TRAP | WEF.NEW,RO (\$REFG |
| 4694 4695 | 021152 021152 | 103072 | | | | BNCOMPLI | TE | 10\$ | ; NO SKIP THE | NEW PASS T | IME STUFF BCC | 10 \$ |
| 4696 4697 | 021154 021154 021160 | · 012790 · 104447 | 000040 | | | READEF | WEF.STAR | 17 | ;IS THIS THE | VERY FIRST | | DUGH? #EF.START,RO CSREFG |
| 4698 4699 4700 | 021162 021162 | • | | | | BNCOMPLE | TE | 6\$ | ; NO SKIP THE | FIRST TIME | STUFF | 6\$ |
| 4701 4702 4703 | 021164 021172 | • 012737 | 000001 | 000672* | | MOV MEMORY | #1,FRSTI FRÉSIZ | M | SET THE FIR | | 5 | (SMEM |
| 4704 4705 4706 4707 | 021174 021200 021206 021214 | 010037 013737 062737 | 000322 | 000324° 000324° | | MOV ADD CLOCK | FRESIZ,F #2,FREME L,R1 | | SIZE OF FRE | EE MEMORY IN | FRESIZ | RO, FRESIZ |
| 4708 4709 4710 | 021220 021222 | 012700 104462 010001 | 000114 | | | D.COMD. F. | | •• | | | | #'L,RO (\$CLCK RO,R1 |
| 4711 4712 4713 | 021224 | 103411 | | | | BCOMPLE | | 1\$ | | | BCS | 1\$ |
| 47!3 4714 4715 4716 4717 4718 | 021226 021226 021232 021236 021240 | 012746 012746 010600 | 001566° 000001 | | | PRINTF | #NO(LK | | ;ERROR MESSA | GE | MOJ | #NOCLK,-(SP) #1,-(SP) SP,RO (\$PNIF #4,SP |
| 4719 4720 4721 | 021246 021250 021254 | 000504 012137 012102 | 000004 | | 1\$: | BR MOV MOV | 20\$ (R1)+,CL (R1)+,R2 | KCSR | CANNOT CONT LINE CLOCK GET CLOCK P | (SR | | |
| 4722 4723 4724 | 021262 | • 072227 • 010237 • 012137 | 000005 | | | ASH MOV MOV | #5,R2 R2,CLKBR (R1)+,CL | KVE (| ; VECTOR | | | |

| MISCELLANEOUS SECTIONS MACY11 30(1046) CZUAAA.P11 11-JAN-83 09:29 | 11-JAN-83 10:13 PAGE 99 INITIALIZE SECTION | S |
|---|---|--|
| 4725 021272' 012137 000302' 4726 021276' 4727 021276' 013746 000276' 4728 021302' 012746 021674' 4729 021306' 013746 000300' 4730 021312' 012746 000003 4731 021316' 104437 | MOV (R1)+,CLKFRE SETVEC CLKVEC,#CLKSRV,CLKBR | FREQUENCY ;SETUP CLOCK INTERRUPT VECTOR MOV (LKBR,-(SP) MOV #CLKSRV,-(SP) MOV (LKVEC,-(SP) MOV #3,-(SP) TRAP (\$5VEC |
| 4727 021276' 013746 000276' 4728 021302' 012746 021674' 4729 021306' 013746 000300' 4730 021312' 012746 000003 4731 021316' 104437 4732 021320' 062706 000010 4733 021324' 000402 4734 021326' 005037 000672' 4735 021332' 012737 177777 000330' 4736 021340' 005237 000330' 4737 021344' 0237'7 000330' 4738 021352' 003042 4739 021354' 4740 021354' 013700 000330' 4741 021360' 104442 | 10\$: INC UNIT | ; INDICATE NOT THE FIRST TIME THROUGH ; YES, INITIALIZE UNIT # ; SETUP FOR NEXT UNIT ; WE TESTED ALL AVAILABLE UNITS? ; YES, LEAVF ; GET P-TAB POINTER FOR THIS UNIT MOV UNIT, RO TRAP C\$GPHRD |
| 4742 021362' 010001 4743' 021364' 4744 021364' 103365 4745 021366' 012137 000266' 4746 021372' 012137 000270' 4747 021376' 012737 000240 000272' 4748 021404' 013737 000266' 000336' 4749 021412' 013737 000336' 000340' 4750 021420' 062737 000002 000340' 4751 021426' 013737 000340' 000342' 4752 021434' 062737 000002 000342' 4753 021442' 013737 000342' 000342' 4754 021450' 062737 000002 000344' 4755 021456' 000403 4756 021460' 005037 000672' | ADD #2.PCSR1 | ;THIS ONE IS NOT AVAILABLE BCC 10\$;SAVE CSR ;SAVE VECTOR ;SAVE PRIORITY ;PCSRO ;PCSR1 ;PCSR2 ;CLEAR FIRST TIME THROUGH FLAG |
| 4757 021464' 4758 021464' 104444 4759 021466' 4760 021466' 4761 021466' 4762 021466' 104411 4763 | DOCLN 30\$: ENDINIT | ; ABORT PASS TRAP C\$DCLN L10066: TRAP C\$INIT |
| 4760 021466' 4761 021466' 4762 021466' 104411 4763 4764 4765 4766 | .EVEN | |

| MISCELLA CZUAAA.1 | ANEOUS S P11 1 | ECTIONS 1-JAN-83 | F*(Y11 | 30(1046) | 11-JAN AUTODRO | -83 10: P SECTIO | 13 PAGE 100 N | | | 3 |
|--|---|--------------------------------------|--|---|----------------------------------|---------------------|--|---|-------------------|------------------------------------|
| 4768 4769 | | | | | .SBTTL | AUTODRO | P SECTION | | | |
| 4770 4771 | 021470' 021470' | | | | | BGNAUTO | | 1 6 4 1 7 0 - | | |
| 4772 | 0214701 | | | | | ENDAUTO | | L\$AUTO: | : | |
| 4773 4774 | 021470' 021470' | 104461 | | | | | | L10067: | TRAP | CSAUTO |
| 4775 4776 | | | | | .SBTTL | CLEANUP | CODING SECTION | | | |
| 4776 4777 4778 4779 4780 4781 | | | | | THE C | LEANUP (THE HAR | ODING SECTION CONTAINS T DWARE TESTS HAVE BEEN PE | HE CODING THAT IS PERFORE | MED | |
| 4782 4783 | 021472' | | | | BGNCLN | | | LSCLEAN | : : | |
| 4784 4785 | 021472° 021476° | 005737 001023 | 000664 | | | TST BNE | NEXMEM 20\$ | DOES PESRO EXIST? | • • | |
| 4786 4787 | 021500 | 012777 | 000040 | 156630 | | MOV | #RSET, aPCSRO | RESTORE DEUNA TO OPERA | TIONAL | |
| 4788 | 021506' 021514' 021520' 021522' 021522' | 012737 004737 103010 | 000770 017330 | 000332' | | MOV JSR BCC | #10*SECOND, METER PC, CHKDN1 10\$ | ;SETUP TIMER;DNI SET WHEN DONE | | |
| 4791 4792 4793 4794 | 021522' 021522' 021532' | 012746 012746 010600 | 021556' | | | PRINT | #CLNERR | ;ERROR | MOV MOV MOV | #(LNERR,-(SP) #1,-(SP) SP,R0 |
| 4795 4796 | 021534° 021536° | 104417 | 000004 | | | | | | TRAP ADD | (SPNTF #4,SP |
| 4797 4798 | 021542° 021546° | 004737 | 017374 | | 10 \$: 20 \$: | JSR JSR | PC,CLRDNI PC,TIMOFF | CLEAR DNI BIT TURN OFF THE LINE CLOC | | ;((|
| 4799 4800 4801 4802 | 021552° 021552° 021554° | 104432 000054 | | | | EXIT | CLN | | TRAP.WORD | CSEXIT L10070 |
| 4803 4804 4805 4806 4807 4808 4809 | 021556' 021564' 021572' 021600' 021606' 021614' 021622' | 047522 052503 042040 020107 | 040445 020122 051122 051125 042504 051040 047045 | 051105 041517 042165 047111 044526 051505 000 | CLNERR: | .ASC12 | /%N%AERROR OCCURRED DUR | RING DEVICE RESETAN/ | | |
| 4810 4811 | J J. L | 021630 | | | | .EVEN | | | | |
| 4812 4813 4814 | 021630° 021630° 021630° | 104412 | | | ENDCLN | | | L10070: | TRAP | (\$(LEAN |

| MISCELL CZUAAA. | ANEOUS S | ECTIONS 1-JAN-83 | MACY11 09:29 | 30(1046) | 11-JAN- DROP UN | -83 10: IT SECTI | :13 PAGE 101 | | | | | |
|--|---|----------------------------|-----------------|----------|--------------------|-------------------------------|---|----------------------------|------------------|--------------------|----------------|-----------------------------|
| 4815 4816 4817 4818 4819 | 021632' 021632' 021632' | | | | .SBTTL | DROP UN BGNDU EXIT | NIT SECTION DU | | | L \$ DU:: | | |
| 4820 | 021632' 021634' 021636' 021636' | 000167 000000 104453 | | | | ENDDU | | | | 10071: | .WORD .WORD | J\$JMP L10071-2 C\$DU |
| 4821 4822 4823 4824 4825 4826 4827 4829 4830 | 021640° 021640° 021640° | 000147 | | | .SBITL | ADD UNI BGNAU EXIT | IT SECTION | | | L\$A U:: | | |
| 4831 4832 4833 4834 4835 4836 | 021640° 021642° 021644° 021644° | 000167 000000 104452 | | | 717.6 | ENDAU | INTERRUPT CERV | 1.CF . DOUT 1.M | | L10072: | .WORD .WORD | J\$JMP L10072-2 |
| 4837 4838 4839 4840 4841 4842 | | | | | | NON-EXI | INTERRUPT SERV | NTERRUPT SE | | •••• | | |
| 4843 4844 4845 4846 4847 4848 4849 | | | | | FUNCTIO | THIS RO IT SETS ATTEMPT | SCRIPTION: DUTINE IS ASSIGNED THE NEXMEM FLATED ON NON-EXIS | AG SIGNALIN TANT MEMORY | IG THAT AN ACCES | SS WAS | S | |
| 4850 4851 4852 4853 4854 4855 4856 | 021646' 021646' 021646' 021654' 021654' | | 000001 | 000664* | BGNSRV ENDSRV | TRAP4 MOV | #1,NEXMEM | | ;SET FLAG | TRAP4:: L10073: | RTI | |

| GLOBAL (ZUAAA. | INTERRUP P11 1 | T SERVIC 1-JAN-83 | E ROUTINES 09:29 | MA (NOR | MACY11 30(1046) 11-JAN-83 10:13 PAGE 102 NON-EXISTANT MEMORY INTERRUPT SERVICE ROUTINE | | | | | | |
|--|---|----------------------|---------------------|----------------|---|--|--|--|--|-------------------------|-----------|
| 4857 4858 4859 | | | | . 58 | TTL U | NA INT | ERRUPT SERV | ICE ROUTINE | | | |
| 4860 4861 4862 4863 4864 4865 4866 | | | | FU | CI AI A P: | ONTROL ND ANY COPY SW AT | OF THE INT OF PCSRO IS THE TIME OF | ERRUPT BITS SET STORED AT 'UNA THE INTERRUPT | INT: AND A COP IS STORED AT (| PV OF THE LPUPRI: ". | |
| 4868 4869 4870 4871 4872 4873 4874 4875 | 021656' 021656' 021656' 021664' 021672' 021672' | | | 0670' 0674' | SRV UI | | aPCSRO,UNA 2∖SP),CPUP | INT | ; INDICATE UNA IP ; GET (PU PRIORI) | UNASRY:: NTERRUPTED | INTERRUPT |
| 4877 4878 48879 4888 4888 4888 4888 4888 | | | | F U | NCTION/ TI TI PUTS: I | AL DES HIS RO URNS T METER METER | SCRIPTION: | | BER OF CLOCK TIC | CKS THEN IT | |
| 4895 4896 4897 4898 4899 4900 4901 4902 4903 4905 4905 | 021674° 021674° 021674° 021700° 021706° 021706° 021706° | 001402 005337 | 000332° 000332° | 20\$ | BI Di | LKSRV ST EQ E(| METER 20\$ METER | ; HAS THE ; YES, STO ; COUNT TI | METER EXPIRED? OP COUNTING ICKS | CLKSRV:: L10075: | |

| | | | .TITLE | | TESTS PCSRO READ ACCESS TES | c 7 | | | |
|---|----------------------------|---|----------|--------------------------|--|--|----------|-------------------------|--|
| | | | .30116 | 1631 1: | PENNU NEAD ALLESS IE |) ! | | • | |
| | | | ; CAN BE | READ FR | VERIFY THAT THE PORT OM THE UNIBUS AND THAT D BIT POSITIONS. | CONTROL AND STATUS F T THE PREDETERMINED E | REGISTER | R () PEAR | |
| | | | TEST SI | QUENCE: | 1-READ PCSRO 2-VERIFY BITS 9 AND | 4 - 0 | | | |
| 021710' 021710' | | | BGNTST | | | | 11:: | •••• | |
| 021710' 021710' 021714' 021720' 021724' | 0:2746 012746 012746 | 000340 021646* 000004 000003 | | SETVEC | #4,#TRAP4,#PR107 | ;SETUP T | | MOV MOV MOV | #PRIO7,-(SI #TRAP4,-(SI #4,-(SP) #3,-(SP) |
| 021730' 021732' 021736' | 062706 | 000010 | BGNSUB | ·#1 | | | | TRAP | (\$SVE(#10.SP |
| 021736° 021736° | 104402 | | 804308 | • • • | | 1 | 11.1: | TRAP | (\$BSUB |
| | | | CHECK | O SEF I | F PCSRO EXISTS | | | | |
| 021740' 021744' 021750' 021754' | 005037 005777 | 000664' 000304' 156362 000664' | ; | CLR CLR TST TST | NEXMEM CSRNUM apcsro Nexmem | CLEAR NON-EXISTA HOLDS WHICH PCSF DOES PSCRO EXIST | R WE ARI | ORY FLAG E DOING | |
| 021760' 021762' 021762' 021764' | 001414 104455 | 000004 | | BEQ ERRDF | 10\$ 001,RACERR,RACMG1 | ; YES ; NO. PRINT FATAL | ERROR I | TRAP | CSERDF |
| 021766 ' 021770' | 001663 ' 012546' | | | | | | | .WORD .WORD .WORD | RACERR RACMG1 |
| 021772' 021772' 021774' 021774' | 104406 | | | (KLOOP | | ;LOOP BACK FROM H | | ERROR TRAP | C\$CLP1 |
| 021774' 021774' | 012700 | 000004 | | CLRVEC | 8 4 | ;RELEASE TRAP 4 v | ECTOR | MOV | #4.RO |
| 022002' 022002' | | 0002201 | | DODU | UNIT | :DROP UNIT | | TRAP | (\$(VE(|
| 022002 ' 022006 ' 022010' | 104451 | 000330* | | DOCLN | | :ABORT SUB-PASS | | TRAP | UNIT,RO (\$DODU |
| 022012 ' 022012 ' | 104444 | | 10\$: | DOCEN | | , AGURT 300-FA33 | | TRAP | CSDCLN |
| 022012 ' 022012 ' | 104407 | | ENDSUB | ;#1 | | ι | 10077: | • • • • | |
| 022012 ' 022014 ' | 104405 | | BGNSUB | :#2 | | | | TRAP | (SESUB |

| HARDWAR | E TESTS P11 1 | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN- | -83 10: TEST 1: | 13 PAGE PCSRO R | 104 EAD ACCESS TEST | | | | |
|--|--|--|-----------------------------|--------------------|-------------------------|----------------------|---|--|------------|--|----------------------------------|
| 4963 4964 4965 | 022014* | 104402 | | | OK, FC | SRO E¥IS | TS NOW CHECK SOME BITS | | | TRAP | C\$BSUB |
| 4966 4967 4968 4969 | 022016' | 104404 | | | BGNSE | G | | | | TRAP | C\$BSEG |
| 4969 4970 4971 4972 4973 4974 | 022020° 022026° 022034° | 012737 012737 032777 | 001311° 006004 000020 | 000312° 000306° | CHECK | MOV MOV | #\$NCLR,BITSTA #4,BITNUM | :TESTING FOR CLEAR :TESTING BIT 4 :15 BIT 4=0? | ARED BIT | rs | |
| 4975 4976 4977 4978 | 022042' 022044' 022044' 022046' | 001404 104456 000002 | 000020 | 156274 | | BIT BEQ ERRHRD | #BIT4,@PCSRU 20\$ 002,RACERR,RACMG2 | :YES ;NO,PRINT HARD E | RROR MES | TRAP.WORD | CSERHRD |
| 4979 4980 4981 4982 | 022050* 022052* 022054* 022054* | 001663° 012574° | | | 20 \$: ENDSE | G | | | 10000\$: | .WORD | RACERR RACMG2 |
| 4983 4984 4985 | 022054' 022054' 022056' | 104405 | | | BGNSE | G | | | 10000\$: | TRAP | CSESEG |
| 4986 4987 4988 | 022056 | 104404 | | | CHECK | BIT 9 = | 0 | | | TRAP | (\$BSEG |
| 4989 4990 4991 4992 | 022060' 022066' 022074' | 012737 032777 001404 | 000011 001000 | 000306° 156242 | • | MOV BIT BEQ | #9.,B!TNUM #BIT9,@PCSRO 30\$ | :TESTING BIT 9 NO :IS BIT 9=0? :YES | 0 ₩ | | |
| 4993 4994 4995 4996 4997 | 022076' 022076' 022100' 022102' 022104' | 104456 000003 001663' 012574' | • | | | ERRHRD | ÓŎ3,RACERR,RACMG2 | NO PRINT HARD E | RROR MES | SSAGE TRAP .WORD .WORD .WORD | CSERHRD 3 RACERR RACMG2 |
| 4008 | 0221061 | | | | 30\$: ENDSE | G | | | 10001\$: | TRAP | (SESEG |
| 4999 5000 5001 5002 5003 5004 | 022106' 022106' 022106' 022110' 022110' 022110' | 104405 | | | ENDSUB | :#2 | | 1 | L10100: | TRAP | C\$ESUB |
| 5005 5006 5007 5008 | 022112' 022116' | 012700 | 000004 | | 5 A I A T A T | CLRVEC | 84 | FREE TRAP 4 VEC | TOR | MOV TRAP | #4.R0 C\$(VE(|
| 5008 1009 5010 | 022120° 022120° 022120° | 104401 | | | ENDIST | | | ı | L10076: | TRAP | (\$ £151 |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 105 (ZUAAA.P11 11-JAN-83 09:29 TEST 1: PCSRO READ /
                                                   TEST 1: PCSRO READ ACCESS TEST
  5012
5013
                                                    .SBTTL TEST 2: PCSR1 READ ACCESS TEST
   5014
  5015
5016
                                                    THIS TEST WILL VERIFY THAT THE PORT CONTROL AND STATUS REGISTER CAN BE READ FROM THE UNIBUS AND THAT THE PREDETERMINED BITS
   5017
   5018
                                                    APPEAR IN THE EXPECTED BIT POSITIONS.
   5019
   5020
                                                    TEST SEQUENCE: 1-READ PCSR1
   5021
                                                                        2-VERIFY BITS 4.5.6.14.15 = 0
  5022
5023
   5024
          022122'
   5025
                                                   BGNTST
  5026
5027
         022122'
022122' 012746
022126' 012746
022132' 012746
022136' 012746
022142' 104437
022142' 1062706
                                                              SETVEC #4.#TRAP4.#PRIO7
                                                                                                       SETUP TIMEOUT TRAP
   5028
                               000340
                                                                                                                                                 #PR107,-(SP)
                                                                                                                                      MOV
   5029
                               0216461
                                                                                                                                       MOV
                                                                                                                                                 #TRAP4,-(SP)
   5030
                               000004
                                                                                                                                      MOV
                                                                                                                                                 #4,-(SP)
  5031
5032
5033
5034
                               000003
                                                                                                                                      MOV
                                                                                                                                                 #3,-(SP)
                                                                                                                                      TRAP
                                                                                                                                                 C$SVEC
                               000010
                                                                                                                                       ADD
                                                                                                                                                 #10.SP
          022150°
022150°
                                                     BGNSUB :#1
   5035
                                                                                                                            12.1:
   5036
          022150' 104402
                                                                                                                                       TRAP
                                                                                                                                                 C$BSUB
   5037
  5038
                                                    CHECK TO SEE IF PCSR1 EXISTS
  5039
         022152' 005037
022156' 012737
022164' 005777
022170' 005737
022174' 001414
                                                                                                       CLEAR NON-EXISTANT MEMORY FLAG
  5040
                               0006541
                                                              CLR
                                                                        NEXMEM
   5041
                               000001
                                         000304
                                                                                                        : TESTING PCSR1
                                                              MOV
                                                                        #1,CSRNUM
   5042
                               156150
                                                              TST
                                                                        aPCSR1
                                                                                                        :DOES POSRI EXIST?
   5043
                               0006641
                                                                        NEXMEM
                                                              TST
  5044
                                                                        10$
                                                              BEQ
          022176'
022176'
022200'
022202'
022206'
022206'
   5045
                                                              ERRDF
                                                                        004, RACERR, RACMG1
                                                                                                        NO PRINT FATAL ERROR MESSAGE
   5046
                    104455
                                                                                                                                                 CSERDF
                                                                                                                                       TRAP
   5047
                    000004
                                                                                                                                       .WORD
                    0016631
   5048
                                                                                                                                       .WORD
                                                                                                                                                 RACERR
   5049
                    0125461
                                                                                                                                       . WORD
                                                                                                                                                 RACMG1
   5050
                                                              CKLOOP
                                                                                                        :LOOP FROM HERE IF ERROR
   5051
                    104406
                                                                                                                                       TRAP
                                                                                                                                                 CSCLP1
   5052
5053
          022210'
                                                              CLRVEC #4
                                                                                                        ; RELEASE TRAP 4 VECTOR
                    012700
                               000004
                                                                                                                                      MOV
                                                                                                                                                 #4.RO
   5054
          022214'
                     104436
                                                                                                                                      TRAP
                                                                                                                                                 C$CVEC
   5055
          0222161
                                                              DODU
                                                                        UNIT
                                                                                                       :DROP THE UNIT
                                                                                                                                      MOV
   5056
          0222161
                    013700
                               000330
                                                                                                                                                 UNIT, RO
          0222224
   5057
                    104451
                                                                                                                                      TRAP
                                                                                                                                                 C$DODU
   5058
                                                              DOCLN
                                                                                                       ;ABORT SUB-PASS
   5059
                                                                                                                                      TRAP
                     104444
                                                                                                                                                 CSDCLN
         022226°
022226°
022226°
   5060
                                                    105:
   5061
                                                     ENDSUB :#1
  5062
5063
                                                                                                                            L10102:
                                                                                                                                      TRAP
          0555561
                    104403
                                                                                                                                                 CSE SUB
         022230
   5064
                                                     BGNSUB :#2
   5065
                                                                                                                            12.2:
   5066
          0222301
                    104402
                                                                                                                                      TRAP
                                                                                                                                                 ($BSUB
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| CZUAAA. | E TESTS P11 1 | MACY11 1-JAN-83 | 30(1046) | 11-JAN | -83 10:13 PAGE TEST 2: PCSR1 R | 106 READ ACCESS TEST | | | |
|--|---|--------------------------------------|-----------------------------|------------------------------|-----------------------------------|---|---|------------------------|------------------------|
| 5067 5068 5069 5070 5071 | 022232 | 104404 | | | DK. PCSR1 EXIS | STS NOW CHECK SOME BITS | | TRAP | C \$ BSEG |
| 5072 5073 5074 5075 | | | | | CHECK BIT 4 = | 0 | | | |
| 5076 5077 | 022234° 022242° 022250° 022256° | 012737 012737 032777 001404 | 001311° 000004 000020 | 000312' 000306' 156062 | MOV MOV BIT BEQ | #\$NCLR,BITSTA #4,BITNUM #BIT4,@PCSR1 20\$ | :TESTING CLEARED BITS :TESTING BIT 4 :IS BIT 4=0? :YES | | |
| 5078 5079 5080 5081 5082 5083 | 022260' 022260' 022262' 022264' | 104456 000005 001663' | | | ERRHRD | ÕÕŠ,RACERR,RACMG2 | NÖ, PRINT HARD ERROR M | TRAP .WORD .WORD | CSERHRD 5 RACERR |
| 5084 5085 | 022266° 022270° 022270° | 012574 | | | 20\$: ENDSEG | | | .WORD | RACMG2 |
| 5086 5087 | 022270' 022270' | 104405 | | | ENDSEG | | 10000\$: | TRAP | C\$ESEG |
| 5088 5089 | 022272' 022272' | | | | BGNSEG | | | TRAP | C\$BSEG |
| 5090 5091 5092 | | | | | CHECK BIT 5 = | 0 | | | |
| 5093 5094 5095 | 022274' 022302' 022310' | 032777 | 000005 000040 | 000306° 156030 | MOV BIT BEQ | #5,BITNUM #BIT5,apcsr1 30\$ | :TESTING BIT 5 :IS BIT 5=0? :YES | | |
| 5096 5097 5098 5099 | 022312' 022312' 022314' 022316' | 000006 | | | ERRHRD | 006,RACERR,RACMG2 | ;NO,PRINT HARD ERROR ME | TRAP .WORD .WORD | CSERHRD 6 RACERR |
| 5100 5101 5102 | 022322' 022322' 022322' | 012574 | | | 30\$: ENDSEG | | | .WORD | RACMG2 |
| 5103 5104 5105 | 022322' | 104405 | | | 2.40323 | | 10001\$: | TRAP | C \$ ESEG |
| 5106 | 022322° 022324° 022324° | 104404 | | | BGNSEG | | | TRAP | C\$BSEG |
| 5107 5108 5109 5110 | | | | | CHECK BIT 6 = | 0 | | | |
| 5110 5111 | 022326' 022334' 022342' 022344' | 012737 | 000006 000100 | 000306' 155776 | MOV BIT | #6.BITNUM #BIT6,@PCSR1 | :TESTING BIT 6 :IS BIT 6=0? | | |
| 5113 5114 | 022344' | 104456 | | | BEQ Errhrd | 40\$ 007,RACERR,RACMG2 | :YES :NO.PRINT HARD ERROR ME | SSAGE TRAP | C\$ERHRD |
| 5115 5116 | のつつてんより | COOOO2 | | | | | | .WORD | 7 RACERR |
| 5117 5118 5110 | 022352 | 0125741 | | | 40\$: | | | .WORD | RACMG2 |
| 5111 5112 5113 5114 5115 5116 5117 5118 5119 5120 5121 | 022350* 022352* 022354* 022354* 022354* | 104405 | | | ENDSEG | | 10502\$: | TRAP | C \$ E SEG |
| 5122 | 0223561 | | | | BGNSEG | | | inni | |

| HARDWARE CZUAAA. | E TESTS P11 1 | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN | -83 10:13 PAGE TEST 2: PCSR1 R | 107 EAD ACCESS TEST | | | | |
|--|--|--|-------------------|-------------------|--------------------------------------|--|--|----------------------|---------------------------------|-----------------------------------|
| 5123 5124 5125 | 022356' | 104404 | | | CHECK BIT 14 = | 0 | | , | TRAP | C\$BSEG |
| 5124 5125 5127 5128 5129 5131 5133 5135 5136 5137 5138 5139 5140 | 022360' 022366' 022374' 022376' 022376' 022400' 022402' 022406' | 012737 032777 001404 104456 000010 001663 012574 | 000016 040000 | 000306' 155744 | MOV BIT BEQ ERRHRD | #14. BITNUM #BIT14, aPCSR1 50\$ 008, RACERR, RACMG2 | :TESTING BIT 14 :IS BIT 14 =0? :YES :NO, PRINT ERROR M | • | TRAP .WORD .WORD .WORD | CSERHRD 8 RACERR RACMG2 |
| 5135 5136 5137 5138 5139 5140 5141 5142 | 022406' 022406' 022406' 022410' | 104405 104404 | | | 50\$: ENDSEG BGNSEG CHECK BIT 15 = | 0 | 10 | 000 3\$: , | TRAP | C\$ESEG C\$BSEG |
| 5143 5144 5145 5146 5147 | 022412' 022420' 022426' 022430' 022432' 022434' 022436' 022440' | 032777 | 0C0017 100000 | 000306° 155712 | MOV BIT BEQ ERRHRD | #15. BITNUM #BIT15, aPCSR1 60\$ 009, RACERR, RACMG2 | :TESTING BIT 15 :IS BIT 15 = 0? :YES ;NO, PRINT ERROR M | | TRAP .WORD .WORD .WORD | C\$ERHRD 9 RACERR RACMG2 |
| 5154 5155 5156 5157 | 022440' 022442' 022442' 022442' 022442' | 104405 104403 | | | 60\$: ENDSEG ENDSUB :#2 CLRVEC | #4 | | 10103: | TRAP | CSESEG CSESUB |
| 5160 5161 5162 5163 5164 5165 | 022444' 022450' 022452' 022452' 022452' | 012700 104436 | 000004 | | ENDTST | | | 1 : 1 0101 | MOV TRAP | #4.RO CSCVEC |

| HARDWAR CZUAAA. | E TESTS P11 1 | MACY11 1-JAN-83 | 30(10-6) 09:29 | 11-JAN | -83 10: TEST 3: | 13 PAGE PCSR2 R | 108 EAD ACCESS TEST | | | S |
|--|---|--|--|---------|--------------------|--|---|--|---|--|
| 5166 5167 | | | | | .SBTTL | | PCSR2 READ ACCESS TES | | | |
| 5169 5170 5171 5172 5173 5174 5175 | | | | | CAN BE | EST WILL READ FR | | CONTROL AND STATUS REGISTE | R 2 | |
| 5168 5169 5171 5177 5177 5177 5177 5178 5188 5188 | 022460' | 013746 012746 012746 012746 104437 | 000340 021646* 000004 000003 | | BGNTST | SETVEC | #4,#TRAP4,PRI07 | T3:: ;SETUP TIMFOUT TRAP VEC | TOR MOV MOV MOV MOV TRAP | PRIO7,-(SP) #TRAP4,-(SP) #4,-(SP) #3,-(SP) C\$SVE(|
| 5185 5186 5187 5188 5189 5190 5191 | 022476' 022502' 022506' 022514' 022520' 022524' 022526' | 062706 005037 012737 005777 005737 001414 | 000010 000664* 000002 135622 000664* | 0003041 | | CLR MOV TST TST BEQ ERRDF | NEXMEM #2, CSRNUM @PCSR2 NEXMEM 10\$ 010, RACERR, RACMG1 | :CLEAR NON-EXISTANT MEM :TESTING PCSR2 :DOES PCSR2 EXIST? :YES :NO.PRINT FATAL ERROR M | ADD ORY FLAG | #10,SP |
| 5195 5196 5197 5198 5199 5200 5201 | 022530' 022534' 022536' 022536' 022540' 022540' 022546' | 000012 001663° 012546° 104406 012700 104436 | 000004 000330* | | | CKLOOP CLRVEC DODU | #4 UNIT | :LOOP BACK FROM HERE IF :RELEASE TRAP 4 VECTOR :DROP THE UNIT | .WORD .WORD .WORD | 10 RACERR RACMG1 CSCLP1 #4,R0 CSCVEC UNIT,R0 |
| 5202 5203 5204 5205 5206 5207 5208 5209 5210 | 022546' 022552' 022554' 022554' 022556' 022566' | 012700 | 000004 | | 10\$: | DOCLN | #4 | :ABORT SUBPASS :RELEASE TRAP 4 VECTOR | TRAP TRAP MOV TRAP | C\$DCLN #4.RO C\$CVE(|
| 5210 5211 5212 5213 | 022564° 022564° 022564° | 104401 | | | ENDTST | | | լ10104։ | TRAP | C\$ETST |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 110 CZUAAA.P11 11-JAN-83 09:29 TEST 5: RESET TEST
  5266
5267
5268
5269
5271
5273
5274
5276
5277
5278
                                                .SBITL TEST 5: RESET TEST
                                                THIS TEST WILL VERIFY THE RESET STATE FOR ALL DEUNA UNIBUS REGISTERS
                                                :TEST SEQUENCE:
                                                          1-WRITE A 1 TO PCSRO BIT 5
                                                          2-READ PCSRO
                                                           -VERIFY DNI SET
                                                           -VERIFY INTR SET
                                                          3-VERIFY PCSRO BITS 15:12 AND 10:08 AND 06:00 FOR LOGICAL O
                                                          4-READ PCSR1
                                                          5-VERIFY PCSR1 BITS 07:03 AND 14 AND 15 FOR LOGICAL O AND
   5280
                                                            PORT STATE FIELD BITS 02:00 FOR READY STATE
   5281
   5282
5283
         022704'
022704'
022704' 005037
   5284
                                                BGNTST
  5285
5286
5287
5288
5289
5290
                                                                                                                    T5::
                             000304
                                                          (LR
                                                                                                 :TESTING PCSRG FIRST
                                                                    CSRNUM
         022710' 012737
                            001340' 000314'
                                                                                                 SETUP PART OF ERROR MESSAGE
                                                          MOV
                                                                    WSAFTER, PWHEN
                                                                                                 FOR THE FOLLOWING TEST SEGMENTS
         022716'
022716'
022716' 104402
                                                 BGNSUB :#1
                                                                                                                    15.1:
  5291
                                                                                                                              TRAP
                                                                                                                                       C$BSUB
  5292
5293
                                                SET THE RESET BIT IN PCSPS AND WAIT FOR 'DNI' TO SET
  5294
         022720' 012777
022726' 012737
022734' 004737
                             000040 155410
000770 000332
  5295
                                                                   WRSET, apcsro
#10*SECOND, METER
                                                          MOV
                                                                                                 RESET DEUNA
  5296
                                      000332
                                                          MOV
                                                                                                 PUT SOME TIME ON THE METER
  5297
                             0173301
                                                                    PC, CHKDNI
                                                                                                 WAIT FOR DNI TO SET
                                                          JSR
         022740' 103014
  5298
                                                                    10$
                                                          BCC
  5299
                                                                                                 ERROR 'DNI' DID NOT SET
         022742' 012737
022750' 012737
022756' 104456
                             000776' 000310'
                                                                   #$DNI,BITNAM
#$NSET,BITSTA
  5300
                                                          MOV
                                                                                                 SETUP ERROR MESSAGE
                            001275' 000312'
  5301
                                                          MOV
  5302
5303
                                                                   012, RSETER, MSG3
                                                          ERRHRD
                                                                                                 PRINT ERROR MESSAGE
                                                                                                                              TRAP
                                                                                                                                       (SERHRD
  5304
5305
         022760' 000014
                                                                                                                              .WORD
                                                                                                                                       12
         022762' 001717'
                                                                                                                              .WORD
                                                                                                                                       RSETER
         022764' 013056'
  5306
                                                                                                                              WORD
                                                                                                                                       MSG3
         022766' 104410
  5307
                                                          ESCAPE TST
                                                                                                 :NO POINT IN CONTINUING TEST
  5308
                                                                                                                              TRAP
                                                                                                                                       CSESTAPE
         022770' 000374
   5309
                                                                                                                              .WURD
                                                                                                                                       L10:05-.
         022772'
   5310
                                                105:
  5311
                                                 ENDSUB :#1
         0227721
  5312
                                                                                                                    L10107:
  5313
                                                                                                                              TRAP
         022772' 104403
                                                                                                                                       CSE SUB
  5314
         022774'
  5315
                                                 BGNSUB :#2
  5316
                                                                                                                    15.2.
                                                                                                                              TRAP
  5317
         0227741 104402
                                                                                                                                       C$BSUR
  5318
  5319
                                                CHECK ALL THE BITS AFFECTED BY RESET
  5320
  5321
         022776
                                                   BGNSEG
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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 111
(ZUAAA.P11 11-JAN-83 09:29
                                              TEST 5: RESET TEST
         022776' 104404
  TRAP
                                                                                                                                    C$BSEG
                                               : CHECK THE INTERRUPT SUMMARY BIT = C
         023000' 032777 023006' 001012
                            000200 155330
                                                        BIT
                                                                  #INTR. apcsro
                                                                                              :IS THE INTERRUPT SUMMARY BIT SET?
                                                        BNE
                                                                  115
                                                                                              ; YES
                                                                                              ERROR, INTERRUPT SUMMARY NOT SET!
        023010' 012737
023016' 012737
023024' 012737
023024' 104456
023026' 000015
023030' 001717'
023032' 013056'
023034'
023034' 104405
                           001630' 000310'
001275' 000312'
                                                        MOV
                                                                  #SINTR, BITNAM
                                                                                              :PREPARE ERROR MESSAGE
                                                        MOV
                                                                  #SNSET, BITSTA
                                                        ERRHRD
                                                                  013, RSETER, MSG3
                                                                                              :PRINT ERROR MESSAGE
                                                                                                                          TRAP
                                                                                                                                    CSERHRD
                                                                                                                                    13
                                                                                                                           .WORD
                                                                                                                          .WORD
                                                                                                                                    RSETER
                                                                                                                           .WORD
                                                                                                                                    MSG3
                                               115:
                                                 ENDSEG
                                                                                                                 10000$:
         023034' 104405
                                                                                                                          TRAP
                                                                                                                                    CSE SEG
  5340
5341
                                               :(HECK BITS 15:12 AND 10:08 AND 06:00 OF PCSRO FOR 0
  5342
5343
         023036' 012701 023042' 012702
                            000356
                                                        MOV
                                                                  #BNAMTO,R1
                                                                                              POINT TO BIT NAME MNEMONICS
  5344
                            000001
                                                        MOV
                                                                  #BITO.R2
                                                                                              START TESTING AT LSB
         023046' 012737
  5345
                            001311' 000312
                                                                                              :TESTING FOR CLEARED BITS
                                                        MOV
                                                                  #SNCLR, BITSTA
         0230341
  5346
                                               15$:
  5347
         0230541
                                                 BGNSEG
        023054' 104404
023056' 030277
023062' 001406
  5348
                                                                                                                           TRAP
                                                                                                                                    C$BSEG
                                                                  R2, aPCSRO
20$
  5349
                            155254
                                                        BIT
                                                                                              : IS THIS BIT CLEARED?
  5350
                                                        BEQ
                                                                                              :YES
  5351
                                                                                              ERROR BIT FAILED TO CLEAR
         023064' 011137
023070'
  5352
5353
                           000310
                                                        MOV
                                                                  (R1) BITNAM
                                                                                              GFT MNEMONIC FOR THIS BIT
                                                        ERRHRD
                                                                  014, RSETER, MSG3
                                                                                              PRINT ERROR MESSAGE
  5354
         023070' 104456
                                                                                                                           TRAP
                                                                                                                                    CSERHRD
         023072' 000016
  5355
                                                                                                                           .WORD
                                                                                                                                    14
        023074' 001717'
  5356
                                                                                                                           .WORD
                                                                                                                                    RSETER
         023076' 013056'
  5357
                                                                                                                           .WORD
                                                                                                                                    MSG3
                                               205:
  5358
         0231001
        023100°
023100°
  5359
                                                 ENDSEG
  5360
                                                                                                                 100015:
         0231001 104405
  5361
                                                                                                                                    CSESEG
         0231021
                                                                  R2
25$
  5362
                  005702
                                               215:
                                                        IST
                                                                                              :WE TESTED ALL BITS IN PCSRO?
  5363
         0231041
                  100411
                                                        BM!
                                                                                              :YES
         0231061
  5364
                  006305
                                                        ASL
                                                                                              POINT TO NEXT BIT TO TEST
         023110' 062701
  5365
                                                                  #2,R1
                                                                                              POINT TO NEXT MNEMONIC
                            000002
                                                        ADD
  5366
         0231141
                  105702
                                                                                              ARE WE POINTING TO 'INTR' BIT?
                                                        TSTB
                                                                                              : YES. SKIP IT
  5367
         023116'
                                                                  215
                  100771
                                                        BMI
         023120 022702
                                                                                              ARE WE POINTING TO 'DNI' BIT?
  5368
                                                        CMP
                            004000
                                                                  #DNI,R2
         023124' 001766
                                                                  21$
15$
  5369
                                                        BEQ
  5370
         023126' 000752
                                                                                              CONTINUE TESTING
                                                        BR
  5371
5372
5373
         023130
                                               25$:
         0231301
                                                 BGNSEG
  5374
         023130' 104404
                                                                                                                          TRAP
                                                                                                                                    C$BSEG
  5375
5376
                                               CHECK POSRI BITS 02:00 FOR THE READY STATE
  5377
```

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| HARDWARI CZUAAA.I | E TESTS P11 1 | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN | | 13 PAGE RESET T | | | | |
|--|---|----------------------------|---|---------|----------------|---------------------------------|---|---|------------------------|---------------------------------|
| 5378 5379 5380 5381 5382 5383 | 023132' 023140' 023144' 023150' 023154' | 017701 042701 022701 | 000001 155174 177770 000002 | 000304* | | MOV MOV BIC (MP BEQ | #1,CSRNUM aPCSR1,R1 #^CPSTATE,R1 #READY,R1 30\$ | :TESTING PCSR1 :GET PCSR1 CONTERTS :MASK ALL BUT PORT STAT :IS THE DEUNA IN THE RE :YES | ADY STA | |
| 5384 5385 5386 5387 | 023156' 023156' 023160' 023162' | 104456 000017 001717 | | | | ERRHRD | 015,RSETER,MSG4 | ;ERROR, DEUNA NOT IN RE ;PRINT ERROR MESSAGE | TRAP .WORD .WORD | CSERHRD 15 RSETER |
| 5384 5385 5386 5387 5388 5389 5390 5391 5393 5395 | 023164' 023166' 023166' 023166' | 013120 | | | 30\$: ENDSE | G | | 10002\$: | .WORD | MSG4 |
| 5393 5394 | 023166* | 104405 | | | CHECK | PCSR1 BI | TS 07:03 FOR 0 | | TRAP | C\$ESEG |
| 5395 5396 5397 5398 5399 5400 | 023170' 023174' 023200' 023206' | 062701 012737 | 000416' 000006 001311' 001346' | 000312* | • | MOV ADD MOV | #BNAMT1,R1 #3+2,R1 #\$NCLR,BITSTA | :POINT TO MNEMONIC TABL :INDEX PAST STATE BITS :PREPARE ERROR MESSAGE | E FOR P | CSR: |
| 5401 | 023214' 023220' | 012702 | 000010 | 000314 | 40 \$: | MOV MOV | #\$AFTER,PWHEN #B1T3,R2 | ;POINT TO BIT 3 TO STAR | T TESTI | NG |
| 5402 5403 5404 5405 | 023220' 023222' 023222' | 104404 030277 001406 | 155112 | | BGNSE | BIT BEO | R2, aPCSR1 | :IS THIS BIT A 0? | TRAP | C\$BSEG |
| 5406 5407 5408 | 023230° 023234° | | 000310 | | | MOV ERRHRD | (R1),BITNAM | ERROR, BIT IS NOT A O GET MNEMONIC FOR THIS | AFTER RI BIT | ESET! |
| 5409 5410 5411 5412 | 023234° 023236° 023240° 023242° | 000020 | | | | EKKHKU | 016,RSETER,MSG3 | PRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 16 RSETER MSG3 |
| 5413 5414 5415 | 023244° 023244° 023244° | | | | 458: ENDSE | G | | 10003\$: | | |
| 5416 5417 5418 | 023244' | 104405 105702 100404 | | | | TSTB BMI | R2 50 \$ | :WE TESTED BITS 07:03? | TRAP | C\$ESEG |
| 5419 5420 | 023250° 023252° 023254° 023260° 023262° | 006302 062701 000757 | 000002 | | 50 \$: | ASL ADD BR | R2 #2,R1 40\$ | NO. POINT TO NEXT BIT POINT TO MNEMONIC FOR CONTINUE TESTING | NEXT BI | ī |
| 5421 5422 5423 5424 5425 5426 | 053565. | 104404 | | | BGNSE : | G | | | TRAP | C\$BSEG |
| 5426 5427 | | | | | CHECK | PCSR1 BI | 1 14 = 0 | | | |
| 5427 5428 5429 5430 | 023264' 023272' | | 040000 | 155046 | - | BIT BEQ | #ICAB,@PCSR1 60\$ | :IS PORT/CABLING BIT CL | | |
| 5430 5431 5432 5433 | 023274' 023302' 023310' | 012737 012737 | | 000312 | | MOV MOV ERRHRD | #\$NCLR,BITSTA #\$ICAB,BITNAM 017,RSETER,MSG3 | ERROR, PORT/CABLING BI PREPARE ERROR MESSAGE GET MNEMONIC PRINT ERROR MESSAGE | T NOT CL | LEAR! |

| HARDWAR! | E TESTS P11 1 | MACY11 1-JAN-8 | 30(1046) 309:29 | 11-JAN | -83 10: TEST 5: | TRESET T | 113 EST | | | | |
|--|--|---------------------------------------|--------------------|--------|--------------------|----------------------|---|--|---------|---------------------------------|---------------------------------|
| 5434 5435 5436 5437 5438 5443 5441 5442 | 023310° 023312° 023314° 023310° 023320° 023320° | 104456 000021 0017171 013056 | | | 60 \$: | c. | | | | TRAP .WORD .WORD .WORD | CSERHRD 17 RSETER MSG3 |
| 5440 5441 5442 | 053355. 053355. 053355. | 104405 | | | BGNSE | | | 1 | 0004\$: | TRAP | C\$ESEG |
| 5443 5444 | 023322. | 104404 | | | : | | | | | TRAP | C\$BSEG |
| 5444 5445 5446 5447 | 0233241 | 032777 | 100000 | 155006 | ; CHECK | PCSR1 BI BIT | T 15 = 0 #XPWR, aPCSR1 | ;IS TRANSCFIVER F | יטינט פ | TT CLEAN | ם ז |
| 5448 5449 | 053335. | 001412 | | | | 860 | 70\$ | YES ERROR, TRANSCEIV | | | |
| 5447 5448 5449 5451 5452 5454 5455 5456 5457 5458 5461 5462 | 023334° 023342° 023350° 023352° 023354° 023356° 023360° 023360° | 012737 012737 104456 | 0013111 | 000312 | | MCV MOV ERRHRD | #SNCLR,BITSTA #SXPUR,BITNAM 018,RSETER,MSG3 | ; PREPARE ERROR ME ; GET MNEMONIC ; PRINT ERROR MESS | SSAGE | TRAP | C \$ ERHRD |
| 5454 5455 5456 | 023352' 023354' 023356' | 000022 0017171 0130561 | | | 700 | | | | | .WORD .WORD .WORD | 18 RSETER MSG3 |
| 5458 5459 5460 | 053390, 053390, 053390, | 104405 | | | 70\$. ENDSE | G | | 1 | 0005\$: | TRAP | C \$ ESEG |
| 5463 | 023362 023362 023362 023364 | 104403 | | | ENDSUB | ;# 2 | | L | 10110: | TRAP | C\$ESUB |
| 5464 5465 5466 | 023364 | 104401 | | | ENDIST | | | L | 10106: | TRAP | CSETST |

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MARDWARE TESTS MACV1: 30(1046) 11-JAN-83 10:13 PAGE 114
CZUAAA.P11 11-JAN-83 09:29
                                                TEST 6: PCSR2 REGISTER READ/WRITE TEST
  5467
                                                 .SBTTL TEST 6: PCSR2 REGISTER READ/WRITE TEST
  5468
  5469
  5470
  5471
                                                 THIS TEST WILL CHECK THE REGISTER FOR ALL SAO AND SAI ERRORS (STUCK AT O AND STUCK AT I ERRORS). THE HOST WILL WRITE PATTERNS TO THE REGISTER
  5472
5473
                                                 AND READ THEM BACK TO VERIFY. THE PATTERNS TO BE USED ARE AT THE LABEL
  5474
                                                 :PATERN:: IN THE GLOBAL DATA SECTION OF THIS PROGRAM.
  5475
  5475
                                                 :NOTE: SINCE PCSR2 BIT OO IS ALWAYS PRESET TO LOGIC O. THE LOWEST ORDER
  5417
                                                 BIT OF THE PATTERN WILL BE MASKED BEFORE DOING THE COMPARISON.
  5478
  5479
                                                 : TEST SEQUENCE:
  5480
                                                          1-WRITE PATTERN TO REGISTER PCSR2
  5481
                                                          2-COMPARE MASKED PATTERN WITH REGISTER PCSR2 CONTENTS
                                                          3-REPEAT STEPS 1 TO 2 FOR ALL PATTERNS
  5482
  5483
  5484
  5485
         0233661
  5486
                                                 BGNTST
  5487
         0233661
                                                                                                                     16::
         023366' 012737
  5488
                             000002 000304
                                                                    #2,CSRNUM
                                                          MOV
                                                                                                  :TESTING PCSR2
         023374 012701 023400 012705
                                                          MOV
  5489
                             000516
                                                                                                 GET ADDRESS OF DATA PATTERNS
                                                                    MPATERN,R1
  5490
                                                                    #5,R5
(R1)+,R3
                             000005
                                                          MOV
                                                                                                  :5 DATA PATTERNS
         023404 012103
  5491
                                                 105:
                                                          MOV
                                                                                                  GET DATA PATTERN
  5492
                                                   BGNSEG
  5493
         0234061
                   104404
                                                                                                                                         ($BSEG
        023410' 010377
023414' 017704
023420' 042703
023424' 020304
  5494
                                                                    R3, apcsR2
apcsR2,R4
                             154726
                                                          MOV
                                                                                                  :WRITE PATTERN TO PCSR2
  5495
                             154722
                                                          MOV
                                                                                                  READ PCSR2
  5496
                             000001
                                                          BIC
                                                                    #B110,R3
                                                                                                 MASK BIT 00
  5497
                                                          (MP
                                                                    R3,R4
                                                                                                 : COMPARE WHAT WAS WRITTEN TO ...
  5498
                                                                                                 WHAT WAS READ
        023426' 001404
023430'
023430' 104456
023432' 000023
023434' 001741'
023436' 012632'
023440'
023440'
  5499
                                                                                                 : COMPARED OK
                                                                    20$ 019,RRWER,RACMG3
                                                          FRRHRD
  5500
                                                                                                 PRINT ERROR MESSAGE
  5501
                                                                                                                               TRAP
                                                                                                                                         CSEPHRD
  5502
5503
                                                                                                                               .WORD
                                                                                                                                        19
                                                                                                                               .WORD
                                                                                                                                         RRWER
  5504
                                                                                                                               .WORD
                                                                                                                                         RACMG3
                                                ¿Ú$:
  5505
  5506
5507
                                                  ENDSEG
         0234401
                                                                                                                     10000$:
        023440' 104405
023442' 005305
023444' 001357
023446'
  5508
                                                                                                                               TRAP
                                                                                                                                         CSE SE G
  5509
5510
                                                          DEC
                                                                                                 :DONE ALL DATA PATTERNS?
                                                                    10$
                                                          BNE
                                                                                                 :NO. CONTINUE TESTING
  5511
                                                ENDIST
  5512
5513
                                                                                                                     L10111:
         023446' 104401
                                                                                                                               TRAP
                                                                                                                                        LSE 151
  5514
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| HARDWAR (ZUAAA. | E TESTS MACY1 P11 11-JAN- | 1 30(1046) 83 09:29 | 11-JAN | -83 10: TEST 7: | 13 PAGE PEGISTE | 115 R PCSR3 READ/WRITE T | EST | | |
|--|--|------------------------|---------|-------------------------|---------------------|--|---|--|----------------------------------|
| 5515 5516 | | | | .SBTTL | TEST 7: | REGISTER PCSR3 READ | WRITE TEST | | |
| 5517 5518 | | | | : | ****** | *************** | | | • |
| 5519 5520 | | | | ; THIS T | EST WILL LL READ | WRITE PATTERNS TO T THESE BACK FOR VERIF | THE WRITEABLE FIELD OF PCSR3 | | |
| 5518 5519 5519 5523 5523 5523 5526 5526 5531 5533 5533 5533 | | | | TEST S | 2-VERIF 3-WRITE | PATTERN 000001 TO P Y PATTERN IN PCSR3 PATTERN 000002 TO P | | | |
| 5527 5527 | | | | • | 4-VERIF | Y PATTERN IN PCSR3 | | | |
| 5529 | 027/501 | | | ;***** | ••••• | ************** | | | ••• |
| 5531 5531 | 023450' 023450' | 7 000007 | 0007041 | BGNTST | M O., | #2 ccn | 17:: | | |
| 5533 5571 | 023450' 01273 023456' 01270 | 7 000003 3 000001 | 000304 | DONES | MOV | #3,CSRNUM #BITOO,R3 | ;TESTING PCSR3 ;DATA PATTERN =1 | | |
| 5535 5536 5537 | 023462' 10440 023462' 10440 023464' 01037 023470' 01770 | 7 154654 | | BGNSE | VCM VOM | R3, apcsr3 apcsr3, r4 | :WRITE PATTERN TO PCSR | TRAP | C\$BSEG |
| 5537 5538 5539 | 023474' 02030 023476' 00140 | | | | CMP BEQ | R3,R4 10\$ | :COMPARE :IF == GOOD | | |
| 5540 5541 5542 5543 5544 5545 | 023500' 023500' 10445 023502' 00002 023504' 00174 023506' 01263 | 1. | | 100 | ERRARD | 020,RRWER,RACMG3 | ;ELSE PRINT ERROR MESS | AGE TRAP .WORD .WORD .WORD | (SERHRD 20 RRWER RA(MG3 |
| 5546 | 023510' 023510' | | | 105: ENDSE | G | | 10000 | _ | |
| 5547 5548 5549 5550 | 023510* 023510* 10440 023512* 00630 023514* | 5 | | BGNSE | ASL G | R3 | 10000\$; DATA PATTERN =2 | TRAP | CSE SE G |
| 5551 5552 5553 5555 5555 5556 5556 5561 5562 5563 5565 5566 | 023514' 10440 023516' 01037 | 7 154622 | | | MOV MOV (MP | R3, apcsr3 apcsr3, r4 R3, r4 | ; WRITE PATTERN TO PCSR? ; READ PCSR3 ; COMPARE | TRAP | C\$BSEG |
| 5555 5556 | 023530° 00140 | 4 | | | BEQ ERRHRD | 20\$ 021,RRWER,RACMG3 | : IF = GOOD :ELSE PRINT ERROR MESS/ | | |
| 5557 5558 5559 5560 | 023526 02030 023526 02030 023532 00140 023532 10445 023534 00002 023536 0174 023542 01263 023542 023542 023542 023542 10440 | 6 5 1' 2' | | | | | | TRAP .WORD .WORD .WORD | CSERHRD 21 RRWER RACMG3 |
| 5561 5562 | 023542° 023542° | | | 20 \$: ENDSE | G | | | | |
| 5563 5564 5565 | 023542' 023542' 10440 023544' | 15 | | ENDIST | | | 10001\$ | TRAP | C \$ ESEG |
| 5566 5567 | 0235441 |)1 | | | | | L 10112 | : TRAP | CSETST |

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HARDWARE TESTS MACY11_30(1046) 11-JAN-83 10:13 PAGE 116
(ZUAAA,P11
               11-JAN-83 09:29
                                              TEST 8: NOP TEST
  5568
                                              .SBTTL TEST 8: NOP TEST
  5569
  5575
5571
                                              THIS TEST WILL VERIFY THAT THE DEUNA PROCESSOR IS ALIVE AND CAN RESPOND TO A PORT COMMAND ISSUED. THE NOP PORT COMMAND WILL BE ISSUED TO THE DEUNA IN PCSRO BITS 3:0 AND WILL WAIT FOR THE 'DNI' BIT TO
  5573
  5574
  5575
                                              SET IN PCSRO.
  5576
  5577
                                              : 1. S NOP PORT COMMAND USES A MINIMUM OF HARDWARE BUT FORCES THE T11
  5578
                                              :TO EXECUTE THE PORT COMMAND SEQUENCE.
  5579
  5580
                                              :TEST SEQUENCE:
  5581
                                                       1-READ REGISTER PCSRO
  5582
                                                       2-VERIFY INTERRUPT ENABLE BIT 06 = LOGIC G
  5583
                                                       3-VERIFY DONE INTERRUPT BIT 11 = LOGIC O
  5584
                                                       4-WRITE PORT COMMAND NOP TO PESRO BITS 3:0
  5585
                                                       5-READ REGISTER PCSRO
  5586
                                                       6-VERIFY DONE INTERRUPT BIT 11 = LOGIC 1
  5587
                                                       7-WRITE REGISTER PCSRO BIT 11 WITH LOGIC 1
  5588
                                                       8-READ REGISTER PCSRO
  5589
                                                       9-VERIFY POSRO BIT 11 = 0
  5590
  5591
  5592
  5593
        0235461
                                              BGNTST
  5594
        0235461
                                                                                                               18::
  5595
        023546"
                                               BGNSUB :#1
  5596
        0235461
                                                                                                               T8.1:
  5597
        023546' 104402
                                                                                                                        TRAP
                                                                                                                                 C$BSUB
  5598
  5599
                                              CHECK THE INTERUPT ENABLE BIT: IF SET CLEAR IT
  5600
        023550' 013701
023554' 011102
  5601
                           000336
                                                       MOV
                                                                PCSRO_R1
                                                                                            :GET PCSRO ADDRESS
  5602
                                                       MOV
                                                                (R1), R2
                                                                                            :GET CONTENTS
        023556' 032702
  5603
                           000100
                                                       BIT
                                                                WINTE, R2
                                                                                            :IS INTERRUPT ENABLE SET?
        023562' 001412
023564' 112711
  5604
                                                       BEO
                                                                10$
                                                                                            : NO
  5605
                           000000
                                                       MOVB
                                                                #0,(R1)
                                                                                            :CLEAR INTERRUPT ENABLE
         023570' 011102
                                                                (R1),R2
  5606
                                                       MOV
                                                                                            GET PCSRO CONTENTS
        023576' 032702
023576' 001404
  5607
                           000100
                                                       BIT
                                                                #INTE,R2
                                                                                            IS INTERRUPT ENABLE CLEAR NOW?
  5608
                                                       BEQ
                                                                10$
                                                                                            :YES
  5609
        0236001
                                                       ERRHRD
                                                                022, NOPERR, RACMG4
                                                                                            INO PRINT ERROR MESSAGE
  5610
        0236001
                  104456
                                                                                                                        TRAP
                                                                                                                                 CSERHRD
        0236021
                  000026
  5611
                                                                                                                        .WORD
  5612
5613
        023604
                  002001
                                                                                                                                 NOPERR
                                                                                                                        . WORD
        0236061
                  012704
                                                                                                                        .WORD
                                                                                                                                 RACMG4
        0236101
  5614
                                              105:
  5615
        0236101
                                               ENDSUB :#2
  5616 0236101
                                                                                                              L10114:
        0236101 104403
  5617
                                                                                                                        TRAP
                                                                                                                                 (SE SUB
  5618 0236121
                                               BGNSUB :#2
  5619
        0236121
                                                                                                               18.2:
        0236121 104402
  5620
                                                                                                                        TRAP
                                                                                                                                 ($BSUB
  5621
                                              : CHECK THE DONE INTERRUPT BIT: IF SET WRITE ONE TO CLEAR IT
  5623
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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 117
(ZUAAA_P11 11-JAN-83 U9:29
                                              TEST B: NOP TEST
        023614' 032702
023620' 001413
  5624
5625
                            C04000
                                                                 #DNI,R2
                                                                                             :IS DONE INTERRUPT CLEAR?
                                                        650
                                                                 205
                                                                                              YES
        023622° 000302
023624° 110261
023630° 111102
023632° 032702
023636° 001404
  5626
                                                                 R2
                                                        SWAB
                                                                                              :NO.ORIENT UPPER & LOWER BYTES
                                                                 RŽ,1(R1)
(R1),R2
  5627
                            000001
                                                        MOVA
                                                                                              SO WE CAN CLEAR UPPER BITS
  5628
                                                        MOV
                                                                                              :GET PCSRO CONTENTS
  5629
5630
                            004000
                                                        BIT
                                                                 #DNI,R2
                                                                                             :IS DNI CLEAR NOW?
                                                                 205
                                                        BEQ
                                                                                             : YES
  5631
5632
5633
         023640'
023640' 104456
023642' 000027
                                                        ERRHRD
                                                                 023 NOPERR RACMG7
                                                                                             :NO.PRINT ERROR MESSAGE
                                                                                                                         TRAP
                                                                                                                                   CSERHRD
                                                                                                                          . WORD
                                                                                                                                   23
         023644' 002001'
  5634
                                                                                                                         .WORD
                                                                                                                                   NOPERR
        023646' 012726'
023650'
023650'
023650'
  5635
5636
5637
5638
                                                                                                                          .WORD
                                                                                                                                   RACMG7
                                              205:
                                               ENDSUB :#2
                                                                                                                L10115:
         023650' 104403
  5639
                                                                                                                          TRAP
                                                                                                                                   C$ESUB
  5640
         0236521
                                                BGNSUB :#3
  5641
         0236521
                                                                                                                18.3:
  5642
         023652' 104402
                                                                                                                         TRAP
                                                                                                                                   C$BSUB
  5643
                                               ISSUE NOP PORT COMMAND AND CHECK FOR DNI
  5644
  5645
         023654' 012777 023662' 012737
  5646
                            000006 154454
                                                        MOV
                                                                 #PNOP, aPCSRO
                                                                                             :ISSUE NOP PORT COMMAND
  5647
                            000176 0003321
                                                                                             :SETUP TIMER
                                                        MOV
                                                                 #2 * SECOND . METER
         023670' 004737
                            0173301
  5648
                                                        JŠŘ
                                                                 PC, CHKDNI
                                                                                              :WAIT FOR DNI TO SET
         0236741 103022
  5649
                                                                  30$
                                                        B((
                                                                                              : 0K
  5650
                                                                                              ERROR DNI DID NOT SET!
  5651
                                                                                              SETUP TO PRINT ERROR MESSAGE
        023676' 012737
023704' 012737
023712' 012737
                                                                 #$DNI,BITNAM
#$NSET,BITSTA
  5652
5653
                           000776' 000310' 001275' 000312'
                                                        MOV
                                                                                              POINT TO 'DNI' ASCII STRING
                                                        MOV
                                                                                              POINT TO 'NOT SET' ASCII STRING
                           001340 000314
                                                                                             POINT TO 'AFTER' ASCII STRING
  5654
                                                        MOV
                                                                 #SAFTER PUHEN
  5655
         023720' 012737
                           0014031 0003161
                                                                                              POINT TO 'NOP' ASCIL STRING
                                                        MOV
                                                                 #$NOP_PCOMND
  5656
         023726
                                                        ERRHAD
                                                                 024, NOPERR, MSG1
                                                                                             PRINT ERROR MESSAGE
        023726°
023730°
  5657
                  104456
                                                                                                                          TRAP
                                                                                                                                   (SFRHRD
                  000030
  5658
                                                                                                                          .WORD
         0237321
  5659
                  002001
                                                                                                                                   NOPERR
                                                                                                                          .WORD
         0237341
  5660
                  0127501
                                                                                                                          . WORD
                                                                                                                                   MSG1
        0237361
  5661
                                                       ESCAPE TST
                                                                                             :DON'T CONTINUE TEST IF ERROR OCCURRED
        0237361
  5662
                  104410
                                                                                                                         TRAP
                                                                                                                                   CSESCAPE
  5663
         0237401
                  000026
                                                                                                                          .WORD
                                                                                                                                   L10113-.
        0237421
  5664
                                               305:
  5665
        0237421
                                                BGNSEG
        923742° 104404
  5666
                                                                                                                         TRAP
                                                                                                                                   C$BSEG
  5667
  5668
                                               :WRITE ONE TO CLEAR 'DNI'
  5669
  5570 023744 004737
                           017374
                                                        JSR
                                                                 PC, CLRDNI
                                                                                             :GO CLEAR DNJ BIT
         023750' 103004
  5671
                                                        BCC
                                                                 40$
                                                                                             :IT CLEARED OK
  5672
5673
                                                                                             ; ERROR DNI DID NOT CLEAR!
         023752'
023752' 104456
                                                       ERRHRD
                                                                025,NOPERR,RACMG7
                                                                                             :NO, PRINT ERROR MESSAGE
  5674
                                                                                                                         TRAP
                                                                                                                                   CSERHRD
  5675
         0237541 000031
                                                                                                                         .WORD
                                                                                                                                   25
         023756' 002001'
  5676
                                                                                                                         .WORD
                                                                                                                                   NOPERR
  5677
         023760 012726
                                                                                                                         .WORD
                                                                                                                                   RACMG7
  5678
         0237621
                                              405:
  5679
         0237621
                                                ENDSEG
```

C\$ESEG

C\$E SUB

CSETST

HA

| HARDWAR (ZUAAA.) | E TESTS MA(V11 30(1046) P11 11-JAN-83 09:29 | 11-JAN-83 10:13 PAGE 118 TEST 8: NOP TEST | |
|--|---|--|----------|
| 5680 5681 | 023762° 023762° 104405 | EAID CLUD - M7 | 10000\$: |
| 5683 5684 | 023764° 023764° 023764° 104403 023766° | ENDSUB ;#3 | L10116: |
| 5681 5682 5683 5684 5685 5686 5687 5688 | 023766° 023766° 104401 | ENDIST | L10113: |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 119
CZUAAA.P11
                11-JAN-83 09:29
                                               TEST 9: SELF TEST
  5689
                                               .SBITL TEST 9: SELF TEST
  5690
  5691
  5692
  5693
                                                        THIS TEST VERIFIES THAT THE ROM BASED SELF TEST
  5694
                                                        CAN BE RUN SUCCESSFULLY WHEN INVOKED VIA
  5695
                                                        THE SELF TEST PORT COMMAND.
  5696
  5697
                                                        TEST SEQUENCE:
  5698
                                                                  1. CLEAR OUTSTANDING INTERRUPTS
  5699
                                                                  2. ISSUE THE SELF TEST PORT COMMAND
                                                                  3. WAIT FOR DAI
  5700
  5701
                                                                  4. CHECK LITE BITE REGISTER FOR SUCCESSFUL SELF TEST
  5702
                                                                  5. WRITE ONE TO CLEAR DNI
  5703
  5704
  5705
  5706
         0237701
                                              BGNTST
  5707
         0237701
  5708
         023770' 004737 017422'
                                                        JSR
                                                                  PC, CLRINT
                                                                                              :CLEAR ANY OUTSTANDING INTERRUPTS
         0237741 103006
  5709
                                                        BCC
                                                                 10$
                                                                                              : OK
  5710
        0237761
                                                        ERRHRD 026, SLFTST
                                                                                              ERROR OCCURRED TRYING TO CLEAR
  5711
         023776' 104456
                                                                                                                          TRAP
                                                                                                                                    C$ERHRD
  5712
         024000' 000032
                                                                                                                          .WORD
                                                                                                                                    26
         024002' 002021'
  5713
                                                                                                                          .WORD
                                                                                                                                    SLFTST
  5714
                                                                                                                           .WORD
  5715
         0240061
                                                        ESCAPE TST
                                                                                              :LEAVE THIS TEST
  5716
         024006' 104410
                                                                                                                          TRAP
                                                                                                                                    CSESCAPE
  5717
         024010' 000170
                                                                                                                                   L10117-.
                                                                                                                           .WORD
        024012' 012737
024020' 012777
024026' 004737
024032' 103022
  5718
                            000770 000332* 10$:
                                                        VCM
                                                                  #10 * SECOND, METER
                                                                                              PUT SOME TIME ON THE METER
                           000003 154310
  5719
                                                                  WSLFT, aPCSRO
                                                        MOV
                                                                                              : RUN SELF TEST
  5720
5721
5722
5723
                                                                                              : DNI ?
                                                        JSR
                                                                 PC, CHKDNI
                                                                  30Š
                                                        BCC
                                                                                                YES
                                                                                              ERROR DNI FAILED TO SET!
        024034' 012737
024042' 012737
024050' 012737
024056' 012737
                           000776' 000310' 001275' 000312' 001340' 000314'
                                                        MOV
                                                                  #SDNI,BITNAM
 5724
5725
5726
5727
5728
5729
5730
5731
5732
5733
5736
5737
5738
                                                                  #SNSET, BITSTA
                                                        MOV
                                                                  #SAFTER, PWHEN
                                                        MOV
                            001371 000316
                                                        MOV
                                                                  #$SLFT, PCOMNO
         0240641
                                                        ERRHRD
                                                                 027, SLFTST, MSG1 ; PRINT ERROR MESSAGE
         0240641 104456
                                                                                                                          TRAP
                                                                                                                                    CSERHRD
        024066' 000033
024070' 002021'
024072' 012750'
                                                                                                                          .WORD
                                                                                                                                    SLFTST
                                                                                                                          .WORD
                                                                                                                          .WORD
                                                                                                                                    MSG1
         0240741
                                                        ESCAPE TST
                                                                                              : AND ABORT TEST
         024074' 104410
                                                                                                                          TRAP
                                                                                                                                    C$ESCAPE
         024076' 000102
                                                                                                                          .WORD
                                                                                                                                   L10117-.
         024100' 017703 154234
                                               305:
                                                        MOV
                                                                  apcsR1,R3
                                                                                              :GET PCSR1 CONTENTS
         024104' 032703
                            03/400
                                                                 #SFT,R3
                                                        BIT
                                                                                              :WAS SELF TEST SUCCESSFUL?
         024110' 001424
                                                        BEO
                                                                  405
                                                                                              ; YES
         024112' 005103
024114' 042703
                                                                                              GET TEST NUMBER CORRECT POLARITY
  5739
                                                        COM
                                                                  83
                                                                                              MASK ALL BUT SELF TEST FIELD
  5740
                            140377
                                                        BIC
                                                                  W^CSFT,R3
         024120' 012701
  5741
                            000010
                                                        MOV
                                                                 #8.,R1
                                                                                              SHIFT RESULT OVER 8 BIT POSTIONS
        024124 006203
024126 005301
  5742
5743
                                               35$:
                                                                 R3
                                                        ASR
                                                                  R1
                                                        DEC
         024130 001375
                                                                  35$
                                                        BNE
```

| HARDWAR CZUAAA. | RE TESTS P11 1 | MACY11 1-JAN-83 | 30(1046) 09:29 | | 13 PAGE SELF TE | 120 ST | | | |
|--|--|----------------------------|--------------------|----------------|------------------------------------|--|--|--|--|
| 5745 5746 5747 5748 5749 5750 | 024136' 024142' 024146' 024146' | 006303 062703 011337 | 024204° 024202° | | MOV ASL ADD MOV ERRHRD | R3,R4 R3 WSTTBL,R3 (R3),STMSG 028,SLFTST,MSG34 | :SAVE ERRUR NUMBER :MAKE NUMBER A BYTE OFF : INDEX INTO SELF TEST : LOAD INTO SELF TEST FAIR : REPORT SELF TEST FAIR | TARLE | C \$ ERHRD |
| 5751 5752 5753 5754 5755 5756 5757 | 024150' 024152' 024154' 024156' 024156' 024160' | 104410 | | | ESCAPE | TST | ; AND ABORT TEST | .WORD .WORD .WORD TRAP .WORD | 28 SLFTST MSG34 C\$ESCAPE L10117 |
| 5758 5759 | 0241621 | 004737 | 017374 | 408: | JSR | PC,CLRDNI | : WRITE ONE TO CLEAR DE | NI | |
| 5760 5761 | 024166* | 103004 | | | BCC | 50\$ | ; ERROR? ; NO ;ERROR DNI FAILED TO CI | LEAR! | |
| 5762 5763 5764 5765 5766 | 024170' 024170' 024172' 024174' 024176' | 000035 | | 5.0 4 | ERRHRD | 029,SLFTST,RACMG7 | ;PRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 29 SLFTST RACMG7 |
| 5767 5768 5769 5770 | 024200' 024200' 024200' 024200' | 104401 | | 50 \$: | ENDTSI | | L10117 | : TRAP | C\$ETST |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 121 CZUAAA.P11 11-JAN-83 09:29 TEST 9: SELF TEST
      5771
5772
5773
                                                                                                       LOCAL STORAGE FOR TEST 9
                                                                                                                                                                               ; SELF TEST MESSAGE ADDRESS
      5774 0242021 000000
                                                                                                        STMSG:: .WORD 0
      5775
      5776
                                                                                                     SELF TEST MESSAGE TABLE
      5777
    5778 024204' 024404'
5779 024210' 024457'
5780 024210' 024457'
5781 024212' 024525'
5783 024216' 024552'
5784 024220' 024613'
5785 024224' 024660'
5787 024224' 024660'
5787 024234' 024746'
5788 024232' 024746'
5790 024234' 024746'
5791 024236' 024746'
5791 024236' 024760'
5792 024240' 024772'
5793 024242' 025004'
5794 024246' 025016'
5795 024246' 025016'
5797 024252' 025063'
5798 024256' 025121'
5800 024266' 025121'
5801 024266' 025121'
5802 024266' 025121'
5803 024266' 025121'
5804 024270' 025270'
5805 024276' 025452'
5807 024276' 025452'
5808 024300' 025513'
5809 024304' 025623'
5810 024306' 025771'
5811 024306' 025771'
5812 024310' 025623'
5813 024326' 026660'
5811 024306' 025771'
5812 024316' 026660'
5811 024306' 025771'
5812 024310' 025774'
5813 024326' 0266317'
5816 024320' 026673'
5817 024332' 026660'
5817 024332' 026660'
5811 024330' 026673'
5819 024332' 026660'
5811 024330' 026673'
5819 024332' 026660'
5811 024332' 026660'
5811 024332' 026660'
5811 024332' 026660'
5811 024332' 026660'
5811 024332' 026660'
5811 024332' 026660'
5811 024332' 026660'
5811 024332' 026660'
5811 024332' 026660'
5811 024332' 026660'
5811 024332' 026660'
5811 024332' 026660'
5811 024332' 026660'
5811 024332' 026660'
                                                                                                        STTBL::
                                                                                                                                                  .WORD
                                                                                                                                                                      SMSG00
SMSG01
                                                                                                                                                  SMSG02
                                                                                                                                                                       SMSG03
                                                                                                                                                                       SMSG04
                                                                                                                                                                       SMSG05
                                                                                                                                                                       SMSG06
                                                                                                                                                                       SMSG07
                                                                                                                                                                       SMSG10
                                                                                                                                                                       SMSG11
                                                                                                                                                                       SMSG12
                                                                                                                                                                       SMSG13
                                                                                                                                                                       SMSG14
                                                                                                                                                                       SMSG15
                                                                                                                                                                       SMSG16
                                                                                                                                                                       SMSG17
                                                                                                                                                                       SMSG20
                                                                                                                                                                       SMSG21
                                                                                                                                                   .WORD
                                                                                                                                                                       SMSG22
                                                                                                                                                   .WORD
                                                                                                                                                                       SMSG23
                                                                                                                                                   . WORD
                                                                                                                                                                       SMSG24
                                                                                                                                                   .WORD
                                                                                                                                                                       SMSG25
                                                                                                                                                   . WORD
                                                                                                                                                                       SMSG26
                                                                                                                                                   . WORD
                                                                                                                                                                       SMSG27
                                                                                                                                                   .WORD
                                                                                                                                                                       SMSG30
                                                                                                                                                   .WORD
                                                                                                                                                                       SMSG31
                                                                                                                                                   .WORD
                                                                                                                                                                       SMSG32
                                                                                                                                                   . WORD
                                                                                                                                                                       SMSG33
                                                                                                                                                   .WORD
                                                                                                                                                                       SMSG34
                                                                                                                                                   .WORD
                                                                                                                                                                       SMSG35
                                                                                                                                                                       SMSG36
                                                                                                                                                   .WORD
                                                                                                                                                   .WORD
                                                                                                                                                                       SMSG37
                                                                                                                                                   .WORD
                                                                                                                                                                       SMSG40
                                                                                                                                                   .WORD
                                                                                                                                                                       SMSG41
                                                                                                                                                   .WORD
                                                                                                                                                                       SMSG42
                                                                                                                                                   .WORD
                                                                                                                                                                       SMSG43
                                                                                                                                                   .WORD
                                                                                                                                                                       SMSG44
                                                                                                                                                   .WORD
                                                                                                                                                                       SMSG45
                                                                                                                                                   .WORD
                                                                                                                                                                       SMSG46
                                                                                                                                                   .WORD
                                                                                                                                                                       SMSG47
                                                                                                                                                   .WORD
                                                                                                                                                                       SMSG50
                                                                                                                                                   .WORD
                                                                                                                                                                       SMSG51
                                                                                                                                                   .WORD
                                                                                                                                                                       SMSG52
                                                                                                                                                   .WORD
                                                                                                                                                                       SMSG53
      5822
5823
                     024334' 026621'
                                                                                                                                                   . WORD
                                                                                                                                                                       SMSG54
                     024 36' 026701'
                                                                                                                                                   .WORD
                                                                                                                                                                       SMSG55
       5824 024340' 026753'
                                                                                                                                                                       SMSG56
                                                                                                                                                   .WORD
       5825
                     024342' 026765'
                                                                                                                                                   .WORD
                                                                                                                                                                        SMSG57
                     024344' 026777'
                                                                                                                                                   .WORD
                                                                                                                                                                        SMSG60
```

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CZUAAA.P11 11-JAN-83 09:29
                                         TEST 9: SELF TEST
         024346' 027010'
024350' 027031'
                                                                         .WORD
                                                                                   SMSG61
                                                                         .WORD
                                                                                   SMSG62
         024352' 027043'
024354' 027070'
                                                                         .WORD
                                                                                   SMSG63
                                                                         .WORD
  5830
                                                                                    SMSG64
                                                                         .WORD
          024356' 027102'
  5831
                                                                                    SMSG65
         024360' 027121'
024362' 027133'
024364' 027145'
                                                                         WORD
  5832
                                                                                    SMSG66
                                                                         WORD
  5833
                                                                                    SMSG67
                                                                         .WORD
  5834
                                                                                    SMSG70
         024366' 027164'
024370' 027215'
                                                                         .WORD
  5835
                                                                                    SMSG71
  5836
                                                                         .WORD
                                                                                    SMSG72
         024372' 027237'
024374' 027251'
  5837
                                                                         .WORD
                                                                                    SMSG73
                                                                         .WORD
                                                                                    SMSG74
  5838
         024376' 027263'
                                                                         .WORD
  5839
                                                                                    SMSG75
         024400' 027275'
                                                                         .WORD
  5840
                                                                                    SMSG76
         024402' 027307'
                                                                         .WORD
  5841
                                                                                    SMSG77
  5842
                                                     :ASCII MESSAGES
         024404' 047503
024412' 042524
024420' 047516
  5843
                               0501 5 042514
                                                    SMSG00::
                                                                         .ASCIZ /COMPLETED - NO ERRORS/
                               020104 020055
   5844
  5845
                               042440
                                          051122
         024420 047316
024426 051117
024432 050103
024440 052123
024446 047511
024454 052123
024457 122
                               000123
020125
052522
020116
  5846
                                                    SMSGO1:: .ASCIZ /CPU INSTRUCTION TEST/
  5847
                                          047111
  5848
5849
                                          052103
                                          042524
  5850
                                   000
                               046517
000124
052111
  5851
                                          052040 SMSGC2:: .ASCIZ /ROM TEST/
         024457' 122
024464' C51505
024470' U51127
024476' 046102
024504' 052116
024512' 052123
024520' 042524
024525' 120
024532' 040503
024540' 051104
024546' 047522
   5852
                                         040505
047503
020114
                                                    SMSGO3:: .ASCIZ /WRITEARLE CONTROL STORE TEST/
  5853
                               020105
047522
051117
052123
054510
020114
   5854
   5855
  5856
                                          020105
  5857
                                             000
                                          044523
                                                    SMSGO4:: .ASCIZ /PHYSICAL ADDRESS ROM/
  5858
   5859
                               051505
  5860
                                          020123
          0245461
                     047522
   5861
                               000115
                                                    SMSGO5:: .ASCIZ /T11 UNIBUS ADDRESS REGISTER TEST/
                               020061
051525
  5862
5863
          0245521
                                          047125
                                         040440
051523
051511
          024560' 041111
         024566' 042104
024574' 051040
024602' 042524
024610' 052'23
024613' 122
                               042522
   5864
   5865
   5866
                                020122
                                          042524
   5867
                                   000
                               041505
                                                    SMSGO6:: .ASCIZ /RECEIVER UNIBUS DMA TEST/
                                          044505
   5868
                     042526
                               020122
          0246201
                                          047125
   5869
          0246261
                                          042040
   5870
          0246341
                     040515
                                052040
                                          051505
   5871
          0246421
                     000124
   5872
   5873
                                                                         .ASCIZ /UNIBUS TEST/
          0246441
                                                    SN'SG07::
                                041111
                                          051525
          0246521
                               051505
051103
                                          000124
                     052040
                                                                         .ASCIZ /MICROPROCESSON DMA TEST/
          0246601
                     044515
   5875
                                                     SMS 110::
          0246661
                     047522
                                042503
                                          051523
   5876
                               04 040 05 1505
   5877
          0246741
                     051117
                                          040515
          0247021
                     052040
                                          000124
   5878
                                                                       .ASCIZ /CSR TEST/
   5879
          0247101
                     051503
                                020122
                                          042524
                                                     SMSG11::
          0247161
                     052123
                                    000
   588U
                                          051105
                                                     SMSG12::
          0247211
                         124
                                046511
                                                                 .ASCIZ /TIMER TEST/
   5881
                                051505
          0247261
                     052040
                                          000124
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| HARDWARE TESTS MACY11 3 CZUAAA.P11 11-JAN-83 | 0(1046) 11-JAN 09:29 | -83 10:13 PAGE TEST 9: SELF TE | 123 ST | |
|---|---|-----------------------------------|-----------|---|
| 5883 024734° 047125 | 042504 044506 | SMSG13:: | .ASC1Z | /UNDEFINED/ |
| 5885 024746' 047125 · | 000104 042504 044506 000104 | SMSG14:: | .ASCIZ | /UNDEFINED/ |
| 5887 024760' 047125 5888 024766' 042516 5889 024772' 047125 | 042504 044506 000104 | SMSG15:: | .ASCIZ | /UNDEFINED/ |
| 5887 024760' 047125 5888 024766' 042516 5889 024772' 047125 5890 025000' 042516 | 042504 044506 | SMSG16:: | .ASCIZ | /UNDEFINED/ |
| 5891 025004' 047125 5892 025012' 042516 5893 025016' 044514 | 000104 042504 044506 000104 | SMSG17:: | .ASCIZ | /UNDEFINED/ |
| 58.34 0250241 046505 | 045516 046440 051117 020131 052123 _000 | SMSG20:: | .ASCIZ | /LINK MEMORY TEST/ |
| 7070 067077 167 | 042116 043105 042105 000 | SMSG21:: | .ASCIZ | /UNDEFINED/ |
| 5898 0250511 125 | 042116 043105 | SMSG22:: | .ASCIZ | /UNDEFINED/ |
| 5900 025063' 125 5901 025070' 047111 | 042116 043105 | SMSG23:: | .ASCIZ | /UNDEFINED/ |
| 5902 025075' 125 | 042116 043105 | SMSG24:: | .ASCIZ | /UNDEFINED/ |
| 5904 025107' 125 5905 025114' 047111 | 042114 043105 | SMSG25:: | .ASCIZ | /UNDEFINED/ |
| 5906 025121' 125 5907 025126' 047111 | 042105 000 042116 043105 042105 000 042116 043105 042105 000 041517 046101 | SMSG26:: | .ASCIZ | /UNDEFINED/ |
| 5908 025133' 125 5909 025140' 047111 | 042116 043105 | SMSG27:: | .ASCIZ | /UNDEFINED/ |
| 5911 025152' 046040 5912 025160' 041501 5913 025166' 052123 5914 025174' 051124 5915 025202' 052111 5916 025210' 044524 | 042105 000 041517 C46101 047517 041120 020113 042524 026440 020040 047101 046523 042524 020122 042515 052517 | SMSG30:: | .ASCIZ | /LOCAL LONPBACK TEST - TRANSMITTER TIMEOUT/ |
| 5919 025226' 047514 5920 025234' 045503 | 040503 020114 050117 040502 052046 051505 920055 051040 044505 042526 044524 042515 000124 | SMSG31:: | .45C1Z | /LOCAL LOOPBACK TEST - RECEIVER TIMEOUT/ |
| 5926 025276' 047514 5927 025304' 045503 5928 025312' 020124 5929 025320' 043125 | 040503 020114 050117 040502 052040 051505 020055 041040 942506 020122 050115 051101 | SM5G32:: | .ASCIZ | /LOCAL LOOPBACK TEST - BUFFER COMPARSION/ |
| 5930 025326' 047503 1931 025334' 044523 5932 025341' 114 5933 025346' 046040 5934 025354' 041501 5935 025362' 052123 5936 025370' 054502 5937 025376' 052517 | 047117 000 041517 046101 047517 041120 020113 042524 026440 020040 042524 041440 | SMSG33:: | .ASC17 | /LOCAL LOOPBACK TEST - BYTE COUNT/ |
| 5938 025403' 114 | 052116 000 041517 046101 | SMSG34:: | .ASCIZ | /LOCAL LOOPBACK TEST - RECEIVER STATUS/ |

H/ C2

| HARDWARE TESTS MACY11 3 CZUAAA.P11 11-JAN-83 | 30(1046) 09:29 | 11-JAN- | 83 10:13 PAGE TEST 9: SELF TES | 125 T | |
|--|--|--|-----------------------------------|----------|--|
| 5995 026102' 040440 5996 026110' 051523 5997 026116' 020124 5998 026124' 042524 5999 026132' 052116 6000 026135' 124 | 052C40 0 020055 0 041440 0 |)42522)51505)54502)52517 | | | |
| 6001 026142 044515 6002 026150 041040 6003 026156 020122 6004 026164 051505 6005 026172 052123 6006 026200 041505 | 052124 0 043125 0 042101 0 020123 0 026440 0 044505 0 |)51516)51105)42506)51104)42524)5104C)42526)52101 | SMSG44:: | .ASC1Z | /TRANSMITTER BUFFER ADDRESS TEST - RECEIVER STATUS/ |
| 6009 026217 124 6010 026224 044515 6011 026232 041040 6012 026240 020122 6013 026246 051505 6014 026254 052123 6015 026262 041522 6016 026270 051117 | 040522 0 052124 0 043125 0 042101 0 020123 0 026440 0 |)51516)51105)42506)51104)42524)41440)51122 | SMSG45:: | .ASCIZ | /TRANSMITTER BUFFER ADDRESS TEST - CRC ERROR/ |
| 6017 026273' 125 6018 026300' 047111 | 042116 0 042105 |)43105 000 | SMSG46:: | .ASCIZ | /UNDEFINED/ |
| 6019 026305' 125 6020 026312' 047111 | 042116 0 042105 | | SMSG47:: | .ASCIZ | /UNDEFINED/ |
| 6021 026317' 122 6022 026324' 042526 6023 026332' 043106 6024 026340' 042104 6025 026346' 052040 6026 026354' 020055 6027 026362' 051516 6028 026370' 051105 6029 026376' 047505 | 041505 0 020122 0 051105 0 042522 0 051505 0 052040 0 044515 0 052040 0 |)44505)52502)40440)51523)20124)40522)52124)46511 | | .ASCIZ | /RECEIVER BUFFER ADDRESS TEST - TRANSMITTER TIMEOUT/ |
| 6030 026403' 122 6031 026410' 042526 6032 026416' 043106 6033 026424' 042104 6034 026432' 052040 6035 026440' 020055 6036 026446' 044505 | 041505 0 020122 0 051105 0 042522 0 051505 0 051040 0 042526 0 |)44505)52502)40440)51523)20124)41505)20122)52517 | SMSG51:: | .ASCIZ | /RECEIVER BUFFER ADDRESS TEST - RECEIVER TIMEOUT/ |
| 6039 026464' 042522 6040 026472' 051105 6041 026500' 042506 6042 026506' 051104 6043 026514' 042524 6044 026522' 020040 6045 026530' 051105 | 041040 0 020122 0 051505 0 052123 0 052502 0 041440 0 |)53111)43125)42101)20123)26440)43106)46517 | SMSG52:: | .ASCIZ | /RECEIVER BUFFER ADDRESS TEST - BUFFER COMPARSION/ |
| 604 8 026546' 042522 6049 026554' 051105 | 041040 0 |)53111)43125)42101 | SMSG53:: | .ASC1Z | /RECEIVER BUFFER ADDRESS TEST - BYTE COUNT/ |

| HARDWARE TESTS MACY1 CZUAAA,P11 11-JAN- | 1 30(1046) 83 09:29 | 11-JAN- | -83 10:13 PAGE TEST 9: SELF TES | | |
|---|--|--|------------------------------------|--------|--|
| 6051 026570' 05110 6052 026576' 04252 6053 026604' 02004 6054 026612' 04144 6055 026620' 00 6056 026621' 12 | 4 052123 0 054502 0 052517 | 020123 026440 042524 052116 | | | |
| 6057 026626 04252 6058 026634 04310 6059 026642 04210 6060 026650 05204 6061 026656 02005 6062 026664 04450 6063 026672 05212 | 6 020122 6 051105 4 042522 0 051505 5 051040 5 042526 3 052101 | 044505 052502 040440 051523 020124 041505 020122 051525 | SMSG54:: | .ASC1Z | /RECEIVER BUFFER ADDRESS TEST - RECEIVER STATUS/ |
| 6064 026700° 00 6065 026701° 12 6066 026706° 04252 6067 026714° 04310 6068 026722° 04210 6069 026730° 05204 6070 026736° 02005 6071 026744° 04244 6072 026752° 00 | 2 041505 6 020122 6 051105 4 042522 0 051505 5 041440 0 051122 | 044505 052502 040440 051523 020124 041522 051117 | SMSG55:: | .ASCIZ | /RECEIVER BUFFER ADDRESS TEST - CRC ERROR/ |
| 6073 026753 12 6074 026760 04711 6075 026765 12 6076 026772 04711 | 5 042116 1 042105 | 043105 000 | SMSG56:: | .ASCIZ | /UNDEFINED/ |
| 6075 026765 12 | 5 042116 | 043105 | SMSG57:: | .ASCIZ | /UNDEFINED/ |
| 6077 026777' 10 | 3 U41322 (| 000 052040 | SMSG60:: | .ASCIZ | /CRC TEST/ |
| 6078 027004' 05150 6079 027010' 05252 6080 027016' 04150 | 2 052116 (| 050040 020124 000 | SMSG61:: | .ASC1Z | /RUNT PACKET TEST/ |
| 6082 027031' 12 | 5 042116 (| 043195 | SMSG62:: | .ASCIZ | /UNDEFINED/ |
| 6084 027043' 11 6085 027050' 05511 6086 027056' 04550 | 3 052105 | 000 051522 040520 052040 | SMSG63:: | .ASCIZ | OVERSIZE PACKET TEST/ |
| 6087 027064 05150 6088 027070 04712 6089 027076 04251 | > 000124 5 042504 (| 044506 | SMSG64:: | .ASC1Z | /UNDEFINED/ |
| 6089 027076° C4251 6090 027102° 04750 6091 027110° 04751 6092 027116° 05212 6093 027121° 12 6094 027126° 04711 6095 027133° 12 6096 027140° 04711 6097 027145° 11 6098 027152° 04050 6099 027160° 05150 | 6 000104 3 046114 1 020116 3 000 | 051511 042524 | SMSG65:: | .ASCIZ | /COLLISION TEST/ |
| 6093 027121' 12 | 5 042116 | 043105 | SMSG66:: | .ASC1Z | /UNDEFINED/ |
| 6095 027133' 12 | 1 042105 5 042116 (| 000 043105 | SMSG67:: | .ASC1Z | /UNDEFINED/ |
| 6096 02/140° 04/11 6097 027145° 11 6098 027152° 04050 | 1 042105 5 046125 3 052123 5 000124 | 000 044524 052040 | SMSG70:: | .ASC1Z | /MULTICAST TEST/ |
| 6100 027164' 04210 6101 027172' 02012 6102 027200' 04710 6103 027206' 02011 | 3 042522 7 052111 6 042524 | 051505 047503 047511 052123 | SMSG71:: | .ASCIZ | /ADDRESS RECOGNITION TEST/ |
| 6104 027214° 00 6105 027215° 10 6106 027222° 04051 | 5 052130 | 051105 047514 | SMSG72:: | .ASC17 | /EXTERNAL LOOPBACK/ |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 127 (ZUAAA.P11 11-JAN-83 09:29 TEST 9: SELF TEST  

6107 027230' 050117 040502 045503  
6108 027236' 000  
6109 027237' 125 042116 043105 SMSG73:: .ASCIZ /UNDEFINED/ 010  
6110 027244' 047111 042105 000  
6111 027251' 125 042116 043105 SMSG74:: .ASCIZ /UNDEFINED/ 0112 027256' 047111 042105 000  
6113 027263' 125 042116 043105 SMSG75:: .ASCIZ /UNDEFINED/ 0113 027263' 125 042116 043105 SMSG75:: .ASCIZ /UNDEFINED/ 0114 027270' 047111 042105 000  
6114 027270' 047111 042105 000  
6115 027275' 125 042116 043105 SMSG76:: .ASCIZ /UNDEFINED/ 0116 027302' 047111 042105 000  
6117 027307' 116 053105 051105 SMSG77:: .ASCIZ /NEVER GOT STARTED/ 0118 027314' 043440 052117 051440  
6119 027322' 040524 052122 042105  
6120 027330' 000  
027332' .EVEN
```

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 128
CZUAAA.P11
              11-JAN-83 09:29
                                           TEST 10: DEUNA ROM DUMP TEST
 6122
6123
6124
6125
                                           .SBTTL TEST 10: DEUNA ROM DUMP TEST
 6126
                                           THIS TEST WILL VERIFY THAT THE DATA PATH FROM THE TIL PROCESSOR TO THE UNIBUS INTERFACE IS INTACT AND ABLE TO TRANSFER DATA RELIABLY.
  6128
                                            THIS DATA PATH IS CRUCIAL FOR FURTHER TESTING BECAUSE IT IS NECESSARY
  6129
                                           :FOR LOADING REPAIR-LEVEL DIAGNOSTICS INTO THE WCS.
 6130
6131
6132
6133
6134
6135
                                           THE TEST STRATEGY IS TO TRANSFER KNOWN DATA OVER THE DATA PATH AND TO
                                           : VERIFY THE TRANSFERRED DATA.
                                           :THE DATA SOURCE FOR THE DUMP TEST IS THE ROM MICROCODE RESIDENT ON THE
                                           DEUNA PORT BOARD. A DUMP OF THE ROM WILL EXERCISE THE DATA PATH NEEDED
  6136
6137
                                           FOR LOADING WCS AND THE ROM CONTENTS CAN BE VERIFIED. THE ROM MICROCODE
                                           ;WILL BE CHECKED BY VERIFYING THE CRC BYTES. THE CRC BYTES CHARACTERIZE
  6138
                                           THE DATA CONTENTS OF THE ROM AND ARE BURNED INTO THE ROM AT THE TIME OF
  6139
                                           ;MANUFACTURE. A FAILURE TO VERIFY THE CRC CALCULATION ON THE DUMPED ROM
  6140
                                           DATA DUMP WILL BE INTERPRETED AS AN ERROR IN THE DATA PATH.
  6141
  6142
                                           :TEST SEQUENCE:
  6143
  6144
                                                    1-WRITE PCSR2 AND PCSR3 WITH THE ADDRESS OF THE PORT CONTROL BLOCK
  6145
                                                    2-WRITE <GET PCBB> PORT COMMAND TO PCSRO
  6146
                                                    3-READ POSRO AND VERIFY DNI BIT SET
  6147
                                                    4-WRITE PCSRO DNI BIT TO RESET IT
  6148
                                                    S-FILL MEMORY BUFFER WITH A BACKGROUND PATTERN
  6149
                                                    6-WRITE PORT CONTROL BLOCK WITH 'DUMP INTERNAL MEMORY' FUNCTION CODE
  6150
                                                    7-WRITE PORT CONTROL BLOCK WITH UNIBUS DATA BLOCK BASE ADDRESS
  6151
                                                    8-WRITE DATA BLOCK LENGTH TO UNIBUS DATA BLOCK
                                                    9-WRITE MEMORY BUFFER ADDRESS TO UNIBUS DATA BLOCK
  6152
  6153
                                                    10-WRITE INTERNAL DATA BLOCK ADDRESS TO UNIBUS DATA BLOCK
                                                    11-WRITE <GET CMD> PORT COMMAND TO PCSRO
  6154
  6155
                                                    12-READ PCSRO AND VERIFY DNI SET
  6156
                                                    13-CALCULATE CRC ON DUMPED DATA
  6157
                                                    14-REPEAT STEPS 5-13 ON EACH 1K OF ROM
  6158
                                                    15-VERIFY CRC =0
  6159
 6160
  6161
  6162
        0273321
                                           BGNTST
        0273321
  6163
                                                                                                        110::
        0273321
  6164
                                            BGNSUB :#1
        0273321
  6165
                                                                                                        110.1:
        027332' 104402
  6166
                                                                                                                 TRAP
                                                                                                                          ($BSUB
  6167
  6108
                                           :LOAD PCSR2+3: ISSUE GET PORT CONTROL BLOCK PORT COMMAND: AND WAIT FOR 'DNI'
  6169
        0273341
  6170
                                             BGNSEG
        0273341 104404
 6171
                                                                                                                 TRAP
                                                                                                                          C$BSEG
  6172
        027336' 012777
                          0006041 150776
                                                            #PCBB_aPCSR2
aPCSR3
                                                    MOV
                                                                                       :LOAD PCSR2+3 WITH PORT CONTROL BLOCK..
  6173
        027344' 005077
                         150774
                                                                                       : ADDRESS
                                                    CLR
        027350' 012777
                                                            #GETPCB.aPCSRO : ISSUE GET PORT CONTROL BLOCK COMMAND #2.SECOND.METER ; PUT SOME TIME IN THE METER
  6174
                                  150760
                          000001
                                                    MOV
  6175
        027356' 012737
                          000176 000332
                                                    MOV
        027364' 004737
  6176
                          0173301
                                                    JSR
                                                                                       :WAIT FOR DNI 10 SET
                                                             PC_CHKDNI
  6177
        027370
                103022
                                                    BCC
                                                             20$
                                                                                       :OK
```

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 129
CZUAAA.P11 11-JAN-83 09:29
                                          TEST 10: DEUNA ROM DUMP TEST
  6178
                                                                                         :ERROR DNI DID NOT SET!
        027372' 012737
027400' 012737
027406' 012737
                          000776' 000310' 001275' 000312' 001340' 000314'
  6179
                                                              #$DNI,BITNAM
#$NSET,BITSTA
                                                                                         :NO. FORMAT ERROR MESSAGE
  6180
                                                     MOV
  6181
                                                     MOV
                                                              #SAFTER, PWHEN
        027414' 012737
  6182
                          001346* 000316
                                                     MOV
                                                              #$GTPCB_PCOMND
        027422'
027422'
027424'
027426'
027430'
                                                     ERRHRD
                                                              030, ROMDMP, MSG1 : PRINT ERROR MESSAGE
  6184
                 104456
                                                                                                                    TRAP
                                                                                                                             CSERHRD
  6185
                 000036
                                                                                                                    .WORD
                                                                                                                             30
  6186
                 0020421
                                                                                                                             ROMDMP
                                                                                                                    .WORD
  6187
                 012750
                                                                                                                    WORD
                                                                                                                             MSG1
        027432°
027432°
027434°
  6188
                                                     ESCAPE TST
                                                                                         : CAN NOT CONTINUE TESTING
  6189
                 104410
                                                                                                                    TRAP
                                                                                                                             CSESCAPE
  6190
                 000310
                                                                                                                    . WORD
                                                                                                                            L10120-.
  6191
        0274361
                                            205:
 6192
        0274361
                                              ENDSEG
                                                                                                          10000$:
        0274361
 6194
        027436' 104405
                                                                                                                    TRAP
                                                                                                                             CSE SEG
  6 95
        0274401
                                              BGNSEG
        027440' 104404
  6196
                                                                                                                    TRAP
                                                                                                                             C$BSEG
  6197
  6198
                                            :WRITE ONE TO CLEAR 'DNI'
  6199
  6200 027442' 004737
                          0173741
                                                     JSR
                                                              PC, CLRDNI
                                                                                         :GO CLEAR DNI
        027446' 103004
  6201
                                                     BCC
                                                              25$
                                                                                         :OK
  6505
                                                                                         ERROR DNI FAILED TO CLEAR!
  6203
        0274501
                                                     ERRHRD 031,ROMDMP,RACMG7
                                                                                         PRINT ERROR MESSAGE
        027450' 104456
  6204
                                                                                                                    TRAP
                                                                                                                             (SERHRD
        0274521 000037
  6205
                                                                                                                    . WORD
                                                                                                                             31
        0274541
  6206
                 002042
                                                                                                                             ROMDMP
                                                                                                                    .WORD
  6207
        0274561
                 0127261
                                                                                                                    .WORD
                                                                                                                             RACMG7
  6208
        0274601
                                            255:
  6209
        0274601
                                              ENDSEG
  6210 027460'
                                                                                                          10001$:
  6211
        027460' 104405
                                                                                                                    TRAP
                                                                                                                             CSE SEG
 6212
        0274621
                                             ENDSUB : #1
        0274621
                                                                                                          L10121:
  6214 0274621 104403
                                                                                                                    TRAP
                                                                                                                             CSE SUB
  6215
        027464"
                                             BGNSUB :#2
                                                                                                          T10.2:
  6216 0274641
  6217 027464 104402
                                                                                                                    TRAP
                                                                                                                             C$BSUB
  6218
  6219
                                            FILL BUFFER WITH PATTERN: FORMAT PCBB AND UDBB: ISSUE GET COMMAND PORT COMMAND
  6550
                                            AND WAIT FOR 'DNI'
  6221
  6222
        027466' 012737
                          000020
                                   000604
                                                     MOV
                                                              WDIM, P(BB
                                                                                         :LOAD PCB WITH DUMP INTERNAL MEMORY FUNCTION
  6223
                          G006141
                                                              #UDBB, PCBB+2
PCBB+4
                                                                                         :LOAD UNIBUS DATA BLOCK BASE ADDRESS...
                                   000606
                                                     MOV
        027502' 005037
                          0006101
                                                                                         :INTO PCB
  6224
                                                     CLR
        027506' 012737
027514' 012705
  6225
                          040000
                                   000622
                                                     MOV
                                                              #ROMADR, UDBB+6
                                                                                         INTERNAL BASE ADDRESS OF ROM
                                                              #8.,R5
  6226
                          000010
                                                     MOV
                                                                                         :DUMP ROM IN 8. 1K CHUNKS
  6227
        027520' 005004
                                                     CLR
                                                              R4
                                                                                         INITIAL CRC VALUE
        027522'
  6228
                                            26$:
  6229
                                              BGNSEG
        027522
  6230
                 104404
                                                                                                                    TRAP
                                                                                                                            ($BSEG
        027524' 013701
  6231
                          0003241
                                                     MOV
                                                              FREMEM,R1
                                                                                         GET POINTER TO BUFFER
        027530' 012702
                                                              WSIZ1K/2,R2
WPAT1,R3
  6232
                          002000
                                                     MOV
                                                                                         GET 1K WORD COUNT
  6233
        0275341
                 012703
                          000516
                                                     MOV
                                                                                         GET A BACKGROUND PATTERN
```

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 130
CZUAAA.P11
              11-JAN-83 09:29
                                                TEST 10: DEUNA ROM DUMP TEST
         027540' 011321
027542' 005302
027544' 001375
                                                275:
                                                                   (R3),(R1)+
                                                                                                :FILL BUFFER WITH BACKGROUND PATTERN
  6235
                                                                   R2
27$
                                                          DEC
  6236
                                                          BNE
                  012737
  6237
         0275461
                             004000
                                      0006141
                                                                   #ROMSIZ/8., UDBB
                                                                                                :1K BYTE COUNT
                            000324'
         0275541
                                                                   FREMEM, UDBB+2
  6238
                                      0006161
                                                         MOV
                                                                                                :AND BUFFER ADDRESS
         027562°
027566°
                   005037
  6239
                                                         CLR
                                                                   UDBB+4
         027566' 012737
027574' 012777
                                                                                                :PUT SOME TIME ON THE METER :LOAD "CET COMMAND" PORT COMMAND
  6240
                             000176
                                      0003321
                                                         MOV
                                                                   #2 * SECOND, METER
  6241
                            000002 150534
                                                         MOV
                                                                   #GETCMD, aPCSRO
         027602° 004737
027606° 103022
  6242
                             0173301
                                                          JŠŘ
                                                                                                WAIT FOR DNI TO SET
                                                                   PC, CHKDNI
                                                         BCC
                                                                                                :OK
  6244
                                                                                                ERROR, DNI DID NOT SET!
FORMAT ERROR MESSAGE
         027610' 012737
                            000776' 000310'
                                                         MOV
                                                                   #$DNI,BITNAM
                                                                   #$NSET, BITSTA
         027616' 012737
                             001275' 000312'
  6246
                                                         MOV
  6247
         027624 012737
                            001340' 000314'
                                                         MOV
                                                                   #SAFTER, PWHEN
         027632' 012737
  6248
                            001355' 000316'
                                                         MOV
                                                                   #SGTCMD_PCOMND
  6249
6250
6251
6252
6253
         0276401
                                                         ERRHRD
                                                                   032_ROMDMP_MSG1
         027640' 104456
                                                                                                                             TRAP
                                                                                                                                      CSERHRD
         027642' 000040 027644' 002042'
                                                                                                                             .WORD
                                                                                                                                      32
                                                                                                                                      ROMDMP
                                                                                                                             . WORD
         027646' 012750'
                                                                                                                             .WORD
                                                                                                                                      MSG1
  6254
         0276501
                                                         ESCAPE TST
         0276501 104410
                                                                                                                             TRAP
                                                                                                                                       CSESCAPE
 6256
6257
6258
6259
         027652' 000072
                                                                                                                             -WORD
                                                                                                                                      L10120-.
         0276541
                                                305:
         0276541
                                                  ENDSEG
                                                                                                                   100005:
         0276541
         0276541 104405
                                                                                                                             TRAP
  6260
                                                                                                                                      CSESEG
  6261
         0276561
                                                  BGNSEG
  626<u>2</u>
6263
                                                                                                                             TRAP
                                                                                                                                      C$BSEG
         0276561 104404
 6264
                                                :WRITE ONE TO CLEAR 'DNI'
 6266 027660' 004737
6267 027664' 103004
6268
                            0173741
                                                          JSR
                                                                   PC, CLRDNI
                                                                                                :GO CLEAR DNI BIT
                                                         BCC
                                                                   33$
                                                                                                :OK
                                                                                                ERROR DNI FAILED TO CLEAR
  6269
6270
                                                                                                PRINT ERROR MESSAGE
         027666
                                                         ERRHRD 033_RAMDMP_RACMG7
         027666' 104456
                                                                                                                             TRAP
                                                                                                                                       CSERHRD
 6270 027666°
6271 027670°
6272 027672°
6273 027674°
6274 027676°
6275 027676°
6276 027676°
6277 027676°
6278
6279
         027670' 000041
                                                                                                                             .WORD
                                                                                                                                      33
         027672' 002042'
027674' 012726'
                                                                                                                             .WORD
                                                                                                                                      ROMDMP
                                                                                                                             .WORD
                                                                                                                                      RACMG7
                                                33$:
                                                  ENDSEG
                                                                                                                   100015:
                                                                                                                             TRAP
                                                                                                                                      CSE SEG
         027676* 104405
                                                CALCULATE CRC ON 1K OF DATA DUMPED FROM ROM
  6280
  6281
         027700' 013700
                            0003241
                                                                   FREMEM, RO
                                                                                                :GET BUFFER ADDRESS
                                                          MOV
         6282
6283
                             004000
                                                          MOV
                                                                   WSIZ1K,R2
                                                                                                GET BYTE COUNT
                                                                   PC, CRC16
                             017042
                                                          JSR
                                                                                                : CALC CRC ON 1K BUFFER
         027714' 062737
                             004000 0006221
                                                                   #ROMSIZ/8., UDBB+6
                                                                                                POINT TO NEXT 1K OF ROM
  6284
                                                          ADD
         027722' 005305
  6285
                                                          DEC
                                                                   R5
                                                                                                :HAVE WE DONE ALL 8K?
         027724' 001276
                                                                                                :NO
  6286
                                                                   26$
                                                          BNE
         027726' 005704
                                                                                                : YES. IS CRC = 0?
  6287
                                                          TST
                                                                   R4
         027730' 001404
                                                         BEQ
                                                                                                :YES, OK
  6288
         0277321
                                                         ERRHRD
                                                                   034, ROMDMP, MSG2
                                                                                                PRINT ERROR MESSAGE
  6289
```

| HARDWAR CZUAAA. | E TESTS P11 1 | MACY11 1-JAN-83 | 30(1046) 11-J 5 09:29 | AN-83 10 TEST | 0:13 10: DE | PAGE 13 UNA ROP | 31 M DUMP | TEST | | | | |
|--|---|--|--------------------------|------------------|----------------|--------------------|--------------|------|--|--------------------|---------------------|--|
| 6293 6294 6293 6294 6295 6297 6298 6299 6300 6301 | 027732' 027736' 027740' 027742' 027742' 027744' 027744' | 104456 000042 002042 013012 104403 | | 40\$: | JB ;#2 | | | | | L10122: L10120: | TRAP WORD WORD TRAP | CSERHRD 34 ROMDMP MSG2 CSESUB CSETST |
| 6302 6303 | | | | | | | | | | | | |

```
TEST 10: DEUNA ROM DUMP TEST
CZUAAA.P11
              11-JAN-83 09:29
  6304
 6305
                                            .SBTTL TEST 11: WCS LOAD/DUMP TEST
  6306
  6307
  6308
  6309
                                            THIS TEST WILL USE THE LOAD/DUMP PORT COMMAND TO VERIFY THE DATA
  6310
                                            PATHWAY TO/FROM THE WCS. PATTERNS WILL BE USED TO CHECK THE DATA PATHWAY
  6311
                                            FOR ALL SAO AND SAT ERRORS.
  6312
6313
                                            BECAUSE THE OPERATIONAL MICROCODE NEEDS THE LOWER 2K OF WCS ONLY THE TOP HALF.
  6314
  6315
                                            TO MEMORY FOR VERIFICATION. THIS PROCEDURE WILL BE REPEATED FOR ALL PATTERNS.
  6316
  6317
                                            :TEST SEQUENCE:
  6318
                                                    1-FORMAT UNIBUS DATA BLOCK WITH NUMBER OF WORDS, WCS DESTINATION
                                                    ADDRESS, AND SOURCE BUFFER ADDRESS.
2-FILL SOURCE BUFFER WITH DATA PATTERN
  6319
  6320
                                                    3-WRITE PORT CONTROL BLOCK WITH ADDRESS OF UNIBUS DATA BLOCK AND WITH THE 'LOAD INTERNAL MEMORY' FUNCTION CODE
  6321
  6322
6323
                                                    4-WRITE PCSR2 AND PCSR3 WITH PORT CONTROL BLOCK ADDRESS
  6324
                                                    5-WRITE PCSRO WITH <GET CMD> PORT COMMAND
  6325
                                                    6-READ PCSRO TO VERIFY DNI SET
  6326
                                                    7-WRITE ONE TO CLEAR UNI
  <u>93</u>27
                                                    8-FILL DESTINATION BUFFER WITH ZEROS
  6328
                                                    9-WRITE PORT CONTROL BLOCK WITH 'DUMP INTERNAL MEMORY'
  6329
                                                      FUNCTION CODE.
  6330
                                                    10-WRITE PCSRO WITH <GET CMD> PORT COMMAND
  6331
                                                    11-VERIFY DNI SET
  6332
                                                    12-WRITE ONE TO CLEAR DNI
                                                    13-COMPARE DESTINATION BUFFER WITH DATA PATTERN
  6333
  6334
                                                    14-REPEAT STEPS 1-13 FOR ALL DATA PATTERNS
  6335
  6336
                                            ********************************
  6337
  6338
        0277461
                                           BGNTST
 6339
6340
6341
6342
6343
        0277461
                                                                                                        111::
        027746' 012704 000516'
                                                             #PATERN,R4
                                                                                       POINT TO LIST OF DATA PATTERNS
        0277521
                                            BGNSUB :#1
        0277521
                                                                                                        111.1:
        027752' 104402
                                                                                                                 TRAP
                                                                                                                          C$BSUB
  6344
6345
                                           :LOAD WCS
  6347
        0277541
                                             BGNSEG
        027754' 104404
  6348
                                                                                                                 TRAP
                                                                                                                          C$BSEG
  6349
  6350
                                           FILL SOURCE BUFFER: FORMAT UDBB AND PCBB: ISSUE GET PORT CONTROL BLOCK PORT
  6351
                                           : COMMAND AND WAIT FOR 'DNI'
  6352
  6353
        027756' 013702
                          0003241
                                                             FREMEM, R2
NWCSSIZ/4, R3
                                                    MOV
                                                                                       GET UNIBUS BUFFER ADDRESS
  6354
        027762' 012703
                                                                                       GET HALF SIZE OF WCS IN WORDS
                          004000
                                                    MOV
        027766' 011422
027770' 005303
  6355
                                           10$:
                                                    MOV
                                                             (R4)_{*}(R2)+
                                                                                       :FILL BUFFER WITH DATA PATTERN
  6356
                                                    DEC
                                                             R3
  6357
        027772' 001375
                                                             10$
                                                    BNE
  6358
  6359
                                                                                       :SETUP UNIBUS DATA BLOCK
```

HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 132

H/ CZ

| HARDWAR CZUAAA. | E TESTS P11 1 | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN- | 83 10:13 TEST 11: W | PAGE ICS LO | 134 AD/DUMP TEST | | | | |
|---|---|--|-------------------------------|--|------------------------|----------------|--|---|------------------------------------|---------------------------------|------------------------------------|
| 6416 6417 6418 | 030204' 030210' | 004737 103022 | 017330' | | J.S | | PC_CHKDNI 30\$ | GO WAIT FOR DN | | | |
| 6419 6420 6421 6422 | 030212' 030220' 030226' 030234' | 012737 012737 012737 012737 | 000776' 001275' 001340' | 000310' 000312' 000314' 000316' | MC MC MC MC |)V)V | #\$DNI,BITNAM #\$NSET,BITSTA #\$AFTER,PWHEN #\$GTCMD,PCOMND | ;ERROR DNI DID | NUI SEI: | | |
| 6418 64120 64123 64223 64223 64223 64223 64223 64223 64223 64223 6433 643 | 030242' 030242' 030244' 030246' 030250' | 000045 0020671 | | 0003.0 | | ŔŔĦŖĎ | 037, DATALD, MSG1 | ;PRINT ERROR ME | SSAGE | TRAP .WORD .WORD .WORD | CSERHRD 37 DATALD MSG1 |
| 6428 6429 6430 6431 | 030252' 030252' 030254' 030256' 030256' | | | | 30\$: | SCAPE | TST | | | TRAP .WORD | CSESCAPE L10123 |
| 6433 6434 6435 | 030256' 030256' 030260' | 104405 | | | ENDSEG BGNSEG | | | | 10002\$: | TRAP | C\$ESEG |
| 6437 6438 6439 | 030260' | | 0437741 | | WRITE ONE | | | | | TRAP | C\$BSEG |
| 6441 6442 | 030262' | | 017374' | | B(| C | PC_CLRDNI 35\$ | ;GO CLEAR DNI ;OK ;ERROR DNI FAIL | ED TO CLE | AR | |
| 6443 6444 6445 6446 6447 6448 | 030270' 030270' 030272' 030274' 030276' | 104456 000046 002067' 012726' | | | | RRHRD | 038,DATALD,RACMG7 | ;PRINT ERROR MÉ | SSAGE | TRAP .WORD .WORD .WORD | C\$ERHRD 38 DATALD RACMG7 |
| 6448 6449 6450 6451 6452 | 030300' 030300' 030300' 030302' | 104405 | | | 35\$: ENDSEG | +1 | | | 10003\$: | TRAP | C\$ESEG |
| 6653 | 030302° 030302° 030304° 030304° | 104403 | | | BGNSUB : | | | | L10124: | TRAP | C\$ESUB |
| 6454 6455 6456 6457 6458 6459 | 030304 | 104402 | | | DUMP WCS | | | | | TPAP | C\$BSUB |
| 6461 6462 6463 6464 | 030306° 03036′ | 104404 | | | BGNSEG | T T T ALA T | ION BUFFER; FORMAT PCB | OD AND LIDDD. ICCLIC | CET COMM | TRAP | C\$BSEG |
| 6465 6466 | | | | | AND WAIT | FOR 1 | DNI ' | • | | | COMMAND |
| 6467 6468 6469 6470 6471 | 030310° 030314° 030320° 030322° 030324° | 012703 005022 005303 | 000324° 004000 | | 40\$: CL DE BN |)V .R .C | FREMEM,R2 #WCSSIZ/4,R3 (R2)+ R3 40\$ | GET ADDRE'S OF SIZE IN WORDS FILL DESTINATI | FREE MEN OF BUFFEF ON BUFFEF | MORY R WITH Z | EROS |

```
HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 135 CZUAAA.P11 11-JAN-83 09:29 TEST 11: WCS LOAD/DUMP TEST
  6472
6473
                                 000324' 000616'
000620'
000020 000604'
0000275 000332'
017330'
           030326' 013737
                                                                               FREMEM, UDBB+2
                                                                    MOV
   6474
           0303341
                      005037
                                                                    CLR
                                                                               UDBB+4
           030340' 012737
030346' 012777
030354' 012737
030362' 004737
   6475
                                                                    MOV
                                                                               WDIM.PCBB
                                                                                                                 ;LOAD 'DUMP INTERNAL MEMORY' FUNCTION
   6476
                                                                    MOV
                                                                                                                 :ISSUE GET COMMAND PORT COMMAND
                                                                               #GETCMD, aPCSRO
   6477
                                                                                                                 PUT SOME TIME ON THE METER WAIT FOR DNI TO SET
                                                                    MOV
                                                                               #3*SECOND, METER
   6478
                                                                               PC CHKDNI
                                                                    JSR
           030366' 103022
030370' 012737
030376' 012737
030404' 012737
030412' 012737
   64/9
                                                                    BCC
                                                                                                                 :OK
                                  000776' 000310' 001275' 000312' 001340' 000314' 001355' 000316'
   6480
                                                                               #SDNI BITNAM
#SNSET BITSTA
                                                                    MOV
   6481
                                                                    MOV
   6482
                                                                    MOV
                                                                               #$AFTER, PWHEN
   6483
                                                                    MOV
                                                                               #$GTCMD,PCOMND
   6484
           0304201
                                                                    ERRHRD
                                                                               039, DATALD, MSG1
           030420' 104456
030422' 000047
030424' 002067'
030426' 012750'
   6485
                                                                                                                                                   TRAP
                                                                                                                                                               CSERHRD
   6486
                                                                                                                                                               39
                                                                                                                                                   . WORD
   6487
                                                                                                                                                   .WORD
                                                                                                                                                               DATALD
   6488
                                                                                                                                                    .WORD
                                                                                                                                                              MSG1
   6489
           0304301
                                                                    ESCAPE TST
           030430' 104410
030432' 000100
030434'
   6490
                                                                                                                                                   TRAP
                                                                                                                                                               C$ESCAPE
   6491
                                                                                                                                                    .WORD
                                                                                                                                                              L10123-.
  6492
6493
                                                         50$:
           0304341
                                                           ENDSEG
  6494
6495
           0304341
                                                                                                                                        100003:
           030434' 104405
                                                                                                                                                   TRAP
                                                                                                                                                               C$ESEG
   6496
           0304361
                                                           BGNSEG
           030436° 104404
030440° 004737
030444° 103004
  6497
                                                                                                                                                   TRAP
                                                                                                                                                               C$BSEG
   6498
                                                                                                                 ; GO CLEAR DNI
                                  0173741
                                                                    JSK
                                                                               PC, CLRDNI
  6498
6499
6500
6501
6502
6503
6504
6506
6507
                                                                    BCC
                                                                               60$
                                                                                                                 ;OK
                                                                                                                 ERROR DNI FAILED TO CLEAR
           030446
                                                                    ERRHRD
                                                                               040, DATALD, RACMG7
                                                                                                                 PRINT ERROR MESSAGE
           030446' 104456
                                                                                                                                                   TRAP
                                                                                                                                                               C$ERHRD
           030450' 000050
030452' 002067'
030454' 012726'
                                                                                                                                                   .WORD
                                                                                                                                                              40
                                                                                                                                                    .WORD
                                                                                                                                                              DATALD
                                                                                                                                                    .WORD
                                                                                                                                                              RACMG7
           0304561
                                                         605:
           0304561
                                                           ENDSEG
  6508
6509
                                                                                                                                        10001$:
           0304561
           030456' 104405
                                                                                                                                                   TRAP
                                                                                                                                                              CSESEG.
   6510
  6511
                                                         COMPARE DUMPED DATA TO WRITTEN PATTERN
  6512
           030460' 013701
030464' 012703
030470' 021114
                                  0003241
                                                                                                                 ; SOURCE BUFFER ADDRESS
                                                                    MOV
                                                                               FREMEM,R1
                                                                               #<WCSSIZ/2>/2,R3
(R1',(R4)
  6514
6515
6516
6517
6518
6520
6521
6522
6523
6524
6526
                                                                                                                 # OF WORDS TO COMPARE
                                  004000
                                                                    MOV
                                                         705:
                                                                                                                 IS WHAT WAS LOADED SAME AS...
                                                                    CMP
                                                                                                                  WHAT WAS DUMPED?
           030472' 001404
                                                                    BEO
                                                                                                                  : YES
                                                                    ERRHRD
                                                                               041, DATALD, MSG5; ERROR DATA COMPARE
           030474' 104456
                                                                                                                                                   TRAP
                                                                                                                                                              CSERHRD
           030476' 000051
                                                                                                                                                    .WORD
                                                                                                                                                              41
           030500 002067
                                                                                                                                                    .WORD
                                                                                                                                                              DATALD
           030502' 013142'
                                                                                                                                                    .WORD
                                                                                                                                                              MSG5
           030504' 005721
                                                                                                                 ; POINT TO NEXT LOCATION
                                                         80$:
                                                                                (R1)+
                                                                    151
           030506' 005303
                                                                    DEC
                                                                               R3
                                                                                                                 :WE DONE ALL WORDS?
          030510' 001367
030512'
030512'
                                                                                70$
                                                                                                                 :NOT YET
                                                                    BNE
                                                          ENDSUB : #2
   6527
                                                                                                                                        L10125:
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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 136 CZUAAA.P11 11-JAN-83 09:29 TEST 11: WCS LOAD/DUMP TEST 6528 030512' 104403 6529 6530 6531 6532 030514' 062704 6533 030520' 020427 6534 030524' 001402 6535 030532' 6537 030532' 6538 030532' 6539 030532' 104401 TRAP C\$ESUB CKECK TO SEE IF ALL PATTERNS HAVE BEEN RUN THROUGH 000002 #2.R4 R4.#PAT6 90\$ ADD POINT TO NEXT DATA PATTERN WE DONE ALL DATA PATTERNS? YES END OF TEST NO CONTINUE WITH NEW DATA PATTERN CMP BEO 0277521 111.1 JMP 90\$: ENDTST L10123: TRAP C\$ETST

| | | | | | | | £ 11 | | | |
|--------------------------------------|--|-----------------------------|--|-------------------|--------------------|--------------------------|--|---|---------------------------------|----------------------------------|
| HARDWARE CZUAAA.F | TESTS | MACY11 I-JAN-83 | 30(1046) 09:29 | 11-JAN- | -83 10: TEST 12 | 13 PAGE : LOAD A | 138 IND START FUNCTION TEST | | | |
| 6596 | 030572 | 012737 | 000614 | 000606 | | MOV | #UDBB,PCBB+2 | ;SET ADDRESS OF UDBB | | |
| 6597 6598 6599 6600 | 030600° 030604° 030612° | 005037 012777 005077 | 000610° 000604° 147526 | 147530 | | CLR MOV CLR | PCBB+4 #PCBB_aPCSR2 aPCSR3 | ;TELL DEUNA WHERE PCBB | l S | |
| 6601 6602 6603 6604 | 030616' 030624' 030632' 030636' | | 000001 000176 017330 | 1475'2 000332' | | MOV MOV JSR BCC | #GETPCB,@PCSRO #2*SECOND,METER PC,CHKDNI 10\$ | ; ISSUE 'GET PCB' PORT CO ; SETUP TIMER ; WAIT FOR 'DNI' TO SET ; OK | DMMAND | |
| 6605 6606 6607 6608 6609 | 030640' 030646' 030654' 030662' | 012737 012737 | 000776' 001275' 001340' 001346' | 000314 | | MOV MOV MOV | #\$DNI,BITNAM #\$NSET,BITSTA #\$AFTER,PWHEN #\$GTPCB,PCOMND | ;ERROR DNI NOT SET! ;SETUP ERROR MESSAGE | | |
| 6610 6611 6612 6613 6614 | 030670' 030670' 030672' | 104456 000052 002121' | 00.340 | 0003.0 | | ERRHRD | 042,LASFT,MSG1 | ;PRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 42 LASFT MSG1 |
| 6615 6616 6617 6618 | 030700 | 104410 | | | 10\$: | ESCAPE | 151 | ; NO POINT IN CONTINUING | | C\$ESCAPE L10126 |
| 6619 6620 6621 | 030704° 030704° 030704° | 104405 | | | ENDSE | | | 10000\$: | TRAP | C\$ESEG |
| 662 <u>2</u> 6623 | 030706° 030706° | 104404 | | | BGNSE | G | | | TRAP | C\$BSEG |
| 6624 6625 | | | | | WRITE | ONE TO C | LEAR 'DNI' | | | |
| 6626 6627 | 030710 | | 0173741 | | ; | JSR | PC, CLRDNI | GO CLEAR 'DNI' | | |
| 6628 6629 | 030714' | 103006 | | | | BCC | 20\$ | OK :ERROR 'DNI' NOT CLEAR! | | |
| 6630 6631 6632 6633 6634 | 030716' 030716' 030720' 030722' | 000(53 | | | | ERRHRD | | ;PRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 43 LASFT RACMG7 |
| 6635 6636 6637 6638 | 030726° 030726° 030730° 030732° | 104410 000262 | | | 20\$: | ESCAPE | 121 | ;DO NOT CONTINUE TEST | TRAP.WORD | CSESCAPE L10126 |
| 6639 6640 | 030732' 030732' | | | | ENDSE | G | | 10001\$: | | |
| 6641 6642 | 030732' | 104405 | | | BGNSE | : G | | | TRAP | C\$ESEG |
| 6643 | 030734 | 104404 | | | | . • | | | TRAP | C\$BSEG |
| 6644 6645 6646 | | | | | NOW THE | IA; THE L ID SO THE | JNA KNOWS WHERE THE MICR E MICROCODE CAN GET LOAD | OCODE IS, ISSUE THE GET CO ED INTO WCS | OMMAND (| PORT |
| 6647 6648 6649 6650 6651 | 030736° 030744° 030752° 030756° | 012737 | 000002 000176 017330 | 147372 000332* | • | MOV JSR BCC | #GETCMD,@PCSRO #2*SECOND,METER PC,CHKDN1 30\$ | :ISSUE <get command=""> PO :SETUP TIMER :WAIT FOR 'DNI' :OK</get> | RT (OMM | AND |

| HARDWAR CZUAAA. | | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN-83 10: TEST 12 | | 140 IND START FUNCTION TES | 5 T | | | |
|--|---|---------------------------------------|----------------------------|--------------------------|--------------------------|--|---|--|-------------------------------------|--|
| 6708 6709 6710 6711 6712 6713 | 031154° 031160° 031164° | 012750° 017702 042702 012701 | 147160 140370 012402 | 50\$: | MOV BIC MOV (MP | apcsR1,R2 #^c <sf1!pstate>,R2 #SfTB0!SfTB2!SfTB4!I R1,R2</sf1!pstate> | GET PCSRT CONTENTS; CLEAR ALL BUT SELF TO INTST,RT ; PATTERN THAT SHOW IS PCSRT PATTERN CORT | ULD BE IN | LASFT MSG1 TATE BITS PCSR1 | |
| 6714 6715 6716 6717 5718 6719 6720 6721 6722 | 031172' 031174' 031176' 031200' 031202' 031204' 031204' | 001404 104456 000057 002121 | | 60 \$: ENDSE | BEQ ERRHRD | 60\$ 047,LASFT,MSG6 | :YES :NO, PRINT ERROR MESSA | AGE TRAP .WORD .WORD .WORD | CSERHRD 47 LASFT MSG6 | |
| 6722 6723 6724 6725 6726 6727 6728 6729 | 031204° 031204° | 104405 | | : EVERYT :GOING | HING WOR | RKED JUST FINE, NOW WE FORE WE LEAVE OTHERWI | 10004: E HAVE TO GET THE OPERATION ISE EVERYTHING WILL BE SCR | TRAP NAL MICRO | CSESEG CODE | |
| 6727 6728 6729 6730 6731 6732 | 031206° 031212° 031212° 031212° | | 020104* | ENDTST | JSR | PC, REUNA | RESET DEUNA TO RESTOR MICROCODE | | IONAL (SETST | |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 141 CZUAAA.P11 11-JAN-83 09:29 TEST 13: COMPREHENS
                                               TEST 13: COMPRÉHENSIVE WCS MEMORY TEST
  6733
6734
6735
                                                .SBITL TEST 13: COMPREHENSIVE WCS MEMORY TEST
                                                6736
6737
                                                THIS TEST WILL EXHAUSTIVELY TEST THE WCS MEMORY.
CUSTOM MICROCODE MODULE B. MICROTEST WI IS USED TO DO THE ACTUAL TESTING.
MICROTEST WI RUNS A SERIES OF MICROSUBTESTS TESTS ON THE WCS MEMORY CHECKING.
FOR BOTH ADDRESS AND DATA ERRORS. IF AN ERROR DOES OCCUR THE PORT CONTROL
  6738
  6739
5740
6741
                                                BLOCK WILL CONTAIN THE INFORMATION ABOUT THE ERROR.
  6742
                                                PCBB+0: CONTAINS THE MICROSUBTEST THAT FAILED PCBB+1: 0 = DATA ERROR, 1 = ADDRESS ERROR
  6744
  6745
                                                PCBB+2: CONTAINS THE ADDRESS OF THE LOCATION
                                                PCBB+4: CONTAINS THE DATA THAT WAS WRITTEN
  6746
  6747
                                                PCBB+6: CONTAINS THE DATA THAT WAS READ
  6748
  6749
                                                :TEST SEQUENCE:
  6750
                                                         1-LOAD MICROMODULE 'B' INTO THE TOP HALF OF WCS IF NOT ALREADY DONE SO
  6751
                                                         2-WAIT FOR THE MICROMONITOR TO BECOME ACTIVE
  6752
                                                         3-CLEAR PCBB LOCATIONS 0-7
  6753
                                                         4-TELL MICROMONITOR TO EXECUTE MICROTEST #1
  6754
                                                         5-WAIT FOR 'DNI'
  6755
                                                         6-IF ERROR PRINT PCBB CONTENTS
7-WRITE ONE TO CLEAR 'DNI'
  6756
  6757
                                                         8-RESTORE OPERATIONAL MICROCODE
  6758
  6759
                                                6760
  6761
         0312141
                                               BGNTST
  6762
         0312141
                                                                                                                  113::
  6763
  6764
                                               CHECK TO SEE IF MICROCODE MODULE 'B' HAS BEEN LOADED. IF NOT, LOAD IT INTO
  6765
                                                THE TOP HALF OF WCS, START IT AND WAIT FOR THE MICROMONITOR TO SET "DNI".
                                                AFTER 'DNI' SETS WRÎTE '1' TO CLEAR ÎT.
  6766
  6767
         031214'
                                                  BGNSEG
  6768
         031214' 104404
031216' 022737
  6769
                                                                                                                            TRAP
                                                                                                                                     C$BSEG
  6770
                            000102 000326
                                                         CMP
                                                                   #'B,MICRO
                                                                                               :HAS MICROCODE MUDULE 'B' BEEN LOADED?
         031224 001004
  6771
                                                         BNE
                                                                   58
         031226' 122777
  6772
6773
                            000001 147104
                                                                   #INMON, aPCSR1
                                                         (MPB
                                                                                               ; YES, IS THE MICROMONITOR ACTIVE?
         031234' 001435
                                                         BEQ
                                                                   20$
                                                                                               YES SKIP LOADING THE MICROMODULE
         0312361
                            000102 000326 55:
  6774
                  012737
                                                         MOV
                                                                   #'B.MICRO
                                                                                               GO LOAD MICROCODE MODULE B
        031250' 103564
031252' 012737
                            0202521
                                                                  PC_LODMIC 55$
  6775
                                                         JSR
  6776
                                                                                               ; ERROR
                                                         BCS
  6777
                            000176 000332 105:
                                                                   #2*SECOND, METER
                                                                                               WAIT FOR THE MICROMONITOR
                                                         MOV
         0312601
                  004737
  6778
                            0173301
                                                         JSR
                                                                   PC, CHKDNI
         0312641
                                                                   20$
  6779
                   103021
                                                         BCC
                                                                                               :OK
                            000776' 000310' 001275' 000312' 001340' 000314' 001355' 000316'
         031266' 012737
031274' 012737
031302' 012737
  6780
                                                                   "SDNI, BITNAM
                                                         MOV
  6781
6782
6783
                                                         MOV
                                                                   #$NSET,BITSTA
                                                         MOV
                                                                  #SAFTER, PWHEN
         031310' 012737
                                                         MOV
                                                                   #SGTCMD,PCOMND
                                                         ERRHRD
  6784
         031316
                                                                  048, WCSMEM, MSG1
                                                                                               :PRINT ERROR MESSAGE
        031316' 104456
031320' 000060
031322' 002165'
  6785
                                                                                                                           TRAP
                                                                                                                                     (SERHRD
  6786
                                                                                                                            .WORD
                                                                                                                                     48
                                                                                                                            .WORD
  6787
                                                                                                                                     WCSMEM
  6788
         031324' 012750'
                                                                                                                            .WORD
                                                                                                                                     MSG1
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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 142
(ZUAAA.P11 11-JAN-83 09:29
                                                TEST 13: COMPREHENSIVE WCS MEMORY TEST
         031326' 000535
031330' 004737
031334' 103005
  6790
                             0173741
                                                                   PC CLRDNI
25$
                                                205:
                                                          JSR
                                                                                                :CLEAR DNI
  6791
                                                          BCC
  6792
         0313361
                                                          ERRHRD
                                                                   049, WCSMEM, RACMG7
                                                                                                :DNI DID NOT CLEAR!
  6793
         0313361
                                                                                                                             TRAP
                                                                                                                                       CSERHRD
  6794
         0313401
                   000061
                                                                                                                             .WORD
                                                                                                                                       49
                   002165'
  6795
         0313421
                                                                                                                                       WCSMEM
                                                                                                                             .WORD
  6796
         0313441
                                                                                                                             -WORD
                                                                                                                                       RACMG7
         031346'
031350'
  6797
                   000525
                                                          BR
                                                                   55$
  6798
                                                25$:
  6799
         0313501
                                                  ENDSEG
  6800
         0313501
                                                                                                                   10000$:
  6801
         0313501 104405
                                                                                                                             TRAP
                                                                                                                                       CSESEG
  6802
                                                WALT FOR THE MICROMONITOR TO ENTER THE "INMON" STATE THEN START MICROTEST #1.
  6803
                                                WAIT FOR 'DNI'. CHECK FOR ILLEGAL INTERRUPTS CHECK THE STATE BITS FOR AN ERROR CONDITION. IF ERROR REPORT IT. WRITE '1' TO CLEAR 'DNI' AND RESTORE
  6804
  6805
  6806
                                                 OPERATIONAL MICROCODE.
  6807
         0313521
  6808
                                                  BGNSEG
         031352' 104404
031354' 004737
  6809
                                                                                                                             TRAP
                                                                                                                                       C$BSEG
  6810
                                                                                                :WAIT FOR MICROMONITOR
                             0177761
                                                                   PC, CHKMON
                                                          JSR
                                                                   30$
         0313601
  6811
                   103006
                                                          BCC
                                                                                                 :0K
         0313621
  6812
6813
                                                          ERRHRD
                                                                   050, WCSMEM, MSG46
                                                                                                 PRINT ERROR
         031362'
                                                                                                                             TRAP
                                                                                                                                       CSERHRD
                   104456
                   000062
                                                                                                                              .WORD
                                                                                                                                       50
  6814
         031366'
031370'
                   0021651
                                                                                                                                       WCSMEM
  6815
                                                                                                                              .WORD
                   0167001
  6816
                                                                                                                              .WORD
                                                                                                                                       MSG46
         0313721
  6817
                                                          ESCAPE TST
                                                                                                :LEAVE TEST
         0313721
  6818
                                                                                                                             TRAP
                                                                                                                                       CSESCAPE
                   104410
                   000234
         0313741
                                                                                                                              WORD
                                                                                                                                      L10127-.
  6819
                             0006041 146736
                                                                   #PCBB_aPCSR2
aPCSR3
         0313761
  6820
                                                          MOV
                                                                                                :TELL MICROCODE TEST WHERE PCBB IS
  6821
6822
6823
         0314041
                   005077
                             146734
                                                          CLR
                  005037
005037
005037
         0314101
                             000604
                                                                   PCBB+0
                                                          CLR
                                                                                                :CLEAR OUT THE PCBB
         0314141
                             0006061
                                                          CLR
                                                                   PCBB+2
         0314201
                             0006101
  6824
                                                          (LR
                                                                   PCBB+4
         031424
                            0006121
                  005037
012777
  6825
                                                          CLR
                                                                   PCBB+6
         031430
                             000001 146700
  6826
                                                          MOV
                                                                   #1,aPCSRO
                                                                                                :TELL MICROMONITOR TO EXECUTE...
                                                                                                 :MICROTEST #1
  6827
         031436' 012737
031444' 004737
031450' 103017
031452' 004737
031456' 103005
  6828
                             000770 000332
                                                          MOV
                                                                   #10 * SECOND, METER
                                                                                                 PUT SOME TIME ON THE METER
                                                                                                 WALT FOR MICROTEST TO FINISH
                                                                   PC, CHKDNI
  6829
                             017330
                                                          JSR
  6830
                                                          BCC
                                                                   40$
                                                                                                 OK, IT FINISHED
                                                                                                SEE IF ANY ERROR INTERRUPTS OCCURRED
                                                                   PC CHKINT
  6831
                             0200501
                                                          JSR
  6832
6833
                                                          BCC
                                                                                                 :NO, OK
         031460'
                                                          ERRHRD
                                                                   051, WCSMEM, MSG44
                                                                                                 PRINT ERROR MESSAGE
         031460' 104456
031462' 000063
031464' 002165'
                                                                                                                             TRAP
                                                                                                                                       CSERHRD
  6834
                                                                                                                                       51
                                                                                                                              .WORD
  6835
  6836
                                                                                                                              .WORD
                                                                                                                                       WC SME M
                                                                                                                             WORD
         031466' 016454'
031470' 000454
                                                                                                                                       MSG44
                                                                   55%
#3,R2
052,WCSMEM,MSG12
  6838
                                                                                                 :LEAVE
                                                          BR
         031472' 012702
                                                                                                 MICROTEST # THAT IS HUNG
  6839
                                                35$:
                                                          MOV
                             000003
          0314761
                                                          ERRHRD
                                                                                                : TELL MICROTEST HUNG
  6840
         031476' 104456
                                                                                                                                       CSERHRD
                                                                                                                             TRAP
  6841
         031500' 000064
                                                                                                                                       52
                                                                                                                              .WORD
  6842
6843
                                                                                                                                       WESMEM
          031502' 002165'
                                                                                                                              .WORD
                                                                                                                                       MSG12
  6844
          031504 013500
                                                                                                                              .WORD
```

| CZUNAN | | I-JAN-03 | 30(1046) 3 09:29 | 11-JAN | -83 10 TEST 13 | :13 PAG 3: COMPR | E 143 EHENSIVE WCS MEMORY TEST | | | |
|--|-------------------------------|--|---------------------|---------|----------------------------------|---------------------|-----------------------------------|--|------------------|---------------|
| 6845 6846 6847 | 031510 | 000445 122777 001032 | 000003 | 146622 | 40\$: | BR (MPB | 55\$ #INERR,@PCSR1 | :DID AN ERROR OCCUR? | | |
| 6848 | 031520° 031526° | 122737 | 000000 | 000605 | | BNE (MPB | 50\$ #DATERR,PCBB+1 | ; NO ; YES, WAS IT A DATA ERR | OR? | |
| 6850 | 031530 | 012702 | 0014441 | | | BNE MOV | 45 \$ #SDATER,R2 | :NO :YES, POINT TO DATA ERR | | אנכ |
| 6848 6849 6850 6851 6853 6855 | 031534° 031536° | 122777 | 000001 | 0006051 | 458: | BR (MPB | 46\$ #ADRERR,PCBB+1 | :WAS IT AN ADDRESS ERRO | | •0 |
| 6854 | 031544 | 001005 012702 000402 012702 013701 | 001457 | | | BNE MOV | 47\$ #\$ADRER_R2 | ;NO | | |
| 6855 6856 | 0315521 | 000402 | 0015001 | | . 70 | BR | 46\$ | POINT TO ADDRESS ERPOR | | |
| 6856 6857 6858 6859 6860 | 031560 | 013701 | 000606 | | 47 \$: 46 \$: | MOV MOV | #\$PARER,R2 PCBB+2,R1 | ;POINT TO PARITY ERROR ;GET FAILING ADDRESS | STRING | |
| 6859 | 031570 | 013703 | 0006101 | | | MOV MOV | P(BB+4,R3 P(BB+6,R4 | :GET GOOD DATA | | |
| 6860 6861 | 031574' | 104456 | | | | ERRHRD | 053, WCSMEM, MSG16 | GET BAD DATA PRINT ERROR MESSAJE | | |
| 6861 6862 | 031576" | 000065 | | | | | | | TRAP.WORD | CSERHRD 53 |
| 6863 6864 | 031600' 031602' 031604' | 002165° 013650° | | | | | | | .WORD | WCSMEM |
| 6865 6866 | 031604' 031610' | 004737 103004 | 017374 | | 50\$: | JSR | PC_CLRDNI 55\$ | CLEAR DNI | . WORD | MSG16 |
| 6867 6868 | 031612' | | | | | BCC ERRHRD | 054,WCSMEM,RACMG7 | DNI DID NOT CLEAR! | | |
| 6869 6870 | 031612' 031614' | 000066 | | | | | - | To the second se | TRAP | CSERHRD |
| 6870 6871 | 031616' 031620' | 002165' 012726' | | | | | | | .WORD | 54 WCSMEM |
| 6871 6872 6873 6874 6875 | 031622' 031626' | 004737 | 020104 | | 55\$: | JSR | PC, REUNA | RESTORE OPERATIONAL MI | .WORD CROCODE | RACMG7 |
| 6874 | 0316261 | | | | ENDSE | G | | 10001\$: | | |
| 6875 6876 | 031626' 031630' | 104405 | | | ENDTST | | | 100013: | TRAP | C\$ESEG |
| 6877 | 031630" | 10//01 | | | E ITU I 3 I | | | L10127: | | |
| 6878 6879 | 031630 | 104401 | | | | | | # · • · • · • | TRAP | ESETST |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 144
(ZUAAA.P11 11-JAN-83 09:29
                                                      TEST 14: INTERRUPT VECTOR TEST
  6880
                                                      .SBTTL TEST 14: INTERRUPT VECTOR TEST
  6881
  6882
   6883
  6884
                                                      THIS TEST WILL VERIFY THAT THE INTERRUPT INTERFACE LOGIC OF THE DEUNA
IS CAPABLE OF GENERATING AN INTERUPT VECTOR AND ARBITRATING FOR CONTROL
   6885
   6886
                                                       OF THE UNIBUS.
  6887
                                                      THE DEUNA INTERRUPT ENABLE BIT WILL BE SET AND AN INTERRUPT WILL BE CAUSED BY ISSUING A NOP PORT COMMAND. AN INTERRUPT IS EXPECTED AT THE
  6888
   6889
                                                      :CORRECT VECTOR AND AT THE CORRECT PRIORITY.
  6890
  6891
                                                      ITEST SEQUENCE:
                                                                1-SETUP INTERRUPT VECTOR 2-CLEAR INTERRUPT FLAG
  6892
  6893
                                                                 3-SET INTERRUPT ENABLE IN PCSRO
4-ISSUE NOP PORT COMMAND
  6894
  6895
  6896
                                                                 5-WAIT FOR DNI SET IN PCSRO
                                                                6-VERIFY INTERRUPT FLAG SET
7-VERIFY INTERRUPT AT CORRECT PRIORITY
8-RELEASE INTERRUPT VECTOR
9-CLEAR INTERRUPT ENABLE IN PCSRO
  6897
  6898
  6899
  6900
  6901
                                                                 10-WRITE DNI TO CLEAR
  6902
  6903
  6904
  6905
          031632
                                                      BGNTST
          0316321
  6906
                                                                                                                                  114::
  6907
  6908
                                                      SETUP INTERRUPT VECTOR, CLEAR INTERRUPT FLAG, SET INTERRUPT ENABLE,
  6909
                                                      :ISSUE NOP PORT COMMAND AND WAIT FOR 'DNI'
  6910
  6911
          0316321
                                                        BGNSEG
          031632' 104404
  6912
                                                                                                                                                       C$BSEG
                                                                                                                                             TRAP
          031634
  6913
                                                                 SETVEC UNAVEC.#UNASRV_UNAPRI :SETUP DEUNA INTERRUPT VECTOR
          031634' 013746
                                0002721
                                                                                                                                                       UNAPRI,-(SP)
                                                                                                                                            MOV
          031640' 012746
031644' 013746
031650' 012746
  6915
                                0216561
                                                                                                                                            MOV
                                                                                                                                                       #UNASRV,-(SP)
                                000270
  6916
                                                                                                                                            MOV
                                                                                                                                                       UNAVEC, -(SP)
  6917
                                000003
                                                                                                                                            MOV
                                                                                                                                                       #3,-(SP)
          031654' 104437
  6918
                                                                                                                                            TRAP
                                                                                                                                                       C$SVEC
          031656' 062706
  6919
                                000010
                                                                                                                                             ADD
                                                                                                                                                       #10,5P
                                                                                                            CLEAR UNA INTERRUPTED FLAG
          0316621
  6920
6921
                     005037
                                0006701
                                                                 CLR
                                                                           UNAINT
          031666' 012777
031674' 012777
031702' 012737
031710' 004737
                                                                                                            SET INTERRUPT ENABLE
                                000100 146442
                                                                 MOV
                                                                           #IE, apcsro
  6922
6923
6924
6925
                                000106 146434
000176 000332*
                                                                                                            :ISSUE NOP PORT COMMAND :SETUP TIMER
                                                                           WIE!PNOP, aPCSRO
                                                                 MOV
                                                                 MOV
                                                                           #2 * SECOND METER
                                017330'
                                                                                                             GO WAIT FOR DNI
                                                                 JSR
                                                                           PC, CHKDNI
                                                                                                            :OK
          031714' 103020
                                                                 BCC
  6926
6927
6928
6929
6930
                                                                                                            ; ERROR DNI NOT SET!
          031716' 012737
031724' 012737
031732' 012737
                                000776' 000310' 001275' 000312' 001340' 000314'
                                                                           #$DNI,BITNAM
#$NSET,BITSTA
#$AFTER,PWHEN
                                                                 MOV
                                                                                                            SETUP ERROR MESSAGE
                                                                 MOV
                                                                 MOV
          031740' 012737
                                001403' 000316'
                                                                 MOV
                                                                           #$NOP,PCOMND
                                                                ERRHRD
          031746
  6931
                                                                           055, INTVEC, MSG1
                                                                                                         :PRINT ERROR MESSAGE
          031746* 104456
031750* 000067
031752* 002214*
031754* 012750*
                                                                                                                                            TRAP
  6932
                                                                                                                                                       CSERHRD
  6933
                                                                                                                                            . WORD
                                                                                                                                                       55
                                                                                                                                             .WCRD
  6934
                                                                                                                                                       INTVEC
   6935
                                                                                                                                             . WORD
                                                                                                                                                       MSG1
```

1

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 145
CZUAAA.P11
              11-JAN-83 09:29
                                                 TEST 14: INTERRUPT VECTOR TEST
  6936 031756'
                                                 105:
  6937
         0317561
                                                   ENDSEG
  6938
         0317561
                                                                                                                      10000$:
         031756' 104405
  6939
                                                                                                                                TRAP
                                                                                                                                          C$ESEG
  6940
  6941
                                                 VERIFY THAT INTERRUPT OCCURRED AT CORRECT PRIORITY
  6942
6943
         0317601
                                                   BGNSEG
  6944
         031760' 104404
                                                                                                                                TRAP
                                                                                                                                          C$BSEG
  6945
         031762' 012701
                             000006
                                                           MOV
                                                                     #6.R1
                                                                                                  START CPU PRIORITY LOWERING
  6946
                                                                                                  FROM PRIORITY 7
 6947
6948
6949
         031766' 010102
031770' 072227
                                                 20$:
                                                           MOV
                                                                     R1.R2
                                                                                                  GET INTEGER PRIORITY
                             000005
                                                           ASH
                                                                    #5,R2
                                                                                                  PUT PRIORITY IN CORRECT POSITION
         0317741
                                                           SETPRI
                                                                    R2
                                                                                                  SET NEW PRIORITY
         031774' 010200
  6950
                                                                                                                                          R2,R0
  6951
         0317761
                   104441
                                                                                                                                TRAP
         032000' 000240
032002' 005301
                                                                                                                                         C$SPRI
  6952
6953
                                                          NOP
                                                                                                  :LET INTERRUPT OCCUR HERE IF PENDING
                                                          DEC
                                                                                                  LOWER PRIORITY
  6954
         0320041
                   100370
                                                          BPL
                                                                     20$
                                                                                                  : IF DONE FROM 6-->0 THEN DONE
  6955
 6956
6957
         032006' 005737
032012' 001006
                             0006701
                                                                                                  ;UNA SHOULD HAVE INTERRUPTED BY NOW :OK, GO CHECK THE PRIORITY OF THE INTERUPT
                                                          TST
                                                                    UNAINT
                                                          BNE
                                                                     30$
  6958
                                                                                                  ERROR! UNA DID NOT INTERRUPT
  6959
         032014
                                                          ERRHRU 056, INTVEC, MSG7
                                                                                                  PRINT ERROR MESSAGE
         0320141 104456
  6960
        032014 104456
032016 000070
032020 002214 032022 013300 032024 000072
                                                                                                                                TRAP
                                                                                                                                         CSERHRD
  6961
                                                                                                                                .WORD
 6962
6963
6964
6965
                                                                                                                                         56
                                                                                                                                .WORD
                                                                                                                                         INTVEC
                                                                                                                                .WORD
                                                                                                                                         MSG7
                                                          ESCAPE TST
                                                                                                  :LEAVE TEST
                                                                                                                               TRAP
                                                                                                                                         C$ESCAPE
  6966
                                                                                                                                .WORD
                                                                                                                                         L10130-.
 6967
         032030'
                                                30$:
        032030' 013701
032034' 072127
 6968
                            0002721
                                                                    UNAPRI,R1
                                                          MOV
                                                                                                  GET UNA PRIORITY
MAKE IT AN INTEGER
 6969
                            177773
                                                          ASH
                                                                    #-5,R1
 6970
         0320401
                  005301
                                                          DEC
                                                                    R1
                                                                                                  THIS IS THE CPU PRIORITY WHEN THE ...
        032042' 072127
032046' 020137
032052' 001404
 6971
                             000005
                                                          ASH
                                                                    #5.R1
                                                                                                  ; UNA SHOULD HAVE INTERRUPTED
 6972
6973
                            000674
                                                          CMP
                                                                    R1.CPUPRI
                                                                                                  DID UNA INTERRUPT AT CORRECT PRIORITY?
                                                          BEQ
                                                                                                  :YES
 6974
                                                                                                  ERROR! UNA INTERRUPT PRIORITY INCORRECT
        032054'
032054' 104456
032056' 000071
032060' 002214'
032062' 013322'
  6975
                                                          ERRHRD
                                                                    057, INTVEC, MSG8 ; PRINT ERROR MESSAGE
 6976
                                                                                                                               TRAP
                                                                                                                                         C$ERHRD
 6977
                                                                                                                               _WORD
                                                                                                                                         57
 6978
                                                                                                                               .WORD
                                                                                                                                         INTVEC
 6979
                                                                                                                               .WORD
                                                                                                                                         MSG8
 6980
                                                405:
 6981
6982
6983
6984
6985
         0320641
                                                   ENDSEG
        0320641
        032064' 104405
                                                                                                                               TRAP
                                                                                                                                         C$ESEG
         0320661
                                                          CLRVEC UNAVEC
                                                                                                  :RELEASE INTERRUPT VECTOR
         0320661
                  013700
                            000270
                                                                                                                               MOV
                                                                                                                                         UNAVEC, RO
        032072' 104436
032074' 012777
032102' 004737
 6986
                                                                                                                               TRAP
                                                                                                                                         CSCVEC
 6987
                            000000 146234
                                                                    #0,aPCSRO
                                                          MOV
                                                                                                  :CLEAR INTERRUPT ENABLE
        032102° 004737
032106° 103004
 6988
                            0173741
                                                          JSR
                                                                    PC, CLRDNI
                                                                                                  :CLEAR DNI
 6989
                                                          BCC
                                                                    50$
 6990
        032110
                                                                    058, INTVEC, RACMG7
                                                          ERRHRD
                                                                                                  :ERROR! DNI DID NOT CLEAR
 6991
        032110' 104456
                                                                                                                               TRAP
                                                                                                                                         CSERHRD
```

HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 146
CZUAAA.P11 11-JAN-83 09:29 TEST 14: INTERRUPT VECTOR TEST

6992 032112' 000072
6993 032114' 002214'
6994 032116' 012726'
6995 032120'
6996 032120'
6997 032120'
6998 032120' 104401

L10130:
TRAP C\$ETST

```
HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 147 CZUAAA.P11 11-JAN-83 09:29 TEST 15: PCSRO INTER
CZUAAA.P11
                                                   TEST 15: PCSRO INTERRUPT BIT TEST
  6999
                                                    .SBITL TEST 15: PCSRO INTERRUPT BIT TEST
   7000
  7001
  7002
7003
                                                    :THIS TEST WILL VERIFY THAT EACH OF THE INTERRUPT BITS IN REGISTER PCSRO
  7004
7005
7006
7007
                                                    CAN CAUSE AN INTERPUPT.
                                                    EACH OF THE INTERRUPTS OF REGISTER PCSRO IS SET UNDER THE CONTROL OF THE 111 AND NOT DIRECTLY BY HARDWARE. THE T11 THEREFORE CAN INITIATE UNIBUS
   7008
                                                    INTERRUPTS BY SETTING BITS IN REGISTER PCSRO.
  7009
7010
                                                    THIS TEST USES MICROMODULE C, MICROTEST #1.
   7011
                                                    MICROCODE MODULE C IS LOADED IF NOT ALREADY DONE SO BY A PREVIOUS TEST.
   7012
                                                   THE DEUNA INTERRUPT VECTOR IS SETUP TO STORE THE CONTENTS OF PCSRO WHEN THE INTERRUPT OCCURS. PCBB+O IS LOADED WITH THE INTERRUPT BIT THAT IS TO BE TESTED THEN PCSRO COMMAND BITS ARE LOADED WITH A 1 TO TELL THE T11 TO EXECUTE
   7013
   7014
   7015
   7016
                                                    MICROTEST #1. WE WAIT FOR THE INTERRUPT TO OCCUR THEN SEE IF THE CONTENTS
   7017
                                                    OF POSRO AT THE TIME OF THE INTERRUPT CONTAINED THE CORRECT INTERRUPT BIT.
   7018
                                                    THE TEST IS REPEATED FOR ALL THE INTERRUPT BITS.
   7019
  7020
7021
7022
7023
7024
                                                    :TEST SEQUENCE:
                                                              1-LOAD MICROMODULE C INTO THE TOP HALF OF WCS IF NOT ALREADY DONE SO
                                                              2-SETUP DEUNA INTERRUPT VECTOR
3-WAIT FOR THE MICROMONITOR TO BECOME ACTIVE
                                                              4-SET A BIT IN PCBB+O THAT CORRESPONDS TO THE INTERRUPT BIT TO TEST
  7025
7026
7027
7028
                                                              5-SET INTERRUPT ENABLE
                                                              6-TELL MICROMONITOR TO EXECUTE MICROTEST #1
                                                              7-VERIFY INTERRUPT OCCURRED
                                                              8-VERIFY CORRECT BIT CAUSED INTERRUPT
  7029
7030
                                                              9-WRITE ONE TO CLEAR INTERRUPT BIT
                                                             10-REPEAT STEPS 3-9 FOR ALL THE INTERRUPT BITS
   7031
  7032
                                                    7033
   7034
          0321221
                                                   BGNTST
  7035
         032122'
                                                                                                                           T15::
   7036
                                                   CHECK TO SEE IF MODULE 'C' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS. START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI'. AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
   7037
   7038
   7039
   7040
         032122'
032122' 104404
032124' 022737
032132' 001004
032134' 122777
032142' 001440
032144' 012737
032152' 004737
032156' 103002
   7041
                                                      BGNSEG
   7042
                                                                                                                                      TRAP
                                                                                                                                                C$BSEG
   7043
                               000103 0003261
                                                              CMP
                                                                        W'C,MICRO
                                                                                                       ; HAS MICROCODE MODULE C BEEN LOADED?
                                                                                                       ;NO
   7044
                                                              BNE
                                                                        5$
                                                                                                       YES, IS THE MICROMONITOR ACTIVE?
                               000001 146176
   7045
                                                              CMPB
                                                                        #INMON, apcsR1
   7046
                                                              BEQ
                                                                        20$
                                                                                                       SETUP TO LOAD MODULE C
                                                                        #"C,MICRO
   7047
                               000103 000326 55:
                                                              MOV
                                                                                                      GO LOAD MICROMODULE C
SUCCESS
                               020252
   7048
                                                                        PC,LODMIC
                                                              JSR
   7049
                                                                        10$
                                                              BCC
                                                              ESCAPE
   7050
          0321601
                                                                       IST
                                                                                                       :ERROR OCCURRED LEAVE
         032160° 104410
032162° 000444
032164° 012737
   7051
                                                                                                                                     TRAP
                                                                                                                                                C$ESCAPE
   7052
                                                                                                                                      WORD
                                                                                                                                               110131-.
                               000176 000332 105:
                                                                                                       ; PUT SUME TIME ON THE METER
   7053
                                                             MOV
                                                                        #2*SECOND, METER
          032172' 004737
                               017330
                                                              JSR
                                                                        PC.CHKDNI
                                                                                                       GO WALT FOR DNI TO SET AFTER THE
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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 148
CZUAAA, P11
                11-JAN-83 09:29
                                                  TEST 15: PCSRO INTERRUPT BIT TEST
                                                                                                     :LOAD AND START FUNCTION
         032176' 103022
032200' 012737
032206' 012737
032214' 012737
032222' 012737
032230'
  7056
                                                                                                     : 0K
                              000776' 000310'
001275' 000312'
001340' 000314'
                                                                      #SDNI,BITNAM
#SNSET,BITSTA
#SAFTER,PWHEN
   7057
                                                             MOV
                                                                                                     SETUP ERROR MESSAGE
   7058
                                                             MOV
   7059
                                                             MOV
                              001355' 000316'
   7060
                                                             MOV
                                                                       #$GTCMD_PCOMND
   7061
                                                                      059 INTBIT MSG1
                                                             ERRHRD
                                                                                                     :PRINT ERROR MESSAGE
   7062
          0322301 104456
                                                                                                                                   TRAP
                                                                                                                                             CSERHRD
          032232' 000073
032234' 002251'
C32236' 012750'
   7063
                                                                                                                                              59
                                                                                                                                   . WORD
   7064
                                                                                                                                              INTBIT
                                                                                                                                   .WORD
   7065
                                                                                                                                   . WORD
                                                                                                                                             MSG1
   7066
          0322401
                                                             ESCAPE TST
          0322401 104410
   7067
                                                                                                                                   TRAP
                                                                                                                                             CSESCAPE
          032242' 000364 032244' 004737
   7068
                                                                                                                                    . WORD
                                                                                                                                             L10131-.
   7069
                              017374
                                                  20$:
                                                             JSR
                                                                       PC.CLRDNI
                                                                                                     :CLEAR DNI
          032250' 103006
032252'
   7070
                                                             BCC
  7071
7072
7073
                                                             ERRHRD
                                                                      060, INTBIT, RACMG7
                                                                                                     :ERROR! DNI DID NOT CLEAR
          0322521 104456
                                                                                                                                   TRAP
                                                                                                                                             C$ERHRD
          0322541 000074
                                                                                                                                    CAOM
                                                                                                                                             60
   7074
          032256' 002251'
                                                                                                                                   .WURD
                                                                                                                                              INTBIT
   7075
          032260' 012726'
                                                                                                                                   .WORD
                                                                                                                                             RACMG7
   7076
          032262'
                                                             ESCAPE TST
          0322621 104410
   7077
                                                                                                                                   TRAP
                                                                                                                                             C$ESCAPE
          032264' 000342
   7078
                                                                                                                                    WORD
                                                                                                                                             L10131-.
   7079
          0322661
                                                  25$:
                                                                                                     SETUP DEUNA INTERRUPT VECTOR
                                                             SETVEC UNAVEC, #UNASRV, UNAPRI
          032266' 013746
   7080
                              000272
                                                                                                                                             UNAPRI,-(SP)
                                                                                                                                   MOV
          032272' 012746
032276' 013746
   7081
                              0216561
                                                                                                                                   MOV
                                                                                                                                              #UNASRV_-(SP)
   7082
                              0002701
                                                                                                                                             UNAVEC, - (SP)
                                                                                                                                   MOV
                                                                                                                                             #3,-(SP)
   7083
          032302' 012746
                              000003
                                                                                                                                   MOV
   7084
          0323061 104437
                                                                                                                                   TRAP
                                                                                                                                              L$ŠVEC
   7085
          0323101 062706
                              000010
                                                                                                                                             #10,SP
                                                                                                                                   ADD
   7086
          032314
                                                     ENDSEG
  7087
          0323141
                                                                                                                         10000$:
   7088
          032314' 104405
                                                                                                                                   TRAP
                                                                                                                                             C$ESEG
   7089
  7090
                                                  THE FOLLOWING LOOP WILL BE EXECUTED 6 TIMES- ONCE FOR EACH BIT 10 THRU 15 OF PCSRO. IT WAITS FOR THE MICROMONITOR TO BECOME ACTIVE THEN CALLS
   7091
   7092
                                                   *MICROTEST #1 TO SET A BIT IN PCSRO AS DEFINED BY THE PARAMETER IN PCBB+0.
                                                  THIS OPERATION SHOULD CAUSE AN INTERRUPT WHICH WILL BE REFLECTED BY THE VARIABLE 'UNAINT' WHICH IS SET BY THE UNA INTERRUPT SERVICE ROUTINE. UNAINT
   7093
   7094
   7095
                                                   ; IS LOADED WITH THE VALUE OF PCSRO AT THE TIME OF THE INTERRUPT. THIS WAY
   7096
                                                   THE BIT THAT CAUSED THE INTERRUPT CAN BE CHECKED.
   7097
         032316' 005037
032322' 012737
032330' 012701
032334' 012737
   7098
                              000304
                                                                       CSRNUM
                                                                                                     : CHECKING PCSRO
                              0012751
   7099
                                        000312
                                                             MOV
                                                                       #$NSET,BITSTA
                                                                                                     CHECKING FOR SET BITS
                                                                      #B1110_R1
   7100
                              002000
                                                             MOV
                                                                                                     START WITH BIT 10
   7101
                              000012
                                        0003061
                                                             MOV
                                                                       #10.,BITNUM
   7102
          0323421
                                                  26$:
   7103
          0323421
                                                     BGNSEG
          032342' 104404 032344' 004737
   7104
                                                                                                                                   TRAP
                                                                                                                                             C$BSEG
   7105
                              017776
                                                             JSR
                                                                       PC.CHKMON
                                                                                                     :WAIT FOR MICROMONITOR
   7106
          0323501
                    103006
                                                                       30$
                                                             BCC
                                                                                                     :OK
   7107
                                                             ERRHRD
                                                                       061, INTBIT, MSG46
                                                                                                     PRINT ERROR
          0323521 104456
   7108
                                                                                                                                   TRAP
                                                                                                                                             CSERHRD
          032354' 000075
                                                                                                                                             61
   7109
                                                                                                                                   .WORD
   7110
          0323561
                    002251
                                                                                                                                   .WORD
                                                                                                                                              INTBIT
```

```
HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 149
CZUAAA.P11 11-JAN-83 09:29
                                                TEST 15: PCSRO INTERRUPT BIT TEST
         032360' 016700'
  7111
                                                                                                                               .WORD
                                                                                                                                        MSG46
         032362'
032362' 104410
032364' 000242
  7112
                                                          ESCAPE TST
                                                                                                 :LEAVE TEST
                                                                                                                              TRAP
                                                                                                                                        CSESCAPE
  7114
                                                                                                                               . WORD
                                                                                                                                        L10131-.
         032366' 005037
032372' 010137
032376' 012737
032404' 012777
  7115
                             0006701
                                                 305:
                                                          CLR
                                                                    UNAINT
                                                                                                  CLEAR UNA INTERRUPTED FLAG
                                                                    R1,PCBB+U
  7116
                             0006041
                                                                                                  TELL MICROMONITOR WHICH BIT TO SET
                                                          MOV
  7117
                             000077
                                       0003321
                                                                    #1*SECOND, METER
                                                                                                  PUT SOME TIME ON THE METER
                                                          MOV
                                                                                                 SET INTERRUPT ENABLE AND...
  7118
                             000100 145724
                                                          MOV
                                                                    #IE, arcsro
  7119
  7120
7121
7122
7123
7124
7125
7126
7127
         032412' 012777
032420' 004737
032424' 012700
032430' 104441
032432' 005737
                             000101 145716
                                                                                                  INVOKE INTERRUPT BIT MICROTEST
                                                                    WIE!1.aPCSRO
                             0172761
                                                                    PC.TIMON
                                                          JSR
                                                                                                  TURN ON THE TIMER
                                                          SETPRI
                                                                    #PR104
                                                                                                  LOWER PRIORITY TO ALLOW UNA INTERRUPT
                             000200
                                                                                                                              MOV
                                                                                                                                        #PRI04_R0
                                                                                                                              TRAP
                                                                                                                                        C$SPRI
                                                 35$:
                             0006701
                                                          TST
                                                                    UNAINT
                                                                                                 :HAS INTERRUPT OCCURRED YET?
         0324361
                   001022
                                                          BNE
                                                                    40$
                                                                                                  YES
                   005737
         0324401
                             0003321
                                                          TST
                                                                    METER
                                                                                                 NO. HAS METER EXPIRED?
  7128
7129
         032444' 001372
                                                          BNE
                                                                    35s
         032446' 004737
                             0173141
                                                                    PC,TIMOFF
                                                                                                 TIMER HAS EXPIRED, SHUT IT OFF ERROR, NO UNA INTERRUPT!
                                                           JSR
  7130
         032452' 013703
032456' 006303
  7131
                             0003061
                                                                    BITNUM, R3
                                                                                                  GET WHICH BIT
  7132
                                                                                                 MAKE IT A BYTE OFFSET
                                                          ASL
  7133
         032460 012737
                             000356' 000310'
                                                                    #BNAMTO_BITNAM
                                                          MOV
                                                                                                 POINT TO TABLE OF BIT MNEMONICS
  7134
         032466' 060337
                             0003101
                                                                    R3, BITNAM
                                                                                                  ; INDEX INTO TABLE OF BIT MNEMONICS
                                                          ADD
         032472'
032472' 104456
032474' 000076
  7135
                                                          ERRHRD
                                                                    062, INTBIT, MSG9
                                                                                                  PRINT ERROR MESSAGE
  7136
                                                                                                                               TRAP
                                                                                                                                        CSERHRD
  7137
                                                                                                                               .WORD
                                                                                                                                        62
  7138
         0324761
                   0022511
                                                                                                                               .WORD
                                                                                                                                        INTRIT
  7139
         0325001
                   0133441
                                                                                                                               .WORD
                                                                                                                                        MSG9
  7140
         0325021
                   000402
                                                                    45$
         032504' 004737
  7141
                             0173141
                                                405:
                                                          JSR
                                                                    PC_TIMOFF
                                                                                                 ; INTERPUPT OCCURRED, SHUT OFF THE TIMER
  7142 7143
         032510' 013703
                             0006701
                                                455:
                                                                                                  GET SAVED POSPO CONTENTS
                                                          MOV
                                                                    UNAINT, R3
         032514' 042703
                             000377
                                                                    #377,R3
                                                          BIC
                                                                                                  :CLEAR UNWANTED BITS
         032520' 020103
032522' 001404
  7144
                                                                    R1, R3
                                                          (MD
                                                                                                  DID CORRECT BIT CAUSE INTERRUPT?
  7145
                                                                    50$
                                                          BEQ
                                                                                                  :YES. OK
  7146
                                                                                                  ERROR, INCORRECT BIT CAUSED INTERRUPT!
         032524'
032524' 104456
032526' 000077
032530' 002251'
032532' 012574'
032534'
032534'
  7147
                                                          ERRHRD
                                                                    063, INTBIT, RACMG2
                                                                                                  PRINT ERROR MESSAGE
  7148
                                                                                                                               TRAP
                                                                                                                                        CSERHRD
  7149
                                                                                                                               .WORD
                                                                                                                                        63
  7150
7151
7152
7153
7154
7155
7156
7157
                                                                                                                               .WORD
                                                                                                                                        INTBIT
                                                                                                                               .WORD
                                                                                                                                        RACMG2
                                                 505:
                                                   ENDSLG
                                                                                                                     10001$:
         032534' 104405
                                                                                                                              TRAP
                                                                                                                                        CSE SEG
                                                 NOW WRITE '1' TO CLEAR THE BIT THAT CAUSED THE INTERRUPT
  7158
7159
         032536'
032536' 104404
032540' 010377
                                                   BGNSEG
  7160
                                                                                                                                        C$BSEG
                                                                                                 :WRITE "1" TO CLEAR INTERRUPT BIT
  7161
                             145572
                                                          MOV
                                                                    R3, apcsro
         032544' 017704
                                                                                                 READ IT BACK
  7162
7163
                             145566
                                                          MOV
                                                                    apcsmo, R4
                                                                    R4 R3
                                                          BIT
                                                                                                 : IS BIT CLEARED?
   7164
         032552' 001420
                                                          BEQ
                                                                                                  : YES
  7165
                                                                                                  ERROR, BIT DID NOT CLEAR!
         032554 012705 000017
  7166
                                                          MOV
                                                                    #15.,R5
```

| HARDWAR CZUAAA. | | MACY11 I-JAN-83 | 30(1046) 09:29 | 11-JAN- | | 13 PAGE : PCSRO | 150 INTERRUPT BIT TEST | | | | |
|--------------------------------------|---|--------------------------------------|--------------------|---------|----------------|-------------------------|----------------------------------|---|---------------------------|---------------------------------|----------------------------------|
| 7167 7168 7169 7170 7171 | 032560° 032562° 032564° | 006303 103402 605305 000774 | | | 52\$: | ASL BCS DEC | R3 53\$ R5 | IS THIS THE BI | T WE SET? | | |
| 7172 7173 | 032600' | 006305 012737 060537 | 000356° 000310° | 000310* | 53\$: | BR ASL MOV ADD | 52\$ R5 #BNAMTO,BITNAM R5,BITNAM | :MAKE IT A BYTE :GET POINTER TO :INDEX INTO BIT |) BIT NAME I NAME TABI | MNEMON: | ICS |
| 7174 7175 7176 7177 7178 | 032604' 032604' 032606' 032610' 032612' | 104456 000100 002251* | | | | ERRHRD | 064,INTBIT,MSG33 | ;PRINT ERROR ME | | TRAP .WURD .WORD .WORD | CSERHRD 64 INTBIT MSG33 |
| 7179 7180 7181 7182 | 032614' 032614' 032614' 032614' | 104405 | 00070/1 | | 55\$: ENDSE | | | CETUD FOR MEN | 10002\$: | TRAP | C\$ESEG |
| 7183 7184 7185 7186 | 032616' 032622' 032624' | 005237 006301 103246 | 000306* | | FAIRTCT | INC ASL BCC | BITNUM R1 26\$ | SETUP FOR NEXT POINT TO NEXT IF BIT 15 NOT ELSE ALL DONE | HIGHER BI | T GO ON | |
| 7187 7188 7189 | 032626' 032626' | 104401 | | | ENDTST | | | | L10131: | TRAP | CSETST |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 151
CZUAAA.P11
               11-JAN-83 09:29
                                               TEST 16: TIMER TEST
  7190
                                                .SBTTL TEST 16: TIMER TEST
  7191
  7192
  7193
  7194
                                                THIS TEST WILL USE THE CUSTOM MICROCODE MODULE "C" TO CHECK THE OPERATION
  7195
                                                OF THE TIMER.
  7196
7197
                                                THE TIMER IS ACCESSIBLE ONLY TO THE TIL PROCESSOR. THE HOST PROCESSOR
                                                :CAN START THE TIMER ONLY WITH THE ASSISTANCE OF THE T11 PROCESSOR.
  7198
  7199
7200
7201
7202
7203
7204
                                                :FOR THIS TEST THE MICROCODE WILL BE LOADED ONLY IF IT HAS NOT ALREADY
                                                BEEN DONE BY A PREVIOUS TEST.
                                                WHEN THE MICROCODE IS STARTED THE TIL WILL START THE TIMER AND WILL SET "DNI" WHEN THE TIMING INTERVAL HAS EXPIRED. THE INTERVAL IS 10 SECONDS.
  7205
7206
7207
                                                :ANY TIME FROM 8 TO 12 SECONDS IS AN ACCEPTABLE RANGE.
                                                :TEST SEQUENCE:
 7208
7209
7210
7211
7213
7216
7216
7216
7218
7221
7223
7223
7223
7230
7231
7233
7233
                                                         1-LOAD MICROCODE MODULE 'C' IF NOT ALREADY DONE SO
                                                         2-START MICROCODE
                                                         3-START TIMER
                                                         4-WAIT FOR 'DNI'
                                                         5-CHECK TIME INTERVAL
                                                 0326301
                                               BGNTST
         0326301
                                                                                                                   116::
                                               CHECK TO SEE IF MODULE 'C' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS. START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI'. AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
         0326301
                                                  BGNSEG
         032630' 104404
                                                                                                                            TRAP
                                                                                                                                      C$BSEG
         0326321 022737
                                                         CMP
                                                                   #'C,MICRO
                            000103 000326
                                                                                                :HAS MICROCODE MODULE C BEEN LOADED?
         032640
                  001004
                                                         BNE
                                                                   5$
                                                                                               :NO
         0326421
                                                                   #INMON, aPCSR1
                  122777
                            000001 145470
                                                         CMPB
                                                                                                :YES, IS THE MICROMONITOR ACTIVE?
         0326501
                  001440
                                                                   20$
                                                                                                :YES SKIP LOADING THE MICROMODULE
                                                         BEQ
         0326521
                  012737
                            000103 000326' 5$:
                                                         MOV
                                                                   #'C,MICRO
                                                                                               :NO
         0326601
                  004737
                                                                  PC LODMIC
                            0202521
                                                                                               :GO LOAD MICROCODE MODULE C
                                                         JSR
         0326641
                                                                   10$
                  103002
                                                         BCC
                                                                                                :OK
         0326661
                                                         ESCAPE TST
                                                                                               :ERROR OCCURRED LOADING MICROCODE
         032666
                                                                                                                                     CSESCAPE
                  104410
                                                                                                                            TRAP
  7234
7235
7236
7237
7238
         0326701
                  000254
                                                                                                                             . WORD
                                                                                                                                     L10132-.
                  012737
         0326721
                            000176 000332' 10$:
                                                         MOV
                                                                   #2*SECOND_METER
                                                                                               :WAIT FOR MICROMONITOR TO TAKE OVER
                                                                   PC CHKDNI
         0327001
                  004737
                            0173301
                                                         JSR
         0327041
                  103022
                                                         BCC
                            000776' 000310' 001275' 000312' 001340' 000314'
                                                                  #SDNI, BITNAM
#SNSET, BITSTA
         0327061
                  012737
                                                         MOV
  7239
         0327141
                  012737
                                                         MOV
                                                                   #SAFTER, PWHEN
  7240
         0327221
                  012737
                                                         MOV
         032730°
032736°
032736°
032740°
  7241
7242
                  012737
                            001355' 000316'
                                                                   #SGTCMD, PCOMND
                                                         MOV
                                                                   065, TIMTST, MSG1
                                                         ERRHRD
  7243
                  104456
                                                                                                                            TRAP
                                                                                                                                      CSERHRD
                  000101
                                                                                                                            .WORD
         0327421
                                                                                                                                      TIMIST
                  002311
                                                                                                                            .WORD
```

| HARDWARE TESTS MACY11 30(1046) 11-JAI CZUAAA.P11 11-JAN-83 09:29 | N-83 10:13 (Test 16: tii | PAGE 152 MER TEST | | | |
|--|--|---|--|------------------------|----------------------------------|
| 7246 032744' 012750' 7247 032746' | ESC | APE IST | | .word | MSG1 |
| 7247 032746' 7248 032746' 104410 7249 032750' 000174 7250 032752' 004737 017374' 7251 032756' 103006 7252 032760' | 20 \$: | PC_CLRDNI 25\$ | ;CLEAR DNI | TRAP .WORD | CSESCAPE L10132 |
| 7251 032756° 103006 7252 032760° 7253 032760° 104456 | BCC ERR | | ERROR DNI DID NOT CLEAR | TRAP | C\$ERHRD |
| 7254 032762' 000102 7255 032764' 002311' 7256 032766' 012726' 7257 032770' | | | | .WORD .WORD | 66 TIMTST RACMG7 |
| 7257 632770° 7258 632770° 104410 7259 632772° 000152 | | APE TST | | TRAP .WORD | CSESCAPE L10132 |
| 7259 032772° 000152 7260 032774° 7261 032774° 7262 032774° | 25 \$: Endseg | | ¹0000\$: | | |
| 7263 032774° 104405 7264 | ; | | | TRAP | C\$ESEG |
| 7265 7266 7267 7268 | :WAIT FOR TO :12 SECONDS :BY LOADING :CHECK FOR | HE MICROCODE TO ENTER THE MI (THIS GIVES A BETTER RESOLU THE COMMAND FIELD OF PCSRO 'DNI' TO BE SET IN LESS THAN | CROMONITOR, SETUP OUR TIM TION THAN 1 SECOND), STAR WITH THE MICROTEST # TO E 12 SECONDS. | EOUT TO | BE ICROTEST |
| 7270 032776° 7271 032776° 104404 | BGNSEG | | | TRAP | C\$BSEG |
| 7272 033000' 004737 017776' 7273 033004' 103006 7274 033006' | JSR BCC ERRI | PC,CHKMON 30\$ HRD 068,TIMTST,MSG46 | :WAIT FOR MICROMONITOR :OK :PRINT ERROR | INAF | (3636) |
| 7275 033006' 104456 7276 033010' 000104 7277 033012' 002311' 7278 033014' 016700' | | | | TRAP .WORD .WORD | CSERHRD 68 TIMTST MSG46 |
| 7279 033016° 7280 033016° 104410 7281 033020° 000124 | ESC | APE TST | ;LEAVE TEST | TRAP | CSESCAPE |
| 7282 033022 012737 001356 000332 | MOV JSR BCC | #750., METER #2, apcsro PC, CHKDNI 40\$ | :TIMEOUT = 12 SECONDS :START MICROTEST #2 :WAIT FOR DNI :OK IT FINISHED IN TIME | .WORD | L10132 |
| 7283 033030' 012777 000002 145300 7284 033036' 004737 017330' 7285 033042' 103006 7286 033044' 104456 7288 033046' 000105 7289 033050' 002311' 7290 033052' 013372' 7291 033054' 104410 7293 033056' 000066 7294 7295 7296 | ERRI | | ;NO TIMER INTERRUPT | TRAP .WORD .WORD | CSERHRD 69 TIMTST MSG10 |
| 7291 033054° 7292 033054° 104410 7293 033056° 000066 | ESC | APE IST | | TRAP.WORD | C\$ESCAPE L10132 |
| 7295 7296 7297 | | ER INTERRUPTED IN LESS THAN N LESS THAN 8. | 12 SECONDS, SO NOW CHECK | TO SEE | IF IT |
| 7297 7298 033060' 023727 000332' 000764 7299 033066' 003416 | | METER,#500. 60\$ | ;DID INTERRUPT OCCUR BEF | ORE 8 S | ECS.? |
| 7300 033070 012700 001161 7301 033074 163700 000332 | MOV SUB | #625.,RO METER,RO | ; CALC HOW MUCH TIME | | |

| HARDWAR! | E TESTS MACY11 P11 11-JAN-83 | 30(1046) 09:29 | 11-JAN-83 10:1 TEST 16: | 3 PAGE IIMER | 153 TEST | | | |
|--|--|-------------------|----------------------------|--------------------------|-----------------------------|--|---------------------------------|-----------------------------------|
| 7302 7303 7304 7305 | 033100' 005001 033102' 152700 033106' 103402 033110' 005201 | 000077 | | CLR SUB BCS INC | R1 #63.,R0 55\$ R1 | ; CONTAINS SECS ; FIND OUT HOW MAY SECS ! | T T00K | |
| 7303 7304 7305 7306 7307 7308 7309 7310 | 033114' 000773 033114' 104456 033116' 000106 033120' 002311' | | | BR ERRHRD | 50\$ 070,TIMTST,MSG11 | ;PRINT ERROR MESSAGE | TRAP .WORD .WORD | CSERHRD 70 TIMTST |
| 7311 7312 | 033122' 013414' 033124' 004737 | 017374 | 60\$: | JSR | PC_CLRDNI 70\$ | CLEAR DNI | .WORD | MSG11 |
| 7312 7313 7314 7315 7316 7317 7318 7319 7320 7321 7322 7323 7324 7325 | 033124' 004737 033130' 103004 033132' 104456 033134' 000107 033136' 002311' 033140' 012726' | | | BCC ERRHRD | 071,TIMTST,RACMG7 | :ERROR DNI DID NOT CLEAR | TRAP .WORD .WORD .WORD | CSERHRD 71 TIMTST RACMG7 |
| 7319 7320 7321 | 033142' 033142' | | 70 \$: ENDSEG | i | | 10001\$: | *** | |
| 7322 7323 7324 | 033142' 104405 033144' 033144' | | ENDIST | | | L10132: | TRAP | C\$ESEG |
| 7325 | 033144 104401 | | | | | 2101721 | TRAP | CSETST |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 154
CZUAAA.P11
                                     11-JAN-83 09:29
                                                                                                                 TEST 17: LINK MEMORY TEST
     7326
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                                                                                                                  .SBITL TEST 17: LINK MEMORY TEST
                                                                                                                   :THIS TEST WILL EXHAUSTIVELY TEST THE LINK MEMORY.
                                                                                                                  THE LINK MEMORY OCCUPIES THE 16-32K ADDRESS SPACE OF THE T-11. CUSTOM MICROCODE MODULE C MICROTEST #3 IS USED TO DO THE ACTUAL TESTING. MICROTEST #3 RUNS A SERIES OF MICROSUBTESTS TESTS ON THE LINK MEMORY CHECKING
                                                                                                                   FOR BOTH ADDRESS AND DATA ERRORS. IF AN ERROR DOES OCCUR THE PORT CONTROL
                                                                                                                   BLOCK WILL CONTAIN THE INFORMATION ABOUT THE ERROR.
                                                                                                                  PCBB+0: CONTAINS THE MICROSUBTEST THAT FAILED PCBB+1: 0 = DATA ERROR, 1 = ADDRESS ERROR, PCBB+2: CONTAINS THE ADDRESS OF THE LOCATION PCBB+4: CONTAINS THE DATA THAT WAS WRITTEN
                                                                                                                   PCBB+6: CONTAINS THE DATA THAT WAS READ
                                                                                                                  :MICROSUBTEST #
                                                                                                                                                                                      DESCRIPTION
                                                                                                                                                                                      ACCESS TEST
ADDRESS SHIFT TEST
                                                                                                                                                                                      DATA LATCH TEST
                                                                                                                                                                                      ADDRESS BIT SHIFT #1
                                                                                                                                                                                      ADDRESS BIT SHIFT #2
                                                                                                                                                                                      MARCH TEST
      7353
                                                                                                                   :TEST SEQUENCE:
     7354
                                                                                                                                        1-LOAD MICROMODULE 'C' INTO THE TOP HALF OF WCS IF NOT ALREADY DONE SO 2-WAIT FOR THE MICROMONITOR TO BECOME ACTIVE
     7355
7356
                                                                                                                                         3-TELL MICROMONITOR TO EXECUTE MICROTEST #3
     7357
7358
                                                                                                                                         4-VERIFY DNI SET INDICATING TEST COMPLETE
                                                                                                                                         5-CHECK STATE FIELD OF PCSR1 FOR ERROR CONDITION
      7359
      7360
      7361
      7362
                      0331461
                                                                                                                 BGNTST
      7363
                      0331461
                                                                                                                                                                                                                                                                                 117::
     7364
7365
7366
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7378
                                                                                                                  CHECK TO SEE IF MODULE 'C' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS, START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI'. AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
                     033146'
033146' 104404
033150' 022737
033156' 001004
                                                                                                                       BGNSEG
                                                                                                                                                                                                                                                                                                         TRAP
                                                                                                                                                                                                                                                                                                                              C$BSEG
                                                                    000103 0003261
                                                                                                                                         CMP
                                                                                                                                                               #'C,MICRO
                                                                                                                                                                                                                                    :HAS MICROCODE MODULE "C" BEEN LOADED?
                                                                                                                                                                                                                                   ;NO
                                                                                                                                        BNE
                                                                                                                                                               5$
                      033160
                                             122777
                                                                                                                                                               #INMON, aPCSR1
                                                                                                                                                                                                                                    YES, IS THE MICROMONITOR ALTIVE? YES SKIP LOADING THE MICROMODULE
                                                                    000001 145152
                                                                                                                                         (MPB
                      033166'
033170'
                                             601440
                                                                                                                                        BEQ
                                                                                                                                                               20$
                                            012737
                                                                    000103 000326' 5$:
                                                                                                                                        MOV
                                                                                                                                                               #'C,MICRO
                                                                                                                                                                                                                                    GO LOAD MICROCODE MODULE C
                      0331761
                                                                    0202521
                                                                                                                                         JSR
                                                                                                                                                               PC, LODMIC
                      033202
                                             103002
                                                                                                                                        BCC
                                                                                                                                                                10$
                                                                                                                                                                                                                                    :OK
                      033204
                                                                                                                                         ESCAPE
                                                                                                                                                               IST
                      033204' 104410
033206' 000404
                                                                                                                                                                                                                                                                                                        TRAP
                                                                                                                                                                                                                                                                                                                               (SESCAPE
                                                                                                                                                                                                                                                                                                                              L10133-.
       7380
                                                                                                                                                                                                                                                                                                         .WORD
                      033210' 012737
      7381
                                                                   000176 0003321 10$:
                                                                                                                                        MOV
                                                                                                                                                               #2 * SECOND , METER
                                                                                                                                                                                                                                   :WAIT FOR THE MICROMONITOR
```

| HARDWAR! | E TESTS P11 1 | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN | -83 10: | 13 PAGE : LINK M | 155 EMORY TEST | | | |
|--|--|--|---|--|----------------|--|--|---|---------------------------------|-----------------------------------|
| 7382 7383 7384 7385 7386 7387 | 033216' 033222' 033224' 033232' 033240' 033256' | 004737 103022 012737 012737 012737 012737 | 017330° 000776° 001275° 001340° 001355° | 000310° 000312° 000314° 000316° | | JSR BCC MOV MOV MOV MOV | PC,CHKDNI 20\$ #\$DNI,BITNAM #\$NSET,BITSTA #\$AFTER,PWHEN #\$GTCMD,PCOMND | ; OK | | |
| 7384 7385 7386 7388 7388 7390 7391 7393 7394 7395 7396 7397 7398 7399 | 033254' 033256' 033260' 033262' 033264' | 000110 | | | | ESCAPE | 072,LNKMEM,MSG1;PRINT | ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 72 LNKMEM MSG1 |
| 7394 7395 7396 7397 7398 | 033264' 033266' 033270' 033274' 033276' | 104410 000324 004737 103006 | 017374 | | 20\$: | JSR BCC ERRHRD | PC_LLRDNI 25\$ 073,LNKMEM,RACMG7 | ;CLEAR DNI | TRAP .WORD | (\$ESCAPE 110133 |
| 7401 7402 7403 | 033276' 033300' 033302' 033304' 033306' | 000111 002333' 012726' | | | | ESCAPE | | | TRAP .WORD .WORD .WORD | CSERHPD 73 LNKMEM RACMG7 |
| 7404 7405 7406 7407 7408 7409 | 033306' 033310' 033312' 033312' 033312' | 000302 | | | 25\$: ENDSE | S | | 10000\$: | TRAP .WORD | CSESEG |
| 7410 7411 7412 7413 7414 7415 7416 | | 10110 | | | :EXECUI | ION OF T | ICROMONITOR TO ENTER THE ERROR INFORMATION, LOAD CROMONITOR TO EXECUTE MI HE MICROSUBTEST SEQUENCE IS COMPLETE | E 'IN MONITOR' STATE, CLE COMMAND FIELD OF PCSRO W ICROTEST #3, THIS WILL ST E OF MEMORY TESTS. DNI WI | EAR THE | |
| 7417 7418 7419 7420 | 033314' 033314' 033316' 033322' | 004737 | 017776 | | BGNSE | JSR BCC | PC,CHKMON 30\$ | :WAIT FOR MICROMONITOR | TRAP | C\$BSEG |
| 7422 7423 7424 7425 | 033324' 033326' 033330' 033332' 033334' | 104456 000112 002333' 016700' | | | | ERRHRD | 074,LNKMEM,MSG46 | PRINT ERROR | TRAP.WORD.WORD.WORD | CSERHRD 74 LNKMEM MSG46 |
| 7427 7428 7429 7430 | 033334 033336' 033340' 033346' | 000254 012777 | 000604° 144772 | 144774 | 30\$: | MOV CLR | #PCBB_aPCSR2 aPCSR3 | ; LEAVE TEST ; TELL MICROCODE TEST WH | TRAP .WORD IERE PCBB | CSESCAPE L10133 IS |
| 7421 7422 7423 7424 7425 7426 7427 7428 7429 7430 7431 7432 7433 7436 7437 | 033356 | 005037 005037 005037 005037 | 000604° 000606° 000610° 000612° 000003 | 144736 | | CLR CLR CLR CLR MOV | PCBB+0 PCBB+2 PCBB+4 PCBB+6 #3, aPCSR0 | CLEAR OUT THE PCBB | XFCUTF | |
| 7436 7437 | 033400 | | 000770 | 000332 | | MOV | #10 * SECOND, METER | :MICROTEST #3 :PUT SOME TIME ON THE M | | • |

| HARDWARE TESTS MACY11 30(1046) 11- CZUAAA.P11 11-JAN-83 09:29 | JAN-83 10:13 PAG TEST 17: LINK | E 156 MEMORY TEST | | | |
|---|--|--|---|---------------------------------|----------------------------------|
| 7438 033406' 004737 017330' 7439 033412' 103021 | JSR | PC, CHKDNI | WALT FOR MICROTEST TO F | INISH | |
| 7439 033412' 103021 7440 033414' 004737 020050' 7441 033420' 103006 | B(C JSR | 40\$ PC, CHKINT | OK, IT FINISHED SEE IF ANY ERROR INTERR | UPTS O | CURRED |
| 7440 033414' 004737 020050' 7441 033420' 103006 7442 033422' 7443 033422' 104456 7444 033424' 000113 7445 033426' 002333' 7446 033430' 016454' 7447 033432' | BCC ERRHRD | 35\$ 075,LNKMEM,MSG44 | :NO. OK :PRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 75 LNKMEM |
| | ESCAPE | TST | :LEAVE TEST | TRAP | MSG44 C S ESCAPE |
| 7449 033434' 000156 7450 033436' 012702 000003 7451 033442' 7452 033442' 104456 | 35\$: MOV ERRHRD | #3,R2 076,LNKMEM,MSG12 | :MICROTEST # :TELL MICROTEST HUNG | .WORD | L10133 |
| 7453 033444' 000114 7454 033446' 002333' 7455 033450' 013500' 7456 033452' | | | | .WORD .WORD .WORD | 76 LNKMEM MSG12 |
| 7457 033452* 104410 7458 033454* 000136 | ESCAPE | TST | | TRAP.WORD | C\$ESCAPE L10133 |
| 7459 7460 | MICROTEST IS | COMPLETE, NOW CHECK FOR | AN ERROR CONDITION | | |
| 7463 033464' 001027 | 54 40\$: CMPB BNE | #INERR, apcsr1 | :DID AN ERROR OCCUR? | . | |
| 7464 033466 122737 000000 0006 7465 033474 001003 7466 033476 012702 001444 | BNE MOV | #DATERR,PCBB+1 45\$ #\$DATER,R2 | YÉS, WAS IT A DATA ERRO NO YES, POINT TO DATA ERRO | | 1G |
| 7467 033502' 000406 7468 033504' 122737 000001 0006 7469 033512' 001014 | BR 05' 45 \$: CMPB BNE | 46\$ #A[RERR,PCBB+1 47\$ | :WAS IT AN ADDRESS ERROR | l | |
| 7469 033512' 001014 7470 033514' 012702 001457' 7471 033520' 013701 000606' 7472 033524' 013703 000610' 7473 033530' 013704 000612' 7474 033534' | MOV 46\$: MOV MOV MOV ERRHRD | #\$ADRER,R2 PCEB+2,R1 PCBB+4,R3 PCBB+6,R4 | POINT TO ADDRESS ERROR GET FAILING ADDRESS GET GOOD DATA GET BAD DATA PRINT ERROR MESSAGE | STRING | |
| 7475 033534' 104456 7476 033536' 000115 7477 033540' 002333' 7478 033542' 013650' | | | | TRAP .WORD .WORD .WORD | CSERHRD 77 LNKMEM MSG16 |
| 7479 033544 032777 010000 1445 7480 033552 001407 7481 033554 | 64 47 \$: BIT BEQ ERRHRD | <pre>#PARERR,@PCSR0 50\$ 078,LNKMEM,MSG43</pre> | DID A PARITY ERROR OCCU NO YES PRINT ERROR | R? | |
| 7482 033554 104456 7483 033556 000116 7484 033560 002333 7485 033562 016432 | • | | | TRAP .WORD .WORD .WORD | CSERHRD 78 LNKMEM MSG43 |
| 7486 055564 012777 010000 1445 7487 | 44 MOV | #PARERR,@PCSRO | CLEAR PARITY ERROR FLAG | | |
| 7488 7489 7490 | WRITE ONE TO | CLEAR THE DNI BIT | | | |
| 7491 033572 004737 017374 7492 033576 103004 7493 033600 | \$0\$: JSR BCC ERRHRD | PC_CLRDNI 55\$ 079,LNKMEM_RACMG7 | ;CLEAR DNI | | |

| HAPDWARE CZUAAA.F | TESTS MACY1 11 11-JAN- | 1 30(1046) 11-JAN-83 83 09:29 TES | 10:13 7 17: L | PAGE 157 INK MEMORY | TEST | | | |
|--|---|--------------------------------------|------------------|------------------------|------|---------------------|---------------------------------|-----------------------------------|
| 7494 7495 7496 7497 7498 7499 | 033600' 10445 033602' 00011 033604' 00233 033606' 01272 033610' | .7 53' 26' | S: NDSEG | | | | TRAP .WORD .WORD .WORD | CSERHRD 79 LNKMEM RACMG7 |
| 7500 7501 7502 7503 | 033610' 10440 033612' 10440 | END | TST | | | 10001\$: L10133: | TRAP | C\$FSEG |
| 7504 7505 | 033612' 10440 | <i>1</i> [| | | | | TRAP | C\$ETST |

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PARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 158
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                                                            TEST 18: DMA 'TO' ADDRESS TEST
   7506
                                                            .SBTTL TEST 18: DMA 'TO' ADDRESS TEST
   7507
   7508
   7509
                                                            THIS TEST WILL VERIFY THAT THE INTERNAL REGISTER 'DMATO' CAN BE READ AND WRITTEN. THE TILL WILL BE USED TO WRITE AND READ THIS REGISTER. THIS TEST REQUIRES THE USE OF CUSTOM MICROCODE MODULE C MICROTEST #4. PCBB+O WILL BE WRITTEN WITH THE DATA PATTERN TO TEST, THE TILL WILL
   7510
   7511
   7512
7513
   7514
7515
7516
7517
                                                            WRITE THIS PATTERN TO THE 'DMATO' REGISTER AND READ IT BACK AND PUT THE DATA READ INTO POBB+2. THE DATA AT POBB+2 WILL BE VERIFIED.
                                                             :TEST SEQUENCE:
  7518
7519
7520
7521
7522
7523
7524
7526
7526
7530
7531
7532
                                                                        1-LOAD MICROCODE MODULE 'C' IF NOT ALREADY DONE SO 2-LOAD PCBB+O WITH DATA PATTERN
                                                                        3-START MICROCODE
                                                                        4-WAIT FOR 'DNI'
                                                                        5-VERIFY PCBB+2 FOR CORRECT PATTERN
                                                                        6-REPEAT STEPS 2-6 FOR ALL DATA PATTERNS
            033614
                                                            BGNTST
            033614
                                                                                                                                                 118::
                                                            CHECK TO SEE IF MODULE 'C' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS, START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI'.
                                                            AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
  7533
7534
7535
7536
7537
7538
            0336141
                                                               BGNSEG
           033614' 104404
033616' 022737
                                                                                                                                                                         C$BSEG
                                    000103 000326'
                                                                                    #'C.MICRO
                                                                                                             :HAS MICROCODE MODULE 'C' BEEN LOADED?
                                                                        CMP
           033624' 001004
033626' 122777
033634' 001440
                                                                        BNE
                                                                                     5$
                                                                                                                        :110
                                    000001 144504
                                                                        CMPB
                                                                                    #INMON, apcsr1
                                                                                                                         :YES, IS THE MICROMONITOR ACTIVE?
   7539
                                                                        BEQ
                                                                                     20$
                                                                                                                         YES SKIP LOADING THE MICROMODULE
            033636' 012737
   7540
                                    000103 000326' 5$:
                                                                        MOV
                                                                                    #'C,MICRO
           033644' 004737
033650' 103002
  7541
7542
7543
                                                                                    PC LODMIC 10$
                                    020252
                                                                                                             GO LOAD MICROCODE MODULE C
                                                                        JSR
                                                                        BCC
                                                                                                             :OK
           033652'
033652'
                                                                        ESCAPE TST
  7544
7545
7546
7547
7548
7549
7550
7551
7552
7553
                       104410
                                                                                                                                                             TRAP
                                                                                                                                                                         CSESCAPE
            033654' 000314
                                                                                                                                                             .WORD
                                                                                                                                                                         L10134-.
            0336561
                        012737
                                    000176 000332 10$:
                                                                        MOV
                                                                                    #2*SECOND, METER
           033664' 004737
033670' 103022
033672' 012737
033700' 012737
                                                                                    PC, CHKDNI
                                    0173301
                                                                        JSR
                                                                                                            ; WAIT FOR MICROMONITOR TO TAKE OVER
                                                                        BCC
                                                                                                             :OK
                                    000776' 000310' 001275' 000312' 001340' 000314'
                                                                                    #SDNI,BITNAM
                                                                        MOV
                                                                        MOV
                                                                                    #$NSET,BITSTA
            033706' 012737
033714' 012737
                                                                        MOV
                                                                                    #SAFTER, PWHEN
                                    001355' 000316'
                                                                        MOV
                                                                                     #$GTCMD,PCOMND
           033722'
033722' 104456
033724' 000120
033726' 002363'
033730' 012750'
                                                                        ERRHRD
                                                                                    080,DMATO,MSG1
   7554
7555
                                                                                                                                                             TRAP
                                                                                                                                                                         CSERHRD
                                                                                                                                                             .WORD
                                                                                                                                                                         80
   7556
7557
                                                                                                                                                             .WORD
                                                                                                                                                                         DMATO
                                                                                                                                                             .WORD
                                                                                                                                                                         MSG1
            033732' 104410
   7558
                                                                        ESCAPE TST
   7559
                                                                                                                                                             TRAP
                                                                                                                                                                         C$ESCAPE
            033734 000234
   7560
                                                                                                                                                             .WORD
                                                                                                                                                                         L10134-.
   7561
            033736' 0C4737
                                    017374
                                                            205:
                                                                        JSR
                                                                                    PC_CLRDNI
                                                                                                                        :CLEAR DNI
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| HARDWARE TESTS MACY11 30(1046) 11-JAN CZUAAA.P11 11-JAN-83 09:29 | I-83 10:13 PAGI TEST 18: DMA | E 159 TO' ADDRESS TEST | | | |
|--|---------------------------------|---|--|---------------------------------|----------------------------------|
| 7562 033742' 103006 7563 033744' 7564 033744' 104456 7565 033750' 000121 7566 033750' 002363' 7567 033752' 012726' 7568 033754' 7569 033754' 104410 7570 033760' | BCC ERRHRD | 25\$ 081,DMATO,RACMG | 7 | TRAP .WORD .WORD .WORD | CSERHRD 81 DMATO RACMG7 |
| 7567 033752' 012726' 7568 033754' 7569 033754' 104410 7570 033756' 000212 7571 033760' 7572 033760' 7574 033760' 7575 7576 7577 7578 7577 7580 033762' 012701 000516' 7580 033766' 012705 000005 7581 033772' 7582 7583 7584 7585 7586 | ESCAPE 25\$: ENDSEG | 131 | | TRAP.WORD | CSESCAPE L10134 |
| 7574 033760° 104405 7575 7576 7577 | POINT TO LIST | OF DATA PATTERNS ILL BE EXECUTED 5 | TO USE, THERE ARE FIVE ENTRIES TIMES ONCE FOR EACH DATA PATTER | TRAP IN THE L | C\$ESEG .IST |
| 7578 7579 033762' 012701 000516' 7580 033766' 012705 000005 7581 033772' 7582 | ; MOV MOV | #PATERN,R1 #5,R5 | GET ADDRESS OF DATA PATTERNS; NUMBER OF DATA PATTERNS | | |
| 7583 7584 7585 7586 | OF MICROTEST A | MICROMONITOR TO E N, LOAD THE COMMA V4, DNI SETS WHEN | NTER THE 'IN MONITOR' STATE, LOA ND FIELD OF PCSRO WITH 4 TO STAR IT IS COMPLETE | D PCBB+0 T THE EA |) WITH (ECUTION |
| 7587 033772° 7588 033772° 104404 7589 033774° 004737 017776° 7590 034000° 103006 7591 034002° | BGNSEG JSR BCC ERRHRD | PC,CHKMON 35\$ 082,DMATO,MSG46 | ;WAIT FOR MICROMONITOR ;OK ;PRINT ERROR | TRAP | C\$BSEG |
| 7592 034002' 104456 7593 034004' 000122 7594 034006' 002363' 7595 034010' 016700' 7596 034012' | | | • • • | TRAP .WORD .WORD .WORD | CSERHRD 82 DMATO MSG46 |
| 7596 034012' 7597 034012' 104410 7598 034014' 000154 7599 034016' 012137 000604' 7600 034022' 012777 000004 144306 7601 034030' 012737 000176 000332' | SSCAPE 35\$: MOV MOV | TST (R1)+,PCBB+0 #4,aPCSR0 | ; LEAVE TEST :GET A DATA PATTERN ;START MICROTEST #4 | TRAP.WORD | C\$ESCAPE L10134 |
| 7602 034036' 004737 017330' 7603 034042' 103021 7604 034044' 004737 020050' | MOV JSR BCC JSR | #2*SECOND, METER PC, CHKDNI 40\$ PC, CHKINT | :PUT SOME TIME ON THE METER :WAIT FOR DNI :OK :SEE IF ANY ERROR INTERRUPTS OCC | CURRED | |
| 7605 034050° 103006 7606 034052° 7607 034052° 104456 7608 034054° 000123 7609 034056° 002363° | BCC ERRHRD | 36\$ 083,DMATO,MSG44 | ; NO, OK ; PRINT ERROR MESSAGE | TRAP .WORD .WORD | CSERHRD |
| 7607 034052' 104456 7608 034054' 000123 7609 034056' 002363' 7610 034060' 016454' 7611 034062' 7612 034062' 104410 7613 034064' 000104 7614 034066' 012702 000004 7615 034072' 7616 034072' 104456 | ESCAPE 36\$: MOV | TST #4,R2 | :LEAVE TEST | .WORD TRAP .WORD | MSG44 CSESCAPE L10134 |
| 7615 034072' 7616 034072' 104456 7617 034074' 000124 | ERRHRD | 084, 5mato, msg12 | :MICROTEST # :TELL MICROTEST HUNG | TRAP .WORD | CSERHRD 84 |

| HARDWAR CZUAAA.I | E TESTS P11 1 | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN-83 10: TEST 18 | 13 PAGE : DMA 'T | 160 O' ADDRESS TEST | | | | |
|--|--|--|------------------------------|--------------------------|--------------------------|--|--|-----------------|---------------------------------|-----------------------------------|
| 7618 7619 7620 | 034076' 034100' | 002363' 013500' | | | ESCAPE | 151 | | | .WORD | DMATO MSG12 |
| 7621 7622 7623 | 034102 | 104410 | | | LJCAFL | (3) | | | TRAP .WORD | CSESCAPE L10134 |
| 7624 7625 7626 | | | | OK NOW REMEMB | CHECK T ER BIT O | O SEE IF DATA REA OF DMATO IS NOT | AD IS SAME AS TH USED | HE DATA WRITTEN | | |
| 7627 7628 7629 7630 | 034106' 034112' 034116' 034122' | 042703 | 000604' 000001 000606' | 40\$: | MOV BIC CMP BEQ | PCBB+0,R3 #BIT0,R3 R3,PCBB+2 50\$ | GET ORIGINAL DESTRIP LSB: SEE IF DATA WESTES | | EAD | |
| 7621 7622 7623 7623 7626 7627 7628 7629 7631 7633 7635 7637 7638 7637 7641 7642 7643 | 034122' 034124' 034130' 034130' 034132' 034136' | 013704 104456 000125 002363' 013524' | 000606 | | MOV ERRHRD | PCBB+2,R4 085,DMATO,MSG13 | ;NO, ERROR ;PRINT ERROR | | TRAP .WORD .WORD .WORD | CSERHRD 85 DMATO MSG13 |
| 7637 7638 7639 7640 | 034140' 034140' 034140' | | | ENDSEG : | | | | 100019 | | C\$ESEG |
| 7641 | | | | WRITE | ONE TO C | LEAR DNI BIT | | | | |
| 7643 7644 7645 | 034142' 034146' 034150' | 004737 103006 | 017374 | 50\$: | JSR BCC ERRHRD | PC,CLRDNI 55\$ 086,DMATO,RACMG | ;CLEAR DNI | NOT CLEAD | | |
| 7646 7647 7648 | 034150' 034152' 034154' 034156' | 104456 | | | | | FERROR DINT DID | NOT CLEAR | TRAP .WORD .WORD | C\$ERHRD 86 DMATO PACMG7 |
| 7649 7650 7651 7652 7653 7654 7655 | 034160' 034160' 034162' 034164' | 104410 000006 005305 | | 55\$: | ESCAPE DEC | R5 | ;ANY MORE DATA | PATTERNS? | TRAPWORD | C\$ESCAPE L10134 |
| 7654 7655 | 034164' 034166' 034170' | 001301 | | ENDTST | BNE | 30\$ | ; YES | | | |
| 7656 7657 | 034170' 034170' | | | | | | | L1013 | 4: TRAP | C\$ETST |

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CZUAAA.P11
                     11-JAN-83 09:29
                                                               TEST 19: DMA 'FROM' ADDRESS REGISTER TEST
                                                                .SBTTL TEST 19: DMA 'FROM' ADDRESS REGISTER TEST
   7659
   7660
                                                                 7661
                                                               THIS TEST CHECKS THE OPERATION OF THE REGISTER/COUNTER THAT CONTAINS THE ADDRESS OF THE LINK MEMORY WORD TO BE MOVED TO THE HOST DURING DMA OPERATIONS. THE REGISTER CAN BE WRITTEN BY THE T11 BUT IT CAN
   7662
   7663
   7664
   7665
                                                                NOT BE READ BACK FOR VERIFICATION. THEREFORE IT MUST BE CHECKED
   7666
                                                                :INDIRECTLY.
   7667
                                                               THE METHOD USED IS TO LOAD MICROCODE MODULE C IF IT HAS NOT ALREADY BEEN DONE. THE MICROTEST #5 LOADS EACH LOCATION OF LINK MEMORY WITH ITS ADDRESS THEN IT TAKES THE CONTENTS OF PCBB+O AND LOADS IT INTO THE DMA 'FROM' ADDRESS REGISTER, THE 'TO' REGISTER IS LOADED WITH THE ADDRESS OF PCBB+2, THE WORD COUNT IS LOADED FOR A ONE WORD TRANSFER AND THE DMA ENGINE IS STARTED. THE HOST VERIFIES PCBB+2 = PCBB+O
   7668
   7669
   7670
   7671
   7672
   7673
   7674
   7675
                                                                :TEST SEQUENCE:
                                                                            1-LOAD MICROCODE MODULE 'C' IF NOT ALREADY DONE SO 2-LOAD PCBB+O WITH ADDRESS OF LINK MEMORY TO 'OAD
   7676
   7677
                                                                            3-START MICROCODE
   7678
                                                                            4-WAIT FOR 'DNI
   7679
                                                                            5-VERIFY PCBB+2 = PCBB+0
   7680
                                                                            6-CHANGE PCBB+O BY 1K CHUNKS
7-REPEAT 2-6
   7681
   7682
   7683
   7684
   7685
   7686
            034172
                                                               BGNTST
            0341721
                                                                                                                                                         119::
   7687
   7688
                                                               CHECK TO SEE IF MODULE 'C' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS, START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI'. AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
   7689
   7690
   7691
   7692
           034172'
034172' 104404
034174' 022737
034202' 001004
034204' 122777
034212' 001440
034214' 012737
034222' 004737
034226' 103002
034230' 104410
034232' 000316
   7693
                                                                  BGNSEG
                                                                                                                                                                     TRAP
   7694
                                                                                                                                                                                  CSBSEG
   7695
                                      000103 000326'
                                                                            CMP
                                                                                         #'C,MICRO
                                                                                                                               :HAS MICRO MODULE C BEEN LOADED?
   7696
                                                                            BNE
                                                                                         5$
                                                                                                                               : NO
                                                                                                                               YES, IS THE MICROMONITOR ACTIVE? YES SKIP LOADING THE MICROMODULE
   7697
                                      000001 144126
                                                                            CMPB
                                                                                         #INMON, aPCSR1
   7698
                                                                            BEQ
                                                                                         20$
                                                                                         W'C, MICRO
   7699
                                      000103 000326 55:
                                                                            MOV
                                                                                                                               :NO, LOAD MICRO MODULE C
                                      0202521
                                                                                         PC_LODMIC 10$
   7700
                                                                            JSR
   7701
                                                                            BCC
                                                                                                                               :OK
   7702
7703
                                                                            ESCAPE TST
                                                                                                                                                                                  CSESCAPE
                                                                                                                                                                     TRAP
            034232'
                                                                                                                                                                                 L10135-.
                         000316
                                                                                                                                                                      WORD
   7704
                                      000176 000332' 10$: 017330'
                         012737
                                                                                                                               :PUT SOME TIME ON THE METER
   7705
                                                                            MOV
                                                                                         #2*SECOND_METER
                                                                                         PC, CHKDNI
            0342421
                                                                                                                               :WAIT FOR THE MICROMONITOR
    7706
                         004737
                                                                            JSR
           034246' 103022
034250' 012737
034256' 012737
034264' 012737
034300'
   7707
                                                                            BCC
                                                                                                                               : 0K
                                      000776' 000310' 001275' 000312' 001340' 000314'
   7708
                                                                                         #SDNI,BITNAM
                                                                            MOV
                                                                                         #SNSET, BITSTA
   7709
                                                                            MOV
                                                                            MOV
                                                                                         #SAFTER, PWHEN
   7710
                                      001355' 000316'
    7711
                                                                            MOV
                                                                                         #SGTCMD, PCOMND
   7712
7713
                                                                            ERRHRD
                                                                                         087, DMAFRM, MSG1
                                                                                                                                                                                  CSERHRD
            034300' 104456
                                                                                                                                                                     TRAP
```

| HARDWARE TESTS MACY11 30(1046) 11-1 CZUAAA.P11 11-JAN-83 09:29 | JAN-83 10:13 P TEST 19: DMA | PAGE 162 "FROM" ADDRESS REGISTER | TEST | | |
|---|-------------------------------------|---|--|---------------------------------|----------------------------------|
| 7714 034302' 000127 7715 034304' 002431' 7716 034306' 012750' 7717 034310' | | | | .WORD .WORD .WORD | 87 DMAFRM MSG1 |
| 7/18 054510' 104410 7719 034312' 000236 | 20 \$: JSR | PC,CLRDNI | :CLEAR DNI BIT | TRAP.WORD | C\$ESCAPE L10135 |
| 7721 034320' 103006 7722 034322' 7723 034322' 104456 7724 034324' 000130 | BCC ERRH | 25\$ | ; DNI BIT DID NOT CLEAR! | TRAP .WORD | C\$ERHRD |
| 7725 034326' 002431' 7726 034330' 012726' 7727 034332' | ESCA | APE TST | | .WORD | DMAFRM RACMG7 |
| 7728 034332° 104410 7729 034334° 000214 7730 034336° | 25 \$: | | | TRAP.WORD | CSESCAPE L10135 |
| 7731 034336' 7732 034336' | ENDSEG | | 10000\$: | 7040 | C#F.CF.C |
| 7733 034336' 104405 7734 034340' 005037 000604' 7735 | CLR | PCBB+0 | TELL TIT TO START LGAD | TRAP AT BASE | C\$ESEG |
| 7736 034344° 7737 7738 7739 | 30\$: WAIT FOR TH OF PCSRO WI | HE MICRMONITOR TO ENTER 'I TH 5 TO START THE EXECUTI | IN MONITOR' STATE, LOAD CUMI ION OF MICROTEST #5, WAIT FO | MAND FIE | LD |
| 7740 7741 034344' 7742 034344' 104404 7743 034346' 004737 017776' 7744 034352' 103006 7745 034354' | BGNSEG JSR BCC | PC,CHKMON | :WAIT FOR MICROMONITOR | TRAP | C\$BSEG |
| 7745 034354' 7746 034354' 104456 7747 034356' 000131 7748 034360' 002431' 7749 034362' 016700' | ERRI | IRD 089,DMAFRM,MSG46 | ;PRINT ERROR | TRAP .WORD .WORD .WORD | CSERHRD 89 DMAFRM MSG46 |
| 7750 034364 ° 7751 034364 ° 104410 | | APE TST | :LEAVE TEST | TRAPWORD | CSESCAPE L10135 |
| 7754 034376° 012737 000176 0003: 7755 034404° 004737 017330° | JSR | #5,@PCSRO #2*SECOND,METER PC,CHKDNI | :TELL TIT TO START MICRO :WAIT A WHILE FOR DNI | OTEST #5 | |
| 7756 034410' 103021 7757 034412' 004737 020050' 7758 034416' 103006 | BCC JSR BCC | 50\$ PC,CHKINT 45\$ | ; SEE IF ANY ERROR INTER | RUPTS OC | CURRED |
| 7759 034420' 7760 034420' 104456 7761 034422' 000132 7762 034424' 002431' 7763 034426' 016454' | ERRI | HRD 090,DMAFRM,MSG44 | ;PRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 90 DMAFRM MSG44 |
| 7764 034430' 7765 034430' 104410 7766 034432' 000116 | | APE IST | :LFAVE TEST | TRAP.WORD | C\$ESCAPE L10135 |
| 7767 034434° 012702 000005 7768 034440° 7769 034440° 104456 | 45\$: MOV ERRI | HRD 091,DMAFRM,MSG12 | :WE WERE EXECUTING TEST :TELL HIM IT HUNG | TRAP | CSERHRD |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 163
CZUAAA.P11
             11-JAN-83 09:29
                                              TEST 19: DMA 'FROM' ADDRESS REGISTER TEST
        034442' 000133
                                                                                                                       . WORD
                                                                                                                                DMAFRM
  7771
                                                                                                                       - WORD
         034446' 013500'
  7772
                                                                                                                       .WORD
                                                                                                                                MSG12
  7773
         0344501
                                                       ESCAPE TST
        034450' 104410
  7774
                                                                                                                       TRAP
                                                                                                                                CSESCAPE
  7775
         034452' 000076
                                                                                                                       -WORD
                                                                                                                                L10135-.
  7776
                                              OK GET THE 'FROM ADDRESS' THAT I PASSED TO THE MICROCODE AND MAKE IT AN
  7777
                                              ACTUAL LINK MEMORY ADDRESS BY FORCING BIT 15 THIS MAPS IT TO THE 16-32K RANGE
  7778
  7779
                                              ALSO FORCE BIT 2 BECAUSE THE FIRST 2 WORDS OF EACH BUFFER CAN NOT BE DMA'ED FROM LINK MEMORY TO THE UNIBUS. CHECK THAT THE DATA TRANSFERRED IS GOOD
  7780
  7781
                                                                PCBB+0,R3
#BIT15!BIT2,R3
                                              50$:
                                                                                            :GET ORIGINAL 'FROM' ADDRESS
  7782
         034454' 013703
                           0006041
         034460' 052703
034464' 013704
  7783
                                                       BIS
                                                                                            :MAKE IT ACTUAL LINK MEMORY ADDRESS
                           100004
  7784
                           000606
                                                       MOV
                                                                PCBB+2,R4
                                                                                            GET WHAT WAS READ FROM LINK MEMORY
        034470 · 020304
034472 · 001404
034474 ·
                                                                R3, R4
55$
  7785
                                                       CMP
                                                                                            :IS DATA CORRECT?
  7786
                                                       BEQ
                                                                                            :YES
  7787
                                                                092, DMAFRM, MSG14
                                                       ERRHRD
                                                                                            :NO
  7788
         034474
                                                                                                                       TRAP
                                                                                                                                CSERHRD
                  104456
         034476' 000134
  7789
                                                                                                                       .WORD
                                                                                                                                92
        034500' 002431'
034502' 013572'
034504'
  7790
                                                                                                                                DMAFRM
                                                                                                                       .WORD
  7791
                                                                                                                        .WORD
                                                                                                                                MSG14
  7792
                                              55$:
  7793
        0345041
                                              ENDSEG
        0345041
  7794
                                                                                                              10001$:
  7795
         034504' 104405
                                                                                                                       TRAP
                                                                                                                                C$ESEG
  7796
  7797
                                              WRITE ONE TO CLEAR DNI
  7798
        034506° 004737
034512° 103006
  7799
                           0173741
                                                       JSR
                                                                PC, CLRDN1
                                                                57$
  7800
                                                       BCC
         0345141
                                                       ERRHRD 093, DMAFRM, RACMG7
                                                                                           :ERROR DNI DID NOT CLEAR!
  7801
         034514' 104456
                                                                                                                       TRAP
                                                                                                                                C$ERHRD
  7802
                                                                                                                       .WORD
                                                                                                                                93
  7803
         034516' 000135
        034520' 002431'
                                                                                                                                DMAFRM
  7804
                                                                                                                       .WORD
         034522' 012726'
  7805
                                                                                                                        .WORD
                                                                                                                                RACMG7
         0345241
  7806
                                                       ESCAPE TST
                                                                                                                       TRAP
  7807
         034524'
                  104410
                                                                                                                                CSESCAPE
                                                                                                                                L10135-.
  7808
         034526' 000022
                                                                                                                        _WORD
                                    000604' 57$:
                                                                                            :HAVE WE CHECKED ALL 1K CHUNKS?
  7809
         0345301
                  022737
                           074000
                                                       (MP
                                                                #74000,PCBB+0
  7810
         034536' 001404
                                                       BEQ
                                                                60$
                                                                                            :YES
  7811
         034540' 062737
                           004000 000604
                                                                #4000,PCBE+0
                                                                                            :NO, CHECK NEXT 1K
                                                       ADD
  7812
7813
         0345461
                  000676
                                                                30$
                                                                                            :DO AGAIN
                                                       BR
                                              60$:
         0345501
  7814
        0345501
                                              ENDIST
                                                                                                              L10135:
  7815
         0345501
                                                                                                                       TRAP
                                                                                                                                CSETST
  7816 034550' 104401
```

```
HARDWARE TESTS MACY11 30(1046) 1'-JAN-83 10:13 PAGE 164
CZUAAA.P11
               11-JAN-63 09:29
                                            TEST 20: DMA BLOCK TRANSFER TEST
  7817
                                            .SBTTL TEST 20: DMA BLOCK TRANSFER TEST
  7818
  7819
  1820
  7851
                                             THIS TEST WILL VEFIFY THAT THE DMA ENGINE CAN TRANSFER A MAXIMUM SIZE DATA
  7822
7823
                                             BLOCK TO HOST MEMORY.
                                            THIS TEST USES CUSTOM MICROCODE MODULE C. MICROTEST #6. THE MICROTEST FILLS EACH LOCATION OF LINK MEMORY WITH ITS ADDRESS AND THEN SETS
  7825
  7826
                                            LUP A TRANSFER FROM LINK MEMORY TO THE ADDRESS POINTED TO BY PCBB+O.
  782°
7828
                                             THE TRANSFER SIZE IS 1776 WORDS. AFTER THE MICROTEST FINISHES THE
                                            BUFFER IS CHECKED TO SEE IF IT CONTAINS THE INCREMENTING ADDRESS PATTERN.
  7830
                                            :TEST SEQUENCE:
  7831
                                                     1-LOAD MICROCODE MODULE 'C' IF NOT ALREADY DONE SO
  7832
                                                     2-LOAD PCBB+O WITH BUFFER ADDRESS
  7833
                                                     3-START MICROCODE
  7834
                                                     4-WAIT FOR DNI
  7835
                                                     5-VERIFY ALL 1776 WORDS STARTING AT BUFFER ADDRESS BASE
  7836
  7837
  7838
  7839
        0345521
                                            BGNTST
  7840 0345521
                                                                                                          T20::
  7841
                                            CHECK TO SEE IF MODULE "C" HAS BEEN LOADED. IF NOT LOAD IT INTO
  7842
  7843
                                             THE TOP HALF OF WCS, START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI'.
                                            :AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
  7844
  7845
  7846
        0345521
                                              BGNSEG
         0345521 104404
  7847
                                                                                                                   TRAP
                                                                                                                            C$BSEG
  7848
         034554' 022737
                          000103 000326*
                                                     CMP
                                                              #'C,MICRO
                                                                                         :HAS MICRO MODULE C BEEN LOADED?
        034562°
034564°
034572°
  7849
                 001004
                                                     BNE
                                                              58
                                                                                         : NO
                                                              #INMOM, apcsr1
  7850
                 122777
                                                     CMPB
                                                                                         EYES, IS THE MICROMONITOR ACTIVE?
                          000001 43546
                 001435
  7851
                                                              20$
                                                                                         :YES SKIP LOADING THE MICROMODULE
                                                     BEQ
         0345741
                                                              #'C,MICRO
  7852
                 012737
                          000103 000326 55:
                                                                                         :NO. LOAD MICRO MODULE C
                                                     MOV
  7853
                          0202521
         0346021
                  004737
                                                              PC, LODMIC
                                                     JSR
        0346061
  7854
                  103530
                                                     BCS
                                                                                         PUT SOME TIME ON THE METER
         0346101
                          000176 0003321 10$:
                                                              #2*SECOND.METER
  7855
                  012737
                                                     MOV
  7856
7857
         0346161
                 004737
                           0173301
                                                                                         :WAIT FOR THE MICROMONITOR
                                                     JSR
                                                              PC, CHKDNI
        034622'
034624'
034632'
                                                              20$
                  103021
                                                     BCC
                                                                                         : 0K
                                                              #SDNI , BITNAM
  7858
                           000776' 000310'
                 012737
                                                     MOV
                          001275 000312 001340 000314
                 012737
012737
  7859
                                                              #$NSET,BITSTA
                                                     MOV
                                                              #SAFTER, PWHEN
         034640
  7860
                                                     MOV
                          001355' 000316'
         034646' 012737
                                                              #SGTCMD_PCOMND
  7861
                                                     MOV
  7862
7863
         0346541
                                                     ERRHRD
                                                              094,DMABLK,MSG1
         0346541
                                                                                                                   TRAP
                                                                                                                            CSERHRD
                 104456
                                                                                                                   .WORD
                                                                                                                            94
         034656* 000136
  7864
                                                                                                                            DMABLK
         0346601
                                                                                                                   .WORD
                 002501
  7865
         03/662' 012750'
                                                                                                                   .WORD
                                                                                                                            MSG1
  7866
         034664 000501
                                                     BR
                                                              70$
  7867
         034666' 004737
034672' 103005
                          01/374*
                                            205:
                                                              PC, CLRDNI
                                                     JSR
  7868
                                                                                        :GO CLEAR THE DNI BIT
  7869
                                                     BCC
                                                     ERRHRD
                                                              095, DMABLK, RACMG7
  7870
         0346741
                                                                                        :DNI DID NOT CLEAR!
         0346741 104456
                                                                                                                   TRAP
                                                                                                                            CSERHRD
  7871
         034676' 000137
                                                                                                                   .WORD
  7872
```

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 165
(ZUAAA.P11 11-JAN-83 09:29
                                               TEST 20: DMA BLOCK TRANSFER TEST
        034700' 002501'
034702' 012726'
034704' 000471
                                                                                                                          . WORD
                                                                                                                                   DMABLK
  7874
                                                                                                                          . WORD
                                                                                                                                   RACMG7
  7875
                                                        BR
                                                                  70$
  7876
         034706
                                               255:
  7877
         034706
                                                 ENDSEG
  7878
         034706
                                                                                                                10000$:
  7879
         034706' 104405
                                                                                                                          TRAP
                                                                                                                                   C$ESEG
  7880
  7881
7882
7883
7884
                                               TELL MICROCODE TO DMA TO A BUFFER IN FREE MEMORY LOCATED ABOVE THIS DIAGNOSTIC BY LOADING PCBB+O WITH THE ADDRESS TO DMA TO. WAIT FOR THE MICROMONITOR TO ENTER THE 'IN MONITOR' STATE AND LOAD THE COMMAND FIELD OF PCSRO WITH A 6
                                               TO START THE EXECUTION OF MICROTEST #6. WAIT FOR DNI TO SET INDICATING IT IS
  7885
                                                COMPLETE
  7886
7887
         0347101
                                                 BGNSEG
         034710' 104404
  7888
                                                                                                                          TRAP
                                                                                                                                   C$BSEG
         034712' 013737
034720' 004737
  7889
                            000324' 000604'
                                                                  FREMEM, PCBB+0
                                                        MOV
                                                                                              :GET ADDRESS OF FREE MEMORY
         034720'
  7890
                            0177761
                                                        JSR
                                                                  PC, CHKMON
                                                                                              :WAIT FOR MICROMONITOR
  7891
                                                                  30$
                  103006
                                                        BCC
                                                                                              :OK
         034726°
034726°
034730°
  7892
7893
                                                        ERRHRD
                                                                 096.DMABLK.MSG46
                                                                                              :PRINT ERROR
                  104456
                                                                                                                          TRAP
                                                                                                                                    CSERHRD
  7894
                  000140
                                                                                                                          . WORD
                                                                                                                                   96
         034732'
  7895
                  002501
                                                                                                                          .WORD
                                                                                                                                   DMABLK
  7896
                  016700
                                                                                                                          .WORD
                                                                                                                                   MSG46
  7897
         034736
                                                        ESCAPE TST
                                                                                              :LEAVE TEST
  7898
         0347361
                  104410
                                                                                                                          TRAP
                                                                                                                                   C$ESCAPE
         0347401
  7899
                  000136
                                                                                                                          .WORD
                                                                                                                                   L10136-.
         034742'
                            000006 143366 30$:
000473 000332*
  7900
                  012777
                                                                  #6,aPCSRO
                                                                                              :START MICROTEST #6
                                                        MOV
  7901
                  012737
                                                        MOV
                                                                  #5*SECOND_METER
                                                                                              PUT SOME TIME ON THE METER
  7902
7903
         0347561
                  004737
                            017330
                                                        JSR
                                                                  PC, CHKDNI
                                                                                              :WAIT FOR MICROTEST FINISH
         0347621
                  103020
                                                                  40$
                                                        BCC
                                                                                              :OK
        034764'
  7904
                  004737
                            0200501
                                                        JSR
                                                                  PC, CHKINT
                                                                                              SEE IF ANY ERROR INTERRUPTS OCCURRED
                                                                  35$
  7905
                  103006
                                                        BCC
                                                                                              :NO. OK
         034772°
034772°
034774°
  7906
                                                        ERRHRD
                                                                 097, DMABLK, MSG44
                                                                                              PRINT ERROR MESSAGE
  7907
                  104456
                                                                                                                          TRAP
                                                                                                                                   CSERHRD
  7908
                  000141
                                                                                                                          .WORD
                                                                                                                                   97
  7909
         034776
                  002501
                                                                                                                          .WORD
                                                                                                                                   DMABLK
  7910
         0350001 016454
                                                                                                                                   MSG44
                                                                                                                          .WORD
  7911
         035002
                                                        ESCAPE TST
                                                                                              :LEAVE TEST
  7912
7913
         035002*
                  104410
                                                                                                                          TRAP
                                                                                                                                   CSESCAPE
         035004 000072
                                                                                                                          .WORD
                                                                                                                                   L10136-.
  7914
         035006' 012702
                            000006
                                               355:
                                                                                              :MICROTEST NEVER FINISHED!
                                                        MOV
                                                                  #6,R2
         035012' 104456
  7915
                                                                 098,DMABLK,MSG12
                                                        ERRHRD
  7916
                                                                                                                          TRAP
                                                                                                                                   CSERHRD
         0350141 000142
  7917
                                                                                                                          .WORD
                                                                                                                                   98
                                                                                                                                   DMABLK
  7918
         035016' 002501'
                                                                                                                          .WORD
         035020' 013500'
  7919
                                                                                                                          .WORD
                                                                                                                                   MSG12
  7920
         035022 000422
                                                        BR
                                                                  70$
  7921
  7922
                                               OK NOW CHECK THE DATA TRANSFERRED FROM LINK MEMORY TO UNIBUS MEMORY.
  7923
                                               THE DATA PATTERN IS ACTUALLY THE ADDRESS FROM WHICH THE DATA CAME FROM.
  7924
                                               THE FIRST LOCATION WILL BE 4 BYTES FROM THE BEGINING OF LINK MEMORY BECAUSE
  7925
                                               THE DMA FROM ADDRESS REGISTER DOES NOT USE BITS 0 AND 1.
  7926
         035024 013702
                                               405:
                                                                  PCBB+Q,R2
                                                                                              GET ADDRESS OF BUFFER
                            000604
                                                        MOV
                                                                  #100004,-(SP)
         035030 012746
                                                        MOV
                                                                                              STARTING DATA PATTERN
                            100004
```

| HARDWARE TESTS MA(Y11 30(1046) (ZUAAA.P11 11-JAN-83 09:29 | 11-JAN-83 10:13 PAGE TEST 20: DMA BL | 166 OCK TRANSFER TEST | |
|---|---|--|--|
| 7929 035034' 021216 7930 035036' 001405 7931 035040' 010601 7932 035042' 7933 035042' 104456 7934 035044' 000143 7935 035046' 002501' | 50\$: (MP BEQ MOV ERRHRD | (R2),(SP) 60\$ SP,R1 099,DMABLK,MSG15 | :IS DATA PATTERN CORRECT? :YES :NO GET GOOD DATA :PRINT ERROR MESSAGE TRAP (\$ERHRD .WORD 99 .WORD DMABLK .WORD MSG15 |
| 7936 035050° 013620° 7937 035052° 021627 103776 7938 035056° 002004 7939 035060° 0627:6 000002 7940 035064° 005722 | 60\$: CMP BGE ADD TST BR | (SP),#103776 70\$ #2,(SP) (R2)+ 50\$ | DONE ALL DATA? YES NEXT GOOD DATA PATTERN NEXT BUFFER ADDRESS CONTINUE CHECKING |
| 7941 035066' 000762 7942 035070' 004737 020104' 7943 035074' | 70 \$: JSR ENDSEG | PC, REUNA | RESTORE OPERATIONAL MICROCODE |
| 7944 035074° 7945 035074° 104405 7946 035076° 7947 035076° | ENDTST | | TRAP CSESEG L10136: TRAP CSETST |
| 7948 035076 104401 | | | INAF CECISI |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 167
                                                     TEST 21: TRANSMIT DONE TEST
CZUAAA.P11
                 11-JAN-83 09:29
  7949
                                                     .SBTTL TEST 21: TRANSMIT DONE TEST
  7950
  7951
  7952
7953
                                                     THE TRANSMIT STATE MACHINE INFORMS THE PORT MODULE PROCESSOR OF A TRANSMIT DONE' CONDITION. IT DOES THIS BY GENERATING AN INTERRUPT WHENEVER IT FINISHES TRANSMITTING A DATAGRAM. SINCE THE 'TRANSMIT DONE' INTERRUPT IS A NECESSARY CONDITION OF EVERY DATAGRAM TRANSMISSION, THIS TEST WILL USE THE INTERRUPT TO INDICATE THAT THE TRANSMIT STATE MACHINE IS FUNCTIONING.
  7954
  7955
  7956
7957
  7958
                                                     MICROCODE MODULE D MICROTEST WI WILL BE USED FOR THIS TEST. IT SETS :UP THE T-11 FOR AN INTERRUPT, STARTS A DATAGRAM LOOPBACK AND WAITS FOR A :TRANSMIT INTERRUPT. THE T-11 WILL BE RELEASED FROM THE LOOP IF THE XMIT DONE
  7959
  7960
  7961
  7962
                                                     INTERRUPT OCCURS. UPON RELEASE THE DNI BIT WILL BE SET IN POSKO SIGNALING
  7963
                                                     ITHAT THE TEST IS COMPLETE.
  7964
  7965
                                                     :TEST SEQUENCE:
  7966
                                                               1-LOAD MICROCODE MODULE 'D' IF NOT ALREADY DONE SO
  7967
                                                                2-VERIFY THE MICROMONITOR IN THE 'IN MONITOR' STATE
  7968
                                                                3-SELECT MICROTEST #1
  7969
                                                                4-VERIFY "DNI" BIT IN PCSRO AFTER A RESONABLE PERIOD OF TIME
  7970
                                                                5-WRITE ONE TO CLEAR DNI
  7971
  7972
                                                     7973
  7974
          035100
                                                     BGNTST
  7975
          035100
                                                                                                                                T21::
  7976
                                                     CHECK TO SEE IF MODULE 'D' HAS BEEN LOADED. IF NOT LOAD IT INTU THE TOP HALF OF WCS. START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI' SAFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
  7977
  7978
  7979
  7980
  7981
         (35100)
                                                       BGNSEG
  7982
         035100' 104404
                                                                                                                                          TRAP
                                                                                                                                                   C$BSEG
         035102' 022737
  7983
                               000104 0003261
                                                               CMP
                                                                          #'D,MICRO
                                                                                                          ; HAS MICROCODE MODULE 'D' BEEN LOADED
  7984
          035110' 001004
                                                               BNE
                                                                                                          : NO
                                                                          5$
          035112' 122777
  7985
                               000001 143220
                                                                          #INMON, aPCSR1
                                                                                                          YES, IS THE MICROMONITOR ACTIVE? YES SKIP LOADING THE MICROMODULE
                                                               (MPB
  7986
          035120' 001440
                                                               BEQ
                                                                          20$
          035122' 012737
  7987
                               000104 000326 55:
                                                                          "'D, MICRO
                                                               MOV
                                                                                                          GO LOAD MICRO MODULE 'D'
  7988
          035130
                    004737
                               0202521
                                                               JSR
                                                                          PC,LODMIC
  7989
          0351341
                     103002
                                                               BCC
                                                                          10$
                                                                                                          : 0K
  7990
          0351361
                                                               ESCAPE
                                                                         TST
  7991
          J351361
                    104410
                                                                                                                                          TRAP
                                                                                                                                                     CSESCAPE
          035140' 000246
  7992
                                                                                                                                           .WORD
                                                                                                                                                    L10137-.
  7993
          0351421
                     012737
                               000176 000332 10$:
                                                               MOV
                                                                          #2 * SECOND, METER
                                                                                                          :WAIT FOR THE MICROMONITOR
          0351501
                     004737
                               0173301
  7994
                                                                JSR
                                                                          PC, CHKDNI
  7995
          0351541
                    103022
                                                                          20$
                                                               BCC
                                                                                                          : 0K
  7996
          035156' 012737
                               000776' 000310'
                                                               MOV
                                                                          #SDNI,BITNAM
                               001275' 000312' 001340' 000314'
          035164' 012737
  7997
                                                                          #SNSET, BITSTA
                                                               MOV
  7998
                                                               MOV
                                                                          #SAFTER, PWHEN
          035200' 012737
                               001355' 000316'
  7999
                                                               MCV
                                                                          #SGTCMD_PCOMND
         035206'
035206' 104456
035210' 000144
035212' 002540'
  800C
                                                               ERRHRD
                                                                         100.TRNDON.MSG1
  8001
                                                                                                                                                     CSERHRD
                                                                                                                                          TRAP
  8003
8003
                                                                                                                                          .WORD
                                                                                                                                                    100
                    0025401
                                                                                                                                          .WORD
                                                                                                                                                     TRNDON
          035214' 012750'
  8004
                                                                                                                                          .WORD
                                                                                                                                                    MSG1
```

| HARDWARE TE | STS MAC | 111 3 N-83 | 0(1046) 09:29 | 11-JAN- | -83 10:1 TEST 21: | 3 PAGE | 168 IT DONE TEST | | | |
|--|--|--------------------------------------|----------------------------|---------|----------------------|---------------------------------|--|--|---------------------------------|------------------------------------|
| ጸበበል በኛና | 222' 004 | 166 737 | 017374 | | 20\$: | ESCAPE JSR | PC,CLRDNI | CLEAR DNI BIT | TRAP .WORD | C\$ESCAPE L10137 |
| 8010 035 8011 035 8012 035 8013 035 | 230' 230' 104 232' 000 | 3006 3456 3145 2540 2726 | | | | B(C ERRHRD | 25\$ 101,TRNDON,RACMG7 | ;DNI DID NOT CLEAR! | TRAP .WORD .WORD .WORD | CSERHRD 101 TRNDON RACMG7 |
| 8014 035 8015 035 8016 035 8017 035 8018 035 8019 035 8020 035 8021 035 8022 8023 8024 8025 8026 | | 410 0144 | | | 25 \$: | ESCAPE | TST | | TRAP.WORD | C\$ESCAPE L10137 |
| 8020 035 8021 035 | 244° 104 | 405 | | | ENDSE(| , | | 10000\$: | TRAP | C\$ESEG |
| 8023 8024 8025 | | | | | WAIT FO | OR THE M BITS OF BOUT 1 S | ICROMONITOR TO ENTER THE PCSRO WITH A 1 TO START ECOND FOR IT TO FINISH. | 'IN MONITOR' STATE. LOAD THE EXECUTION OF MICROTE IF NO 'DNI' SET PRINT ER | THE CO ST #1. ROR. | MMAND |
| 8027 035 8028 035 8029 035 8030 035 | 250' 004 | 404 737 3006 | 017776 | | BGNSE | JSR BCC | PC CHKMON 30\$ | ;WAIT FOR MICROMONITOR ;OK | TRAP | C\$BSEG |
| 8032 035 8033 035 8034 035 8035 035 | 260' 000 262' 002 264' 016 | 456 146 2,40° 5700° | | | | ERRHRD | 102,TRNDON,MSG46 | PRINT ERROR | TRAP .WORD .WORD .WORD | CSERHRD 102 TRNDON MSG46 |
| 8036 035 8037 035 8038 035 | |)116 | | | | ESCAPE | | :LEAVE TEST | TRAP.WORD | CSESCAPE L10137 |
| 8040 035 | 300' 012 306' 004 | 2737 1737 | 000001 000077 017330 | 143036 | 30\$: | MOV MOV JSR | #1,@PCSRO #1*SECOND,METER PC,CHKDN1 | :TELL T11 TO EXECUTE FIF | RST MICR | OTEST |
| 8042 035 8043 | 312' 103 | 3025 | | | | BCC | 40\$ | :OK-'DNI' SET :ERROR 'DNI' DID NOT SE :INTERRUPT! | T! NO TR | ANSMIT |
| 8046 035 8047 035 8048 035 | 320' 002 | 456 0147 2540' 8002' | | | | ERRHRD | 103,TRNDON,MSG36 | ;PRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 103 TRNDON MSG36 |
| 8050 035 8051 035 8052 035 | 324' 004 | 737 3006 | 020050* | | | JSR BCC ERRHRD | PC,CHKINT 35\$ 103,TRNDON,MSG44 | :SEE IF ANY ERROR INTERI :NO. OK :PRINT ERROR MESSAGE | RUPTS OC | CURRED |
| 8053 035 8054 035 8055 035 8056 035 | 332° 104 334° 000 336° 002 340° 016 | 4456 0147 2540° 6454° | | | | | | | TRAP .WORD .WORD .WORD | CSERHRD 103 TRNDON MSG44 |
| 8057 035 8058 035 8059 035 | 342° 342° 104 344° 000 | 4410 0042 | | | | ESCAPE | TST | ;LEAVE TEST | TRAP.WORD | CSESCAPE L10137 |
| 8060 035 | 346' 012 | 2702 | 000001 | | 35\$: | MOV | #1,R2 | :MICROTEST #1 IS HUNG | | |

| E TESTS P11 1 | MACY11 1-JAN-83 | 30(1046) 1 09:29 | 1-JAN-83 10:1 1EST 21: | TRANSM | 169 IT DONE TEST | | | | | | |
|---|--|--|---|--|--|---|--|---|--|---|---|
| 035352' 035352' 035354' 035356' 035360' | 104456 000150 002540' 013500' | | | ERRHRD | 104, TRNDON, MSG12 | ;PRINT | MESSAG | E ABO | JT HUN | NG MICROT TRAP .WORD .WORD .WORD | TEST CSERHRD 104 TRNDON MSG12 |
| 0353621 | 104410 000022 | | | ESCAPE | 151 | | | | | TRAP.WORD | CSESCAPE L10137 |
| | | | WRITE 1 | TO CLE | AR DNI BIT | | | | | | |
| 035366' | 004737 | 017374' | 205 : | JSR BCC | PC_CLRDNI | ;CLEAR | DNI BI | T | | | |
| 035374' 035374' 035376' 035400' | 104456 000151 002540 | | | ERRHRD | 105, TRNDON, RACMG7 | ;ERROR | DNI DI | D NOT | CLEAR | TRAP .WORD .WORD | CSERHRD 105 TRNDON RACMG7 |
| 035404' | 0.6.60 | | 55 \$: | _ | | | | | | | |
| 035404° 035404° | 104405 | | |) | | | | 10 | 001\$: | TRAP | C\$ESEG |
| 0354061 | 104401 | | ENDIST | | | | | L1 | 0137: | TRAP | C\$ETST |
| | P11 1' 035352' 035352' 035356' 035366' 035366' 035366' 035376' 035376' 035376' 035376' 035404' 035406' 035406' 035406' 035406' 035406' 035406' 035406' | P11 11-JAN-83 035352' 104456 035352' 104456 035354' 000150 035366' 013500' 035362' 104410 035364' 000022 035366' 004737 035374' 104456 035374' 104456 035376' 000151 035404' 002540' 035404' 035404' 035404' 035406' 104405 | P11 11-JAN-83 09:29 035352' 104456 035354' 000150 035356' 002540' 035362' 104410 035364' 000022 035374' 104456 035374' 104456 035376' 000151 035400' 002540' 035404' 035404' 035404' 104405 035406' 035406' | P11 11-JAN-83 09:29 TEST 21: 035352' 035352' 104456 035356' 002540' 035360' 013500' 035362' 104410 035364' 000022 :WRITE 1 035372' 103004 035374' 104456 035374' 104456 035376' 000151 035400' 002540' 035404' 035404' 035404' 104405 035406' 035406' ENDIST | P11 11-JAN-83 09:29 TEST 21: TRANSM 035352' 104456 035354' 000150 035356' 002540' 035366' 013500' 035366' 104410 035366' 000022 #RITE 1 TO CLEA 035374' 103004 035374' 104456 035374' 104456 035376' 000151 035400' 002540' 035400' 012726' 035404' 035404' 104405 035406' ENDIST | P11 11-JAN-83 09:29 035352' 035352' 035356' 002540' 035366' 013500' 035362' 104410 035364' 000022 #RITE 1 TO CLEAR DNI BIT 035372' 103004 035374' 104456 035374' 104456 035376' 000151 035400' 002540' 035404' 035404' 035404' 104405 035406' 035406' ERRHRD 104,TRNDON,MSG12 ERRHRD 104,TRNDON,MSG12 ESCAPE TST 40\$: JSR PC_CLRDNI BCC 55\$ ERRHRD 105,TRNDON,RACMG7 55\$: ENDSEG | P11 11-JAN-83 09:29 TEST 21: TRANSMIT DONE TEST 035352' | P11 11-JAN-83 09:29 TEST 21: TRANSMIT DONE TEST 035352' 104456 035356' 002540' 035360' 013500' 035362' 104410 035366' 000022 #RITE 1 TO CLEAR DN! BIT 035366' 004737 017374' 40\$: JSR PC_CLRDNI ;CLEAR DNI BI 035372' 103004 035374' 104456 035374' 104456 035374' 104456 035376' 000151 035400' 002540' 035400' 012726' 035400' 012726' 035404' 55\$: ENDSEG | P11 11-JAN-83 09:29 TEST 21: TRANSMIT DONE TEST 035352' | P11 11-JAN-83 09:29 TEST 21: TRANSMIT DONE TEST 035352' 104456 | P11 11-JAN-83 09:29 TEST 21: TRANSMIT DONE TEST 035352' 035354' 000150 035356' 002540' 035362' 104410 035366' 000022 ##RITE 1 TO CLEAR DN! BIT 035372' 103004 ERRHRD 105, TRNDON, RACMG7 035374' 035404' 035404' 035404' 035404' 035404' 035404' 035404' 035404' 035404' 035406' ENDSEG TRAP 10001\$: TRAP 035376' 035406' |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 170
CZUAAA.P11
                11-JAN-83 09:29
                                                TEST 22: RECEIVER DONE TEST
                                                .SBTTL TEST 22: RECEIVER DONE TEST
  8087
  8088
  8089
  8090
                                                THE LINK HARDWARE INCLUDES LOGIC TO TELL THE DEUNA PROCESSOR WHEN A LINK MEMORY BUFFER HAS BEEN FILLED AND DATA IS AVAILABLE FOR PROCESSING.
  8091
  8092
                                                THE HARDWARE INTERRUPTS THE DEUNA PROCESSOR. BECAUSE THE INTERRUPT HAPPENS WHEN A LINK MEMORY BUFFER IS FULL AND THE LINK MEMORY IS FILLED BY THE
  8093
  8094
                                                OPERATION OF THE RECEIVE STATE MACHINE, THE INTERRUPT CAN BE USED TO CHECK
  8095
                                                : IF THE STATE MACHINE WORKS.
  8096
  8097
                                                MICROCODE MODULE D MICROTEST #2 WILL BE USED FOR THIS TEST. IT SETS
  8098
                                                :UP THE T-11 FOR AN INTERRUPT, STARTS A DATAGRAM LOOPBACK AND WAITS FOR A RECEIVER INTERRUPT. THE T-11 WILL BE RELEASED FROM THE LOOP IF THE
  8099
  8100
                                                ; INTERRUPT OCCURS. UPON RELEASE THE DNI BIT WILL BE SET IN PCSRO SIGNALING
  8101
                                                THAT THE TEST IS COMPLETE.
  8102
  8103
                                                :TEST SEQUENCE:
  8104
                                                         1-LOAD MICROCODE MODULE 'D' IF NOT ALREADY DONE SO
  8105
                                                         2-VERIFY THE MICROMONITOR IN THE 'IN MONITOR' STATE
  8106
                                                         3-SELECT MICROTEST #2
  8107
                                                         4-VERIFY 'DNI' BIT IN PCSRO AFTER A RESONABLE PERIOD OF TIME
  8108
                                                         5-WRITE ONE TO CLEAR DNI
  8109
  8110
  8111
  8112
         0354101
                                               BGNTST
  8113
         0354101
                                                                                                                   122::
  8114
  8115
                                                CHECK TO SEE IF MODULE 'D' HAS BEEN LOADED. IF NOT LOAD IT INTO
                                                :THE TOP HALF OF WCS. START IT AND WAIT FOR THE MICROMONITOR TO SET "DNI"
  8116
  8117
                                                AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
  8118
  8119
         035410
                                                  BGNSEG
         0354101 104404
  8120
                                                                                                                            TRAP
                                                                                                                                     C$BSEG
         035412' 022737
  8121
                            000104 000326
                                                                  #'D,MICRO
                                                         CMP
                                                                                                :HAS MICROCODE MODULE 'D' BEEN LOADED
        035420 001004
035422 122777
035430 001440
  8122
8123
                                                         BNE
                                                                   5$
                                                                                               :NO
                            000001 142710
                                                         CMPB
                                                                   #INMON, aPCSR1
                                                                                               YES, IS THE MICROMONITOR ACTIVE? YES SKIP LOADING THE MICROMODULE
  8124
                                                         BEQ
                                                                   20$
  8125
         0354321
                  012737
                            000104 000326 55:
                                                         MOV
                                                                   #'D,MICRO
                                                                                               GO LOAD MICRO MODULE "D'
  8126
8127
         035440' 004737
                            0202521
                                                         JSR
                                                                   PC,LODMIC
         035444'
                  103002
                                                                   10$
                                                         BCC
  8128
         0354461
                                                                  151
                                                         ESCAPE
  8129
         0354461
                  104410
                                                                                                                                     CSESCAPE
                                                                                                                            TRAP
         035450' 000246
035452' 012737
  8130
                                                                                                                                     £10140-.
                                                                                                                             WORD
  8131
                            000176 000332 105:
                                                                   #2 * SECOND, METER
                                                         MOV
                                                                                               :WAIT FOR THE MICROMONITOR
  8132
8133
         035460' 004737
                                                                  PC CHKDNI
                            0173301
                                                         JSR
         0354641
                  103022
                                                         BCC
                                                                                               :OK
                            000776' 000310' 001275' 000312' 001340' 000314'
         035466' 012737
  8134
                                                                  #SDNI,BITNAM
                                                         MOV
                                                                  #$NSET,BITSTA
  8135
                                                         MOV
  8136
8137
         035502' 012737
                                                         MOV
                                                                   #SAFTER, PWHEN
         035510' 012737
                            001355' 000316'
                                                                   #$GTCMD_PCOMND
                                                         MOV
  8138
         0355161
                                                         ERRHRD
                                                                  106_RCVDON_MSG1
  8139
         035516' 104456
                                                                                                                            TRAP
                                                                                                                                     CSERHRD
         035520 000152
  8140
                                                                                                                                     106
                                                                                                                            .WORD
         0355221 0025721
  8141
                                                                                                                            .WORD
                                                                                                                                     RCVDON
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HARDWARE TESTS MACY11_30(1046) 11-JAN-83 10:13 PAGE 171
CZUAAA.P11 11-JAN-83 09:29
                                            TEST 22: RECEIVER DONE TEST
  8142 035524' 012750'
8143 035526'
                                                                                                                    .WORD
                                                                                                                             MSG1
        035526'
035526' 104410
035530' 000166
035532' 004737
035536' 103006
                                                     ESCAPE TST
  8144
                                                                                                                    TRAP
                                                                                                                             C$ESCAPE
  8145
                                                                                                                    .WORD
                                                                                                                            L10140-.
                          0173741
                                             20$:
                                                      JSR
  8146
                                                              PC.CLRDNI
                                                                                         :CLEAR DNI BIT
  8147
                                                     BCC
  8148
        035540
                                                     ERRHRD
                                                              107, RCVDON, RACMG7
                                                                                         :DNI DID NOT CLEAR!
  8149
         0355401
                 104456
                                                                                                                    TRAP
                                                                                                                             C$ERHRD
        0355421
                 000153
  8150
                                                                                                                    .WORD
                                                                                                                             107
  8151
                 0025721
                                                                                                                    .WORD
                                                                                                                             RCVDON
  8152
8153
         0355461
                 0127261
                                                                                                                    .WORD
                                                                                                                             RACMG7
         035550
                                                     ESCAPE TST
  8154
8155
        035550' 104410
                                                                                                                    TRAP
                                                                                                                             C$ESCAPE
        035552' 000144
                                                                                                                    .WORD
                                                                                                                             L10140-.
        0355541
  8156
                                             25$:
  8157
        0355541
                                              ENDSEG
                                                                                                           10000$:
  8158
        0355541
  8159
        0355541 104405
                                                                                                                    TRAP
                                                                                                                             C$ESEG
  8160
                                             WAIT FOR THE MICROMONITOR TO ENTER THE 'IN MONITOR' STATE. LOAD THE COMMAND
  8161
                                             FIELD BITS OF PCSRO WITH A 2 TO START THE EXECUTION OF MICROTEST #2.
  8162
  8163
  8164
  8165
        0355561
                                              BGNSEG
        035556' 104404
  8166
                                                                                                                    TRAP
                                                                                                                             C$BSEG
  8167
         035560' 004737
                          0177761
                                                      JSR
                                                              PC, CHKMON
                                                                                         :WAIT FOR MICROMONITOR
  8168
        035564' 103006
                                                              30$
                                                     BCC
                                                                                         :OK
  8169
        035566
                                                     ERRHRD
                                                              108_RCVDON_MSG46
                                                                                         PRINT ERROR
  8170
        0355661
                                                                                                                    TRAP
                                                                                                                             C$ERHRD
                 104456
        0355701
  8171
                 000154
                                                                                                                    .WORD
                                                                                                                             108
        035572'
                                                                                                                    .WORD
  8172
                 0025721
                                                                                                                             RCVDON
  8173
                 016700
                                                                                                                    .WORD
                                                                                                                             MSG46
  8174
         035576
                                                     ESCAPE TST
                                                                                         :LEAVE TEST
  8175
         0355761
                 104410
                                                                                                                    TRAP
                                                                                                                             C$ESCAPE
  8176
        0356001
                 000116
                                                                                                                    .WORD
                                                                                                                            L10140-.
                          000002 142526 30$:
000077 000332*
  8177
         035602' 012777
                                                     MOV
                                                              #2.aPCSRO
                                                                                         :TELL T11 TO EXECUTE MICROTEST #2
         035610' 012737
                                                     MOV
                                                              #1 * SECOND , METER
                                                                                         WAIT FOR DNI
  8178
  8179
        035616' 004737
                           0173301
                                                      JSR
                                                              PC.CHKDNI
        035622' 103025
  8180
                                                              40$
                                                                                         OK DNI SET
                                                     BCC
                                                                                         :ERROR-DNI NOT SET, NO RECEIVER
  8181
  8182
                                                                                         :INTERRUPT
  8183
         0356241
                                                     ERRHRD 109, RCVDON, MSG37
                                                                                         PRINT ERROR MESSAGE
        035624° 104456
035626° 000155
                                                                                                                    TRAP
                                                                                                                             C$ERHRD
  8184
  8185
                                                                                                                             109
                                                                                                                    .WORD
        035630' 002572'
                                                                                                                    .WORD
                                                                                                                             RCVDON
  8186
        035632' 016024'
035634' 004737
  8187
                                                                                                                    .WORD
                                                                                                                            MSG37
                                                              PC, CHKINT
  8188
                          020050
                                                      JSR
                                                                                         :SEE IF ANY ERROR INTERRUPTS OCCURRED
  8189
         035640' 103006
                                                              35$
                                                     BCC
                                                                                         :NO. OK
        035642'
035642' 104456
035644' 000156
  8190
                                                     ERRHRD
                                                             110 RCVDON MSG44
                                                                                         PRINT ERROR MESSAGE
  8191
                                                                                                                    TRAP
                                                                                                                             (SERHRD
                                                                                                                    .WORD
                                                                                                                             110
  8192
  8193
         035646*
                 0025721
                                                                                                                    .WORD
                                                                                                                             RCVDON
         035650' 016454'
                                                                                                                    .WORD
                                                                                                                             MSG44
  8194
        035652' 104410
  8195
                                                     ESCAPE TST
                                                                                                                    TRAP
                                                                                                                             CSESCAPE
  8196
                                                                                                                    .WORD
                                                                                                                            L10140-.
  8197
         035654 000042
```

| HARDWAF CZUAAA. | RE TESTS P11 1 | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN-83 10: TEST 22 | 13 PAGE : RECEIV | 172 PER DONE TEST | | | | | | |
|--|--|--|-------------------|--------------------------|---------------------|---------------------------|--------|--------------------|---------------|-----------|---------------------------------|------------------------------------|
| 8198 8199 8200 | 035656' 035662' 035662' | 012702 104456 | 000002 | 35\$: | MOV Errhrd | #2,R2 111,RCVDON,MSG12 | :MICRO | TEST #2 ERROR N | IS H MESSA | UNG GE | *** | |
| 8201 8202 8203 8204 | 0356641 | 000157 002572' 013500' | | | ECCADE | *** | | | | | TRAP .WORD .WORD .WORD | CSERHRD 111 RCVDON MSG12 |
| 8205 8206 8207 | 0356721 | 104410 000022 | | • | ESCAPE | TST | | | | | TRAP.WORD | C\$ESCAPE L10140 |
| 8208 8209 | | | | WRITE | 1 TO CLE | AR DNI BIT | | | | | | |
| 8210 8211 | 035676' 035702' | 004737 103004 | 017374' | 405: | JSR BCC | PC,CLRDNI 55\$ | ;CLEAR | DNI BIT | | | | |
| 8201 8201 8202 8203 8205 8206 8207 8208 8210 8211 8215 8216 8217 8216 8217 8217 8221 8221 8221 8222 | 035704' 035706' 035710' 035712' | 104456 000160 002572' 012726' | | | ERRHRD | 112,RCVDON,RACMG7 | ;ERROR | DNI DID | NOT | CLEAF | TRAP .WORD .WORD .WORD | CSERHRD 112 RCVDON RACMG7 |
| 8217 8218 8219 8220 | 035714' 035714' 035714' 035714' | 104405 | | 55 \$: Endse(| G | | | | 10 | 001\$: | | |
| 8221 | 0357161 | 10440) | | ENDTST | | | | | | | TRAP | C\$ESEG |
| 8223 | 035716' 035716' | 104401 | | | | | | | L 1 | 0140: | TRAP | C \$ ETST |

```
HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 173
CZUAAA.P11
                   11-JAN-83 09:29
                                                        TEST 22: RECEIVER DONE TEST
   8225
                                                         .SBTTL TEST 23: DATA BYTE FRAMING TEST
   8226
   8227
   8228
8229
                                                         :THIS TEST WILL CHECK THE LINK MODULE DATA PATH FOR BYTE DATA BOUNDARY
   8230
                                                         : CONDITIONS.
   8231
                                                         THE T-11 PROCESSOR WILL TRANSMIT DATA IN LOOPBACK MODE. THE DATA WILL BE CORGANIZED SUCH THAT DATA BOUNDARIES ARE CREATED BETWEEN ADJACENT BYTES
   8233
8234
8235
                                                         IN THE DATA STREAM (I.E. 111111110000000011...) THE T-11 PROCESSOR WILL VERIFY THE CONDITION OF THE DATA AFTER IT IS LOOPED BACK TO THE RECEIVER
   8236
8237
                                                         DATA BUFFER.
                                                        THIS TEST WILL USE MICROCODE MODULE 'D' MICROTEST #3. TESTING OF THE DATA FRAMING WILL BE DONE BY THE T-11 PROCESSOR. THE HOST PROCESSOR, MEANWHILE, WILL WAIT FOR A 'DNI' IN REGISTER PCSRO. IF 'DNI' APPEARS, THE HOST PROCESSOR WILL CHECK PCSR1 FOR AN ERROR CONDITION. IF AN ERROR CONDITION IS SET,
   8238
   8239
   8240
   8241
   8242
                                                         ADDITIONAL ERROR INFORMATION WILL BE FOUND IN THE PCBB AS FOLLOWS:
   8243
                                                         PCBB+0: RECEIVER STATUS WORD PCBB+2: DATA TRANSMITTED
   8244
   8245
   8246
                                                         PCBB+4: DATA RECEIVED
   8247
                                                         :PCBB+6: WORD OFFSET INTO RECEIVER BUFFER OF BAD DATA
   8248
                                                         :TEST SEQUENCE:
   8249
                                                                    1-LOAD MICROCODE MODULE 'D' IF NOT ALREADY DONE SO
   8250
                                                                    2-VERIFY MICROMONITOR TO ENTER THE 'INMON' STATE
   8251
                                                                    3-CLEAR OUT THE PCBB+,+2,+4,+6
  8253
                                                                    4-SELECT MICROTEST #3
5-VERIFY 'DNI' BIT SET IN PCSRO
   8254
  8255
                                                                    6-CHECK FOR AN ERROR CONDITION IN PCSR1
   8256
                                                                    7-WRITE ONE TO CLEAR THE DNI BIT
   8257
   8258
   8259
   8260
          035720'
                                                        BGNTST
                                                                                                                                        123::
   8261
           0357201
   8262
                                                        CHECK TO SEE IF MODULE 'D' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS. START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI' AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
   8263
   8264
   8265
   8266
   8267
           0357201
                                                           BGNSEG
           035720' 104404
035722' 022737
035730' 001004
   8268
                                                                                                                                                   TRAP
                                                                                                                                                              C$BSEG
                                                                    CMP
                                                                               "'D, MICRO
                                                                                                                  :HAS MICROCODE MODULE 'D' BEEN LOADED
   8269
                                  000104 000326
   8270
                                                                               5$
                                                                    BNE
                                                                                                                 : NO
           035732' 122777
035740' 001440
                                                                               #INMON, aPCSR1
                                                                                                                 YES, IS THE MICROMONITOR ACTIVE? YES SKIP LOADING THE MICROMODULE
   8271
                                                                    CMPB
                                  000001 142400
   8272
8273
                                                                    BEQ
                                                                               20$
           035742*
035750*
035754*
                                  000104
020252*
                      012737
                                                                    MOV
                                                                               "'D,MICRO
                                                                                                                  :GO LOAD MICRO MODULE 'D
                                             000326 55:
                      004737
                                                                               PC,LODMIC
   8274
                                                                    JSR
                      103002
                                                                                                                 ;OK
   8275
                                                                    BCC
                                                                                10$
           0357561
                                                                    ESCAPE
                                                                               TST
   8276
   8277
                                                                                                                                                               CSESCAPE
           035756' 104410
                                                                                                                                                   TRAP
                                                                                                                                                              L10141-.
           035760' 000316
   8278
                                                                                                                                                    WORD
           035762' 012737
                                  000176 000332 10$:
                                                                    MOV
                                                                               #2 * SECOND, METER
                                                                                                                 :WAIT FOR THE MICROMUNITOR
```

```
HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 174
(ZUAAA.P11 11-JAN-83 09:29
                                                    TEST 23: DATA BYTE FRAMING TEST
          035770' 004737
                               017330
                                                                         PC, CHKDNI
20$
          0357741 103022
  8281
8282
                                                               BCC
         035776' 012737
036004' 012737
                               000776' 000310' 001275' 000312' 001340' 000314'
                                                                         #SDNI BITNAM
#SNSFT BITSTA
#SAFTES PWHEN
#SGTCMD PLUMED
                                                                                                         ERROR 'DNI' BIT NEVER SET
                                                               MOV
  8283
                                                               MOV
          036012' 012/37
  8284
                                                               MOV
  8285
          036020' 012737
                               001355' 000316'
                                                               MOV
  8286
8287
8288
8289
          0360261
                                                               ERRHRD
                                                                        113, DBFRAM, MSG1
          0360261
                     104456
                                                                                                                                         TRAP
                                                                                                                                                   C$ERHRD
          0360301
                    000161
                                                                                                                                         .WORD
                                                                                                                                                   113
          0360321
                     0026241
                                                                                                                                         .WORD
                                                                                                                                                   DBFRAM
  8290
8291
          036034
                     012750'
                                                                                                                                         . WORD
                                                                                                                                                   MSG1
          036036
                                                               ESCAPE TST
  8292
8293
          0360361
                     104410
                                                                                                                                         TRAP
                                                                                                                                                   C$ESCAPE
          0360401
                    000236
                                                                                                                                         _WORD
                                                                                                                                                   L10141-.
  8294
          0360421
                     004737
                               017374
                                                    20$:
                                                               JSR
                                                                         PC, CLRDNI
                                                                                                         :CLEAR DNI BIT
  8295
          0360461
                    103006
                                                                          25$
                                                               BCC
  8296
8297
          036050
                                                               ERRHRD 114, DBFRAM, RACMG7
                                                                                                         :DNI DID NOT CLEAR.
                    104456
          0360501
                                                                                                                                         TRAP
                                                                                                                                                   CSERHRD
  8298
          0360521
                    000162
                                                                                                                                         .WORD
                                                                                                                                                   114
  8299
          0360541
                    0026241
                                                                                                                                         .WORD
                                                                                                                                                   DBFRAM
  8300
          036056'
                    012726
                                                                                                                                                   RACMG7
                                                                                                                                         .WORD
  8301
          036060
                                                               ESCAPE TST
  8302
8303
          036060' 104410
                                                                                                                                         TRAP
                                                                                                                                                   C$ESCAPE
          036062' 000214
                                                                                                                                         .WORD
                                                                                                                                                   L10141-.
  8304
          0360641
                                                    25$:
  8305
          0360641
                                                      ENDSEG
  8306
          0360641
                                                                                                                              1000)5:
  8307
8308
          0360641 104405
                                                                                                                                                   C$ESEG
                                                    WAIT FOR MICROMONITOR TO ENTER THE 'INMON' STATE. CLEAR THE PCBB. LOAD THE COMMAND FIELD OF PCSRO WITH A 3 TO START THE EXECUTION OF MICROTEST #3. WAIT FOR THE 'DNI' BIT. IF NO 'DNI' OR IF ANY EXTRANEOUS INTERRUPTS HAPPEN
  8309
  8310
  8311
  8312
                                                    :PRINT ERROR
  £313
  8314
  8315
          0360661
                                                      BGNSEG
  8316
          0360661
                    104404
                                                                                                                                                   C$BSEG
          036070' 004737
  8317
                               017776
                                                                         PC, CHKMON 30$
                                                               JSR
                                                                                                         ; WAIT FOR MICROMONITOR
  8318
          0360741
                    103006
                                                               BCC
                                                                                                         : OK
  8319
          0360761
                                                                         115, DBFRAM, MSG46
                                                               ERRHRD
                                                                                                         :PRINT ERROR
  8320
          0360761
                    104456
                                                                                                                                         TRAP
                                                                                                                                                   C$ERHRD
          0361001
  8321
                    000163
                                                                                                                                                   115
                                                                                                                                         .WORD
  8322
8323
          0361021
                    0026241
                                                                                                                                                   DBFRAM
                                                                                                                                         .WORD
          036104
                    016700
                                                                                                                                         .WORD
                                                                                                                                                   MSG46
  8324
          036106
                                                               ESCAPE TST
                                                                                                         :LEAVE TEST
  8325
          0361061
                    104410
                                                                                                                                         TRAP
                                                                                                                                                   CSESCAPE
          036110' 000166
  8326
                                                                                                                                                   L10141-.
                                                                                                                                         .WORD
                                                                                                        THIS IS WHERE MICROCODE WILL PUT...
RECEIVE BUFFER STATUS WORD
HERE IS WHERE THE GOOD DATA GOES
HERE IS WHERE THE BAD DATA GOES
HERE IS WHERE THE BUFFER OFFSET GOES
TELL TIT TO EXECUTE MICROTEST #3
  8327
          036112' 005037
                               0006041
                                                    305:
                                                               CLR
                                                                         PCBB
  8328
  8329
          0361161
                    005037
                               0000006
                                                               CLR
                                                                         PCBB+2
         036122'
036126'
036132'
                    005037
  8330
                               0006101
                                                               CLR
                                                                         PCBB+4
  8331
                    005037
                               0006121
                                                               CLR
                                                                         PCBB+6
                               000003 142176
                    012777
  8332
                                                                         #3,aPCSRO
                                                               MOV
  8333
8334
          036140
                    012737
                               000176
                                          000332
                                                                         #2 SECOND, METER
                                                               MOV
                                                                                                         :WAIT FOR DNI
          U$6146'
036152'
                    004737
                               0173301
                                                               JSR
                                                                         PC, CHKDNI
                    103021
                                                               BCC
```

| HARDWARE TESTS MACY11 30(1046) 11- CZUAAA.P11 11-JAN-83 09:29 | -JAN-83 10:13 PAGE TEST 23: DATA B | 175 YTE FRAMING TEST | | | |
|---|---------------------------------------|---|--|---------------------------------------|------------------------------------|
| 8336 036154' 004737 020050' 8337 036160' 103006 | JSR BCC | PC_CHKINT | ; SEE IF ANY ERROR INTERF | RUPTS OC | CURRED |
| 8337 036160' 103006 8338 036162' 8339 036162' 104456 8340 036164' 000164 8341 036166' 002624' 8342 036170' 016454' | ERRHRD | 116,DBFRAM,MSG44 | ;PRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 116 DBFRAM MSG44 |
| 8342 036170' 016454' 8343 036172' 8344 036172' 104410 8345 036174' 000102 8346 036176' 012702 000003 | ESCAPE 35 \$ · MOV | TST #3,R2 | ;MICROTEST #3 IS HUNG | TRAP.WORD | C\$ESCAPE L10141 |
| 8347 036202' 8348 036202' 104456 8349 036204' 000165 8350 036206' 002624' 8351 036210' 013500' 8352 036212' | ERRHRD | 117,DBFRAM,MSG12 | , MICKUTEST WS 13 HUNG | TRAP .WGRD .WORD .WORD | CSERHRD 117 DBFRAM MSG12 |
| 8352 036212* 8353 036212* 104410 8354 036214* 000062 | ESCAPE | 151 | | TRAP.WORD | C\$ESCAPE L10141 |
| 8356 8357 8358 | OK WE GOT 'DNI RECEIVED DATA. | NOW CHECK PCSR1 TO SEE IF SO, GET THE INFORMAT | IF THE T-11 FOUND A BOGION FROM THE PCBB AND PR | JS BYTE Int erro | IN THE |
| 8336 036154' 004737 020050' 8337 036160' 103006 8338 036162' 104456 8340 036164' 000164 8341 036166' 002624' 8342 036170' 016454' 8343 036172' 104410 8345 036172' 104410 8346 036174' 000102 8346 036176' 012702 000003 8347 036202' 104456 8349 036204' 000165 8350 036204' 000165 8351 036210' 013500' 8352 036212' 104410 8354 036212' 104410 8355 036212' 104410 8356 036224' 001014 8361 03626' 013701 000612' 8363 036226' 013701 000612' 8364 036226' 013701 000612' 8365 036246' 013703 000610' 8365 036246' 104456 8366 036246' 104456 8367 036250' 000166 8368 036252' 002624' 8369 036254' 013742' 8370 | 114 40\$: CMPB BNE MOV MOV MOV ERRHRD | #INERR, aPCSR1 50\$ PCBB+6,R1 PCBB+2,R2 PCBB+4,R3 PCBB,R4 | DID AN ERROR OCCUR? NO GET BUFFER OFFSET FOR THIS IS THE GOOD DATA THIS IS THE BAD DATA THIS IS THE RECEIVER | FOR ERRO | R REPORT |
| 8366 036246' 104456 8367 036250' 000166 8368 036252' 002624' 8369 036254' 013742' | . ENRIND | 118,DBFRAM,MSG17 | ;PRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 118 DBFRAM MSG17 |
| 8371 | WRITE '1' TO C | LEAR 'DNI' BIT | | | |
| 8373 036256' 004737 017374' 8374 036262' 103004 | 50 \$: JSR | PC,CLRDNI | :CLEAR DNI BIT | | |
| 8372 8373 036256' 004737 017374' 8374 036262' 103004 8375 036264' 104456 8377 036266' 000167 8378 036270' 002624' 8379 036272' 012726' 8380 036274' 8381 036274' 8382 036274' 8383 036274' 104405 8384 036276' 8385 036276' 8386 036276' 104401 | BCC ERRHRD | 55\$ 119,DBFRAM,RACMG7 | ;ERROR DNI DID NOT CLEAN | R! TRAP .WORD .WORD .WORD | CSERHRD 119 DBFRAM RACMG7 |
| 8380 036274' 8381 036274' | 55 \$: ENDSEG | | | | TEPE ST |
| 8381 036274° 8382 036274° 8383 036274° 104405 8384 036276° | ENDIST | | 10001\$: | TRAP | (\$ESEG |
| 8385 036276' 8386 036276' 104401 | CHPIJI | | £10141: | TRAP | C\$ETST |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 176
CZUAAA.P11
               11-JAN-83 U9:29
                                             TEST 24: DATA WORD FRAMING TEST
  8387
                                             .SBTTL TEST 24: DATA WORD FRAMING TEST
  8388
  8389
  8390
  8391
                                             THIS TEST WILL CHECK THE LINK MODULE DATA PATH FOR WORD DATA BOUNDARY
  8392
                                             : CONDITIONS.
  8393
  8394
                                             THE T-11 PROCESSOR WILL TRANSMIT DATA IN LOOPBACK MODE. THE DATA WILL BE
  8395
                                             ORGANIZED SUCH THAT DATA BOUNDARIES ARE CREATED BETWEEN ADJACENT WORDS
  8396
                                             IN THE DATA STREAM (I.E. 1111111111111111000000000000000011...) THE T-11 PROCESSOR WILL VERIFY THE CONDITION OF THE DATA AFTER IT IS LOOPED BACK TO
  8397
  8398
                                             THE RECEIVER DATA BUFFER.
  8399
  8400
                                             THIS TEST WILL USE MICROCODE MODULE 'D' MICROTEST #4. TESTING OF THE DATA
  8401
                                             FRAMING WILL BE DONE BY THE T-11 PROCESSOR. THE HOST PROCESSOR, MEANWHILE
  8402
                                             WILL WAIT FOR A 'DNI' IN REGISTER PCSRO. IF 'DNI' APPEARS, THE HOST PROCESSOR
  8403
                                             WILL CHECK POSR1 FOR AN ERROR CONDITION. IF AN ERROR CONDITION IS SET,
  8404
                                             :ADDITIONAL ERROR INFORMATION WILL BE FOUND IN THE PCBB AS FOLLOWS:
  8405
  8406
                                              PCBB+0: PECEIVER STATUS WORD
  8407
                                              PCBB+2: DATA TRANSMITTED
  8408
                                              PCBB+4: DATA RECEIVED
  8409
                                             PCBB+6: WORD OFFSET INTO RECEIVER BUFFER OF BAD DATA
  8410
  8411
                                             :TEST SEQUENCE:
  8412
                                                      1-LOAD MICROCODE MODULE 'D' IF NOT ALREADY DONE SO
                                                      2-VERIFY MICROMONITOR IS IN THE 'INMON' STATE
  8413
  8414
                                                      3-CLEAR OUT THE PCBB+0.+2.+4.+6
  8415
                                                      4-SELECT MICROTEST #4
  8416
                                                      5-VERIFY 'DNI' BIT SET IN PCSPO
  8417
                                                      6-CHECK FOR AN ERROR CONDITION IN PCSR1
  8418
                                                      7-WRITE ONE TO CLEAR THE DNI BIT
  8419
  8420
 8421
8422
8423
8424
8425
        036300
                                             BGNTST
        036300
                                                                                                            124::
                                             CHECK TO SEE IF MODULE 'D' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS, START IT AND WAIT FOR THE MICROMONITOR TO SET 'THI'
  8426
  8427
                                             AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
  8428
8429
8430
        036300'
                                               BGNSEG
        036300' 104404
036302' 022737
036310' 001004
                                                                                                                     TRAP
                                                                                                                              CSBSEG
  8431
                           000104 000326*
                                                               "'D,MICRO
                                                                                          ; HAS MICROCODE MODULE 'D' BEEN LOADED
  8432
                                                      BNE
                                                               5$
                                                                                          : NO
        036312' 122777
036320' 001440
  8433
                           000001 142020
                                                      CMPB
                                                               #INMON, aPCSR1
                                                                                          ; YES, IS THE MICROMONITOR ACTIVE?
  8434
                                                      BEQ
                                                               20$
                                                                                          YES SKIP LOADING THE MICROMODULE
        036322 012737
036330 004737
  8435
                           000104 000326 55:
                                                               "'D.MICRO
                                                                                          GO LOAD MICRO MODULE 'D'
                                                      MOV
                           0202521
  8436
                                                      JSR
                                                               PC,LODMIC
        036334' 103002
  8437
                                                      BCC
                                                               10$
                                                                                          : 0K
        036336'
036336' 104410
  8438
                                                      ESCAPE
                                                               TST
  8439
                                                                                                                     TRAP
                                                                                                                              (SESCAPE
  8440 036340 000316
                                                                                                                      WORD
                                                                                                                             L10142-.
        036342' 012737
                           000176 000332' 10$:
  8441
                                                      MOV
                                                               #2*SECOND, METER
                                                                                          :WAIT FOR THE MICROMONITOR
                           0173301
        036350' 004737
  8442
                                                      JSR
                                                               PC_CHKDNI
```

| HARDWAR CZUAAA. | E TESTS P11 1 | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN | -83 10: TEST 24 | 13 PAGE : DATA W | 177 ORD FRAMING TEST | | | |
|--|--|--|--|--|-------------------------|---|--|--|---|------------------------------------|
| 8443 8444 8445 8446 8447 | 036354' 036356' 036364' 036372' 036400' 036406' | 103022 012737 012737 012737 012737 | 000776' 001275' 001340' 001355' | 000310° 000312° 000314° 000316° | | BCC MOV MOV MOV MOV ERRHRD | 20\$ #\$DNI,BITNAM #\$NSET.BITSTA #\$AFTER,PWHEN #\$GTCMD,PCOMND 120,DWFRAM,MSG1 | ; OK | | |
| 8447 8448 8449 8450 8451 8452 | | 000170 002662 | | | | ESCAPE | 151 | | TRAP .WORD .WORD .WORD | CSERHRD 120 DWFRAM MSG1 |
| 8451 8452 8453 8454 8455 8456 8457 | 036416' 036420' 036422' 036426' | 104410 000236 004737 103006 | 017374 | | 20\$: | JSR BCC | PC_CLRDNI 25\$ | CLEAR DNI BIT | TRAP .WORD | CSESCAPE L10142 |
| 8460 | 036430' 036430' 036432' 036434' 036436' | 000171 0026621 | | | | ERRHRD | 121,DWFRAM,RACMG7 | ;DNI DID NOT CLEAR! | TRAP .WORD .WORD .WORD | CSERHRD 121 DWFRAM RACMG7 |
| 8461 8462 8463 8464 8465 8466 | 036440° 036442° 036444° 036444° | 104410 000214 | | | 25 \$: ENDSE | ESCAPE G | TST | | TRAPWORD | CSESCAPE L10142 |
| 8467 8468 8469 8470 8471 8472 8473 | 036444° 036444° | 104405 | | | WAIT FO | OR MICRO D FIELD | MONITOR TO ENTER THE 'OF PCSRO WITH A 4 TO S | 10000\$: INMON' STATE. CLEAR THE PC TART THE EXECUTION OF MICR OR IF ANY EXTRANEOUS INTER | TRAP BB. LOAD OTEST #4 | (SESEG |
| 8474 8475 8476 | 0364461 | | | | PRINT | ERROR | DAT BIT. IT NO DAT | ON IL MAL EXIMMETORS THICK | NUT IS HE | AFF EN |
| 8477 8478 8479 | 036446' 036450' 036454' 036456' | 004737 | 017776' | | BGNSE | JSR BCC ERRHRD | PC,CHKMON 30\$ 122,DWFRAM,MSG46 | :WAIT FOR MICROMONITOR :OK :PRINT ERROR | TRAP | C\$BSEG |
| 8481 8482 8483 8484 | 036456° 036460° 036462° 036466° | 104456 000172 002662' 016700' | | | | | | | TRAP .WORD .WORD .WORD | CSERHRD 122 DWFRAM MSG46 |
| 8485 8486 8487 8488 | 036466' 036470' 036472' | 000166 | 000604* | | 30\$: | ESCAPE | PCAB | ; LEAVE TEST ; THIS IS WHERE MICROCOD | TRAP .WORD E WILL P | CSESCAPE L10142 |
| 8480 8481 8482 8483 8485 8486 8487 8489 8491 8493 8493 8493 | 036476' 036502' 036506' 036512' 036520' | 005037 005037 005037 012777 012737 | 000606' 000610' 000612' 000004 000176 017330' | 141615 000332* | | CLR CLR CLR MOV MOV JSR | PCBB+2 PCBB+4 PCBB+6 #4,@PCSRO #2*SECOND,METER FC,CHKDNI | RECEIVE BUFFER STATUS HERE IS WHERE THE GOOD HERE IS WHERE THE BAD HERE IS WHERE THE BUFF HERE IS WHERE THE BUFF HELL TIT TO EXECUTE MI WAIT FOR DNI | WORD DATA GO DATA GOE ER OFFSE | DES S T GOES |
| 8496 8497 8498 | 036526' 036532' 036534' 036540' | 103021 004737 103006 | 020050* | | | B((JSR B((| 40\$ PC,CHKINT 35\$ | :SEE IF ANY ERROR INTER :NO, OK | RUPTS OC | CURRED |

| HARDWARE TESTS MACY11 30(1046) CZUAAA.P11 11-JAN-83 09:29 | 11-JAN-83 10:13 PAGE TEST 24: DATA W | 178 ORD FRAMING TEST | | | |
|---|--|---|--|---------------------------------|------------------------------------|
| 8499 036542' 8500 036542' 104456 8501 036544' 000173 8502 036546' 002662' 8503 036550' 016454' | ERRHRD | 123,DWFRAM,MSG44 | ;PRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | C\$ERHRD 123 DWFRAM MSG44 |
| 8504 036552' 8505 036552' 104410 8506 036554' 000102 8507 036556' 012702 000004 8508 036562' | ESCAPE 35 \$: MOV | TST #4,R2 | :MICROTEST #4 IS HUNG | TRAP .WORD | CSESCAPE L10142 |
| 8509 036562' 104456 8510 036564' 000174 8511 036566' 002662' 8512 036570' 013500' | ERRHRD | 24,DWFRAM,MSG12 | | TRAP .WORD .WORD .WORD | CSERHRD 124 DWFRAM MSG12 |
| 8513 036572' 8514 036572' 104410 8515 036574' 000062 | ESCAPE . | TST | | TRAP.WORD | C\$ESCAPE L10142 |
| 8517 8518 8519 | OK WE GOT 'DNI' IN THE RECEIVE | ' NOW CHECK PCSR1 TO SEE R BUFFER. IF SO, PRINT EF | IF THE T-11 DETECTED A | BOGUS WO | RD |
| 8520 036576' 122777 000003 8521 036604' 001014 8522 036606' 013701 000612' 8523 036612' 013702 000606' 8524 036616' 013703 000610' 8525 036622' 013704 000604' 8526 036626' 8527 036626' 104456 8528 036630' 000175 8529 036632' 002662' 8530 036634' 013742' 8531 8532 8533 | 141534 40\$: CMPB BNE MOV MOV MOV MOV ERRHRD | WINERR, aPCSR1 50\$ PCBB+6,R1 PCBB+2,R2 PCBB+4,R3 P 9B,R4 125,DWFRAM, MSG17 | DID AN ERROR OCCUR? NO GET BUFFER OFFSET FOR THIS IS THE GOOD DATA THIS IS THE BAD DATA F THIS IS THE RECEIVER S PRINT ERROR MESSAGE | FOR ERRO OR ERROR | R REPORT |
| 8527 036626' 104456 8528 036630' 000175 8529 036632' 002662' 8530 036634' 013742' | | 127,001 RAFI,FISGIT | , FRINT ERROR MESSAGE | TRAP.WORD.WORD.WORD | CSERHRD 125 DWFRAM MSG17 |
| 8532 8533 | : | LEAR 'DNI' BIT | | | |
| 8534 036636' 004737 017374' | 50\$: JSR BCC BCC | PC_CLRDNI 55\$ | CLEAR DNI BIT | .01 | |
| 8535 036642' 103004 8536 036644' 104456 8537 036646' 000176 8539 036650' 002662' 8540 036652' 012726' 8541 036654' 8542 036654' 8543 036654' 104405 8545 036656' 8546 036656' 104401 | ERRHRD | 126,DWFRAM,RACMG7 | ;ERROR DNI DID NOT CLEA | TRAP .WORD .WORD .WORD | CSERHRD 126 DWFRAM RACMG7 |
| 8541 036654° 8542 036654° 8543 036654° 8544 036654° 104405 | 55 \$: ENDSEG | | 10001\$: | TRAP | (C ECEC |
| 8545 036656' 8546 036656' 8547 036656' 1044uî | ENDTST | | £10142: | | C\$ESEG C\$FTST |

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HARDWARE TESTS MACY11_35(1046) 11-JAN-83 10:13 PAGE 179
CZUAAA.P11
              11-JAN-83 09:29
                                               TEST 25: DATA PATH PATTERN TEST
                                               .SBTTL TEST 25: DATA PATH PATTERN TEST
  8549
  8550
                                                *****************************
  8551
  8552
8553
                                               THIS TEST WILL CHECK THE LINK MODULE DATA PATH FOR ALL "STUCK AT O" AND "STUCK AT 1" ERRORS.
  8554
  8555
                                               THE T-11 PROCESSOR WILL TRANSMIT DATAGRAMS OF MAXIMUM LENGTH IN LOOPBACK MODE.
  8556
8557
                                               THIS PATTERN LOOPBACK PROCEDURE WILL BE USED FOR ALL PATTERNS OF UP TO WORD
  8558
8559
                                               THIS TEST USES MICROMODULE 'D' MICROTEST #5 TO DO THE TESTING. THE HOST PROCESSOR WILL PASS A DATA PATTERN TO THE T-11 PROCESSOR THROUGH THE PCBB.
  8560
  8561
                                               THE T-11 WILL FILL A XMIT BUFFER WITH THE DATA PATTERN AND TRANSMIT THE
                                              DATAGRAM OVER THE LOOPBACK. THE T-11 PROCESSOR WILL VERIFY THE PATTERN IN THE RECEIVER BUFFER. IF THE T-11 FINDS AN ERROR, IT WILL WRITE THE FAILING PATTERN TO THE PCBB ALONG WITH THE OFFSET INTO THE RECEIVER BUFFER AT WHICH THE PATTERN WAS FOUND. IT WILL INFORM THE HOST OF THE ERROR BY SETTING PCSR1
  8562
  8563
  8564
  8565
  8566
                                               TO AN ERROR CONDITION. THE PCBB IS FORMATTED AS FOLLOWS:
  8567
  8568
                                               :PCBB+0: DATA PATTERN
  8569
                                               :PCBB+2: RECEIVER STATUS WORD
  8570
                                               :PCBB+4: BAD DATA PATTERN
  8571
                                               PCBB+6: OFFSET INTO RECEIVER BUFFER WHERE BAD DATA WAS FOUND
  8572
8573
                                               ************************************
  8574
8575
         0366601
                                              BGNTST
  8576
8577
         036660'
                                                                                                                125::
  8578
                                               CHECK TO SEE IF MODULE 'D' HAS BEEN LOADED. IF NOT LOAD IT INTO
  8579
                                               THE TOP HALF OF WCS, START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI'
                                               AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
  8580
  8581
  8582
8583
         036660'
                                                 BGNSEG
         036660' 104404
                                                                                                                          TRAP
        036662
036670
036672
036700
  8584
                  022737
                            000104 000326"
                                                                 #'D,MICRO
                                                                                             :HAS MICROCODE MODULE 'D' BEEN LOADED
  8585
                  001004
                                                        BNE
                                                                 5$
                                                                                             :NO
                  122777
                                                                 #INMON, aPCSR1
  8586
                            000001 141440
                                                        CMPB
                                                                                             ; YES, IS THE MICROMONITOR ACTIVE?
  8587
                  001440
                                                        BEQ
                                                                                             :YES SKIP LOADING THE MICROMODULE
                                                                 20$
         036702'
036710'
                  012737
                            000104 000326 55:
  8588
                                                                 M'D.MICRO
                                                        MOV
                                                                                             GO LOAD MICRO MODULE 'D'
  8589
                  004737
                            0202521
                                                        JSR
BCC
                                                                 PC,LODMIC
  8590
         0367141
                  103002
                                                                 10$
                                                                                             : 0K
  8591
         0367161
                                                        ESCAPE
                                                                 TST
  8592
8593
         0367161
                  104410
                                                                                                                         TRAP
                                                                                                                                   C$ESCAPE
         0367201
                  000332
                                                                                                                          .WORD
                                                                                                                                  L10143-.
        036722°
036730°
036734°
                  012737
  8594
                            000176 000332 10$:
                                                                 #2*SECOND, METER
                                                        MOV
                                                                                             :WAIT FOR THE MICROMONITOR
  8595
                  004737
                            0173301
                                                                 PC, CHKDNI
                                                        JSR
  8596
                  103022
                                                                 20$
                                                        BCC
                                                                                             :OK
  8597
         036/36"
                  012737
                            000776' 000310'
                                                                 #SDNI,BITNAM
                                                        MOV
         036744"
                  012737
                            001275' 000312'
  8598
                                                        MOV
                                                                 #$NSET,BITSTA
         0367521
                  012737
                            001340' 000314'
                                                                 WSAFTER, PWHEN
  8599
                                                        MOV
         036760' 012737
  8600
                           001355' 000316'
                                                        MOV
                                                                 #SGTCMD_PCOMND
  8601
         0367661
                                                                 127, DPPAT, MSG1
                                                        ERRHRD
         036766' 1044"6
  8602
                                                                                                                                   CSERHRD
                                                                                                                         TRAP
         036770 000177
  8603
                                                                                                                         .WORD
```

| HARDWARE CZUAAA.F | E TESTS | MACY11 : 1-JAN-83 | 30(1046) 09:29 | 11-JAN | -83 10: TEST 25 | 13 PAGE : DATA P | 180 ATH PATTERN TEST | | | |
|---|--|--|---|-------------------|--------------------|--------------------------|--|--|---------------------------------|-----------------------------------|
| 8604 8605 8606 | 036772' 036774' 036776' | 002720' 012750' | | | | ESCAPE | 151 | | .WORD | DPPAT MSG1 |
| 8607 8608 | 036776' 037000' 037002' | 104410 000252 004737 | 017374' | | 20\$: | JSR | PC_CLRDNI 25\$ | CLEAR DNI BIT | TRAP .WORD | C\$ESCAPE L10143 |
| 8609 8610 86112 86113 8613 8613 8613 8613 8613 8622 8623 8623 8633 8633 8633 8633 863 | 037006' 037010' 037010' 037012' 037014' 037016' | 103006 104456 000200 002720' 012726' | | | | BCC ERRHRD | 128,DPPAT,RACMG7 | ;DNI DID NOT CLEAR! | TRAP .WORD .WORD .WORD | CSERHRD 128 DPPAT RACMG7 |
| 8616 8617 8618 8619 | 037020° 037020° 037022° 037024° | 104410 000230 | | | 25\$: | ESCAPE | TST | | TRAP.WORD | CSESCAPE L10143 |
| 8620 8621 8622 8623 | 037024' 037024' 037024' | 104405 | | | ENDSE. | G | | 10000\$: | TRAP | C\$ESEG |
| 8624 8625 | | | | | CLEAR FROM A | OUT THE | PCBB+2,+4,+6 AND LOAD F STANDARD DATA PATTERNS | PCBB+O WITH A DATA PATTERN | SELECTE | D |
| 8627 8628 | 037026' | 005037 | 000606 | | ; | CLR | PCBB+2 | ;HERE IS WHERE MICROCOD | E WILL F | Put |
| 8629 8630 8631 8632 | 037032' 037036' 037042' 037046' | 005037 005037 012701 012705 | 000610' 000612' 000516' 000005 | | | CLR CLR MOV MOV | PCBB+4 PCBB+6 #PATERN,R1 #5,R5 | HERE IS WHERE BAD DATA HERE IS WHERE BUFFER O GET ADDRESS OF DATA PA M OF DATA PATTERNS |)FFSET GC | DES ABLE |
| 8633 8634 | 037052' | 012137 | 000604 | | 27\$: BGNSE | MOV | (Ŕĺ)÷,PCBB | LOAD PEBB WITH A DATA | PATTERN | |
| 8635 8636 | 037056 | 104404 | | | : | | | | TRAP | C\$BSEG |
| 8637 8638 8639 | | | | | :WAIT F | OR THE T DING PCS | -11 TO ENTER THE 'INMON RO COMMAND FIELD BITS W | N' STATE AT WHICH TIME SEL NITH A 5. WAIT FOR 'DNI'. | ECT MICR | ROTEST #5 |
| 8640 | 037060° 037064° | 004737 103006 | 017776 | | • | JSR BCC | PC,CHKMON 30\$ | :WAIT FOR MICROMONITOR | | |
| 8641 8642 86443 86445 86446 86447 86449 86551 86553 86553 86557 8658 | 037066' 037066' 037070' 037072' 037074' | 104456 000201 | | | | ERRHRD | 129,DPPAT,MSG46 | ;PRINT ERROR | TRAP .WORD .WORD .WORD | CSERHRD 129 DPPAT MSG46 |
| 8647 8648 | 037076' 037076' | 104410 | | | | ESCAPE | TST | ;LEAVE TEST | TRAP | CSESCAPE L10143 |
| 8650 8651 8652 | 037100' 037102' 037110' 037116' 037122' 037124' 037130' 037132' | 000152 012777 012737 004737 103021 | 000005 000176 017330 | 141226 000332* | 30\$: | MOV MOV JSR | #5.apcsro #2*second, meter PC, CHKDNI | :TELL TIT TO EXECUTE MI :WAIT FOR DNI | .WORD | #5 |
| 8655 8655 | 03/122 037124' 037130' | 103021 004737 103006 | 020630 | | | BCC JSR BCC | 40\$ PC_CHKINT 35\$ | :SEE IF ANY ERROR INTER | RUPTS OC | CURRED |
| 8656 8657 8658 8659 | 037132° 037132° 037134° 037136° | 000202 | | | | ERRHRD | 130,DPPAT,MSG44 | ;PRINT ERROR MESSAGE | TRAP .WORD .WORD | CSERHRD 130 DPPAT |

| HARDWAR CZUAAA. | E TESTS P11 1 | MA(Y11 1-JAN-83 | 30(1046) 09:29 | 11-JAN | -83 10: TEST 25 | 13 PAGE : DATA P | 181 PATH PATTERN TEST | | | | |
|--|--|--|--|--------|-------------------------|--------------------------|--|--|---------------------|---------------------------------------|----------------------------------|
| 8660 8661 | 037140' 037142' | 016454' | | | | ESCAPE | TST | | | .WORD | MSG44 |
| 8662 8663 8664 8665 | 037142' 037144' 037146' 037152' | | 000005 | | 35\$: | MOV | #5.R2 | :MICROTEST #5 IS | HUNG | TRAP.WORD | C\$ESCAPE L10143 |
| 8666 8667 | 037152' 037154' 037156' | 104456 000203 002720' 013500' | | | | ERRHRD | 131, DPPAT, MSG12 | | | TRAP .WORD .WORD .WORD | CSERHRD 131 DPPAT MSG12 |
| 8668 8669 8670 8672 8673 8674 8675 8677 8678 | 037160' 037162' 037162' 037164' | 104410 000066 | | | • | ESCAPE | TST | | | TRAP.WORD | CSESCAPE L10143 |
| 8674 8675 8676 | | | | | OK WE PERTIN | GOT 'DNI ENT INFO | ' NOW CHECK PCSR1 TO SEE | IF AN ERROR HAPPI | ENED, I | F SO, PF | RINT |
| 8677 | 037166 | 122777 | 000003 | 141144 | 405: | CMPB | #INERR, apcsR1 | :DID AN ERROR OC | CUR? | | |
| 8679 8680 8681 8682 8683 8684 | 037174' 037176' 037202' 037206' 037212' 037216' | 001014 013701 013702 013703 013704 | 000612' 000604' 000610' 000606' | | | BNE MOV MOV MOV | 50\$ PCBB+6,R1 PCBB,R2 PCBB+4,R3 PCBB+2,R4 | ;NO ;GET BUFFER OFFSI ;THIS IS THE GOOD ;THIS IS THE BAD ;THIS IS THE RECO | D DATA I DATA FI | FOR ERRO OR ERROF | OR REPORT R REPORT |
| 8684 8685 8686 8687 8688 8689 | 037216' 037220' 037222' 037224' | 104456 000204 002720' 013742' | | | | ERRHRD | 132, DPPAT, MSG17; PRINT | ERRUR MESSAGE | | TRAP .WORD .WORD .WORD | CSERHRD 132 DFPAT MSG17 |
| 8689 | | | | | WRITE | '1' TO C | LEAR 'DNI' BIT | | | | |
| 8691 | 0372261 | 004737 | 017374 | | 505: | JSR | PC, CLRDNI | CLEAR DNI BIT | | | |
| 8692 8693 8694 8695 8696 | 037232' 037234' 037234' 037236' 037240' | 103004 104456 000205 002720 | | | | BCC ERRHRD | 55\$ 133,DPPAT,RACMG7 | ;ERROR DNI DID NO |)T (LEAI | R! TRAP .WORD .WORD .WORD | CSERHRD 133 DPPAT |
| 8696 8697 8698 8699 8700 8701 8702 | 037236' 037240' 037242' 037244' 037244' | 012726* | | | 55 \$: ENDSE | G | | | 10001\$: | | RACMG7 |
| 8701 8702 8703 8704 8705 8706 | 037246° 037250° 037252° | 005305 | | | ENDIST | DE C BNE | R5 27\$ | :HAVE WE TESTED W | JITH ALI | TRAP L DATA P | CSESEG PATTERNS? |
| 8705 8706 | 037252' 037252' | 104401 | | | | | | l | 10143: | TRAP | CSETST |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-33 10:13 PAGE 182 CZUAAA.P11 11-JAN-83 09:29 TEST 26: STATUS MUX VERIFICATION TEST
  8707
                                                     .SBTTL TEST 26: STATUS MUX VERIFICATION TEST
  8708
  8709
  8710
  8/11
                                                     THE LINK WRITES STATUS IN LINK MEMORY AFTER EACH TRANSMIT ATTEMPT. THE STATUS GIVES INFORMATION ABOUT THE ATTEMPTED OPERATION. THE STATUS INFORMATION IS
  8712
  8713
                                                      WRITTEN INTO THE FIRST TWO LOCATIONS OF THE TRANSMIT BUFFER. THIS INFORMATION
  8714
                                                     IS ACCESSIBLE TO THE T-11 BY SIMPLY READING IT FROM LINK MEMORY.
  8715
  8716
                                                     THIS TEST WILL VERIFY THAT THE STATUS INFORMATION IS WRITTEN INTO THE FIRST
  8717
                                                     LOCATION OF THE TRANSMIT BUFFER. THE TEST WILL ALSO CHECK THE SECOND WORD
  8718
                                                     OF THE TRANSMIT BUFFER.
  8719
  8720
                                                     THIS TEST WILL USE MICROMODULE 'D' MICROTEST #6. WHEN THE TEST IS STARTED, THE T-11 PROCESSOR WILL SET UP THE LINK FOR LOOPBACK
  8721
8722
                                                     OF A DATA PATTERN. A BACKGRAOUND PATTERN WILL BE WRITTEN INTO THE FIRST WORD
  8723
8724
                                                     OF THE TRANSMIT BUFFER. THIS WORD SHOULD BE OVER-WRITTEN BY THE STATUS WHEN THE BUFFER IS TRANSMITTED. THE SECOND WORD OF THE TRANSMIT BUFFER CAN NOT BE
  8725
                                                      WRITTEN WITH A BACKGROUND BECAUSE IT MUST DESIGNATE THE TRANSMIT BYTE COUNT.
  8726
8727
                                                     WHEN THE DATAGRAM HAS BEEN LOOPED BACK, THE T-11 PROCESSOR WILL PASS THE FIRST TO THE WORDS OF THE TRANSMIT BUFFER TO THE HOST THRU THE PCBB+0 AND PCBB+2.
  8728
  8729
8730
8731
                                                      PCBB+0: FIRS1 WORD OF TRANSMIT BUFFER
                                                     :PCBB+2: SECOND WORD OF TRANSMIT BUFFER
  8732
8733
8734
8735
                                                     THE CORRECT STATUS SHOULD BE:
                                                               TRANSMIT STATUS WORD 0 BITS 15,09:00 SHOULD BE ALL 0 AND
  8736
8737
8738
                                                                                             BIT 13 SHOULD BE A 1
                                                               TRANSMIT STATUS WORD 1 BITS 15:13 SHOULD ALL BE 0
  8739
  8740
                                                     :TEST SEQUENCE:
  8741
                                                               1-LOAD MICROMODULE 'D' IF NOT ALREADY DONE SO
  8742
                                                               2-VERIFY MICROMONITOR IS IN THE 'INMON' STATE
                                                               3-CLEAR PCBB+O AND PCBB+2
  8743
                                                               4-SELECT MICROTEST #6
5-VERIFY 'DNI' SET
  8744
  8745
                                                               6-VERIFY PCBB+0 BITS 15,09:00 = 0 AND BIT 13 = 1
AND PCBB+2 BITS 15:13 = 0
  8746
  8747
  8748
                                                               7-WRITE ONE TO CLEAR 'DNI'
  8749
  8750
  8751
  2752
          037254
                                                    BGNTST
  8753
          0372541
                                                                                                                              126::
  8754
                                                    CHECK TO SEE IF MODULE 'D' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS. START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI' AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
  8755
  8756
  8757
  8758
  8759
          0372541
                                                       BGNSEG
  8760 037254 104404
8761 037256 022737
                                                                                                                                         TRAP
                                                                                                                                                   C$BSEG
                               000104 000326'
                                                               CMP
                                                                         #'D,MICRO
                                                                                                         :HAS MICROCODE MODULE 'D' BEEN LOADED
          037264' 001004
  8762
                                                               BNE
                                                                          58
                                                                                                         : NO
```

| HARDWAR CZUAAA. | E TESTS P11 11 | MACY11 1 1-JAN-83 | 30(1046) 09:29 | 11-JAN- | -83 10: TEST 26 | 13 PAGE : STATUS | 183 MUX VERIFICATION TEST | | | |
|--|---|--|---|---|--------------------------|---|---|--|---------------------------------|------------------------------------|
| 8763 8764 8765 8766 8767 8768 8769 8770 8771 | 037274' | 122777 001440 012737 004737 103002 | 000001 000104 020252* | 141044 000326' | 5 \$: | CMPB BEQ MOV JSR BCC ESCAPE | #INMON,@PCSR1 20\$ #'D,MICRO PC,LODMIC 10\$ TST | :YES, IS THE MICROMONITO :YES SKIP LOADING THE MI :GO LOAD MICRO MUDULE 'D | CROMODU | E? LE |
| | 037314' 037316' 037324' 037330' 037332' 037340' 037346' | 104410 000500 012737 004737 103022 012737 012737 012737 | 000176 017330' 000776' 001275' 001340' 001355' | 000332' 000310' 000312' 000314' 000316' | 10\$: | MOV JSR BCC MOV MOV MOV MOV | #2*SECOND, METER PC, CHKDNI 20\$ #3DNI, BITNAM #\$NSET, BITSTA #\$AFTER, PWHEN #\$GTCMD, PCOMND | ;WAIT FOR THE MICROMONIT;OK | TRAP .WORD OR | CSESCAPE L10144 |
| 8779 8780 | 037364 | 000206 002756 | | | | ERRHRD | 134,STAMUX,MSG1 | | TRAP .WORD .WORD | CSERHRD 134 STAMUX MSG1 |
| 8781 8782 8783 8784 8785 8786 8787 | 037372' 037374' 037376' 037402' 037404' | 104410 000420 004737 103006 | 017374 | | 20\$: | JSR BCC ERRHRD | PC_CLRDNI 25\$ | ;CLEAR DNI BIT | TRAP .WORD | CSESCAPE L10144 |
| 8787 8788 8789 8790 8791 8792 8793 8794 | 037404° 037406° 037410° | 104456 000207 002756' 012726' | | | | | 135,STAMUX,RACMG7 | ;DNI DID NOT CLEAR! | TRAP .WORD .WORD .WORD | CSERHRD 135 STAMUX RACMG7 |
| 8795 8796 8797 | 037414' 037416' 037420' 037420' | 104410 000376 | | | 25 \$: ENDSE(| ESCAPE 1 | 131 | | TRAP .WORD | CSESCAPE L10144 |
| 8798 8799 | 037420° 037420° | 104405 | | | | | | 10000\$: | TRAP | C\$ESEG |
| 8800 8801 8802 8803 8804 8805 8805 | | | | | ;FIRST | IWO WORDS | ICROMONITOR TO ENTER THE S OF THE PCBB. EXECUTE MI PCSRO WITH A 6, WAIT FOR | 'INMON' STATE, THEN CLEA ICROTEST #6 BY LOADING TH 'DNI'. | R OUT TI E COMMAI | HE ND |
| 8805 8805 8806 8808 | 037422' 037422' 037424' 037430' 037432' | 104404 004737 103006 | 017776 | | BGNSE | JSR BCC | PC_CHKMON | :WAIT FOR MICROMONITOR :OK | TRAP | C\$BSEG |
| 8808 8809 8810 8811 8812 8813 8815 8816 8817 8818 | 037432° 037434° 037436° 037440° | 104456 | | | | ERRHRD | 136,STAMUX,MSG46 | | TRAP .WORD .WORD .WORD | CSERHRD 136 STAMUX MSG46 |
| 881 \ 8815 | 0574421 | 104410 | | | | ESCAPE | TST | ;LEAVE TEST | TRAP | CSESCAPE |
| 8817 8818 | 37444° UZ7446 | 000350 005037 | 0006041 | | 30\$: | CLR | P(BB | :THIS IS WHERE THE MICRO ;PUT THE CONTENTS OF THE | .WORD CODE WIL FIRST V | L10144 JORD |

| HARDWAF CZUAAA | RE TESTS P11 1 | MA(¥11 1-JAN-83 | 30(1046 09:29 | 11-JAN | -83 10: TEST 26 | 13 PAGE | 184 MUX VERIFICATION TEST | | | |
|--|--|--|--|------------------|-------------------------------------|--|--|--|----------------------------------|------------------------------------|
| 8819 8821 8822 8823 8825 8826 8827 8827 8831 8833 | 037452' 037456' 037464' 037472' 037476' | 005037 012777 012737 004737 103021 | 000606' 000006 000176 017330' | 140652 000332 | | CLR MOV MOV JSR BCC | PCBB+2 #6,aPCSRO #2*SECOND,METER PC,CHKDNI 45\$ | OF THE TRANSMIT BUFFER HERE IS WHERE THE SECO TELL TIT TO EXECUTE MI | ND WORD CROTEST | GOES #6 |
| 8825 8826 8827 | 037500° 037506° 037506° | 004737 | 020050 | | | JSR BCC ERRHRD | PC, CHKINT 358 137, STAMUX, MSG44 | :SEE IF ANY ERROR INTER | RUPTS 00 | CCURRED |
| 8828 8829 8830 8831 8832 | 0575061 | 104456 000211 002756' 016454' | | | | | | PRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 137 STAMUX MSG44 |
| 8833 8834 8835 8836 8837 8838 | 037516' 037520' 037522' 037526' | 000274 012702 | 000006 | | 35\$: | MOV ERRHRD | #6,R2 138,STAMUX,MSG12 | ;MICROTEST #6 IS HUNG | TRAP.WORD | CSESCAPE L10144 |
| 8837 8838 8839 8840 8841 | 037526' 037530' 037532' 037534' | 000212 | | | | ESCAPE | | | TRAP .WORD .WORD .WORD | C\$ERHRD 138 STAMUX MSG12 |
| 8842 8843 8844 | 037536' 037540' | 104410 | | | | ESCAPE | 131 | | IRAP.WORD | C\$ESCAPE L10144 |
| 8839 8840 8841 8842 8843 8844 8845 8846 8847 8848 8849 | | | | | OK, NO CONTAI FOR A AND BI | W PCBB+0 N TRANSM GOOD TRA T 15 SHO | SHOULD CONTAIN THE TRAN IT STATUS WORD 1. CHECK NSMIT I.E. BITS 09:00 SH ULD BE A 0 | ISMIT STATUS WORD O AND P THAT PCBB+O CONTAINS STA HOULD ALL BE O BIT 13 SHO | CBB+2 SH TUS BITS ULD BE # | HOULD |
| 8850 8851 8852 8853 8854 | 037542' 037544' 037550' 037554' 037560' 037564' | 012703 012704 012702 | 000456° 000012 000001 000604° | | 45 \$: | CLR MOV MOV BIT | R1 #BNAMT2,R3 #10.,R4 #1,R2 R2,PCBB | :WE ARE GOING TO CHECK :POINT TO A TABLE OF BI :FIRST 10 BITS SHOULD B :R2 POINTS TO THE BIT W :IS THIS BIT A 0? | T MNEMON | IICS |
| 8856 8857 8858 8859 | 037566' 037572' 037572' 037574' | 011337 104456 000213 | 000310 | | | BEQ MOV ERRHRD | 55\$ (R3),BITNAM 139,STAMUX,MSG18 | ; YES :NO, GET POINTER TO BIT ; PRINT ERROR MESSAGE | NAME AS | CSERHRD |
| 8855 8856 8857 8858 8860 8861 8862 8863 8865 8865 8867 8868 8869 8870 | | 002756' 014034' 062703 006302 005304 001362 | 000002 | | 55\$: | ADD ASL DEC BNE | #2,R3 R2 R4 50\$ | POINT TO NEXT BIT MNEMS POINT TO NEXT BIT HAVE WE DONE ALL 10 BIT | | STAMUX MSG18 |
| 8867 8868 8869 8870 | 037614' 037622' 037624' 037632' | 001007 | 020000 001145 | 000604° | | BIT BNE MOV ERRHRD | #BIT13,PCBB 60\$ #\$BIT13,BITNAM 140,STAMUX,MSG18 | ; IS BIT 13 A 1? ; YES ; NO, POINT TO ASCII STR ; PRINT ERROR MESSAGE | ING | |
| 8871 8872 8873 8874 | 037632 | 104456 000214 002756' | | | | Lump | T TO , S I MILON , FISO 10 | "LUTIAL FULUN LIE 32MAE | TRAP .WORD .WORD .WORD | CSERHRD 140 STAMUX MSG18 |

HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 185 CZUAAA.P11 11-JAN-83 09:29 TEST 26: STATUS MUX VERIFICATION TEST

| 8875 8876 8877 8878 88879 8880 8881 8882 8883 8884 8885 8886 | 037642' 037650' 037652' 037660' 037660' 037662' 037666' | 032737 001407 012737 104456 000215 002756' 014034' | 100000 001127° | 000604° 000310° | 60\$: | BIT BEQ MOV ERRHRD | #BIT15,PCBB 65\$ #\$BIT15,BITNAM 141,STAMUX,MSG18 | :IS BIT 15 4 0? :YES :NO. POINT TO ASCII STR. :PRINT ERROR MESSAGE | ING TRAP .WORD .WORD .WORD | CSERHRD 141 STAMUX MSG18 |
|---|---|--|-------------------|--------------------|----------------|------------------------------------|--|---|--|------------------------------------|
| 8884 8885 | | | | | NOW CH | ECK TRAN | SMIT WORD 1 BITS 15,14 | AND 13 TO BE ALL O | | |
| 8888 8889 8890 8891 | 037670' 037672' 037700' 037702' 037710' | 005201 032737 001407 012737 | 020000 001145' | 000606° 000310° | 65\$: | INC BIT BEQ MOV ERRHRD | R1 #BIT13,PCBB+2 70\$ #\$BIT13,BITNAM 142,STAMUX,MSG18 | ;WE ARE CHILLING TRNASM :IS BIT 13 A 0? ;YES :NO, POINT TO ASCII STR ;PRINT ERROR MESSAGE | IT WORD | 1 NOW |
| 8892 8893 8894 8895 | 037710' 037712' 037714' | 104456 000216 002756' 014034' | | | | CHANNA | 142,31 ARIOX,83010 | , FRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 142 STAMUX MSG18 |
| 8896 8897 8898 8899 8900 | 037720' 037726' 037730' 037736' | 032737 001407 012737 | 040000 001136' | 000606 | 70\$: | BIT BEQ MOV ERRHRD | #BIT14,PCBB+2 75\$ #\$BIT14,BITNAM 1/3 STAMUY MSG18 | ; IS BIT 14 A 0? ; YES ; NO, POINT TO ASCII STR | ING | |
| 8901 8902 8903 8904 8905 | 037736' 037740' 037742' 037744' | 104456 000217 002756' 014034' | | | | EKKNKU | 143,STAMUX,MSG18 | ;PRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 143 STAMUX MSG18 |
| 8906 | 037746° 037754° | 032737 001407 | 100000 | 000606 | 75\$: | BIT BEQ | #BIT15,PCBB+2 80\$ | :IS BIT 15 A 0? :YES | | |
| 8907 8908 8909 | 037756° 037764° | 012737 | 001127 | 000310 | | MÖV ERRHRD | #\$BIT15,BITNAM 144,STAMUX,MSG18 | NO. POINT TO ASCII STR | ING | |
| 8910 8911 8912 8913 | 037764' 037766' 037770' 037772' | 104456 000220 902756' 014034' | | | | | | | TRAP .WORD .WORD .WORD | CSERHRD 144 STAMUX MSG18 |
| 8914 8915 8916 | | | | | WRITE | '1' TO C | LEAR 'DNI' BIT | | | |
| 8917 | 037774' 040000' | 004737 103004 | 017374 | | 80\$: | JSR BCC | PC_CLRDNI 85\$ | CLEAR DNI BIT | | |
| 8919 8920 8921 8922 8923 8924 8925 | 040002' 040002' 040004' 040006' | 104456 000221 002756' 012726' | | | 050 | ERRHRD | 145,STAMUX,RACMG7 | ;ERROR DNI DID NOT CLEAR | R! TRAP .WORD .WORD .WORD | CSERHRD 145 STAMUX RACMG7 |
| 8925 8926 8927 8928 | 040012' 040012' 040012' 040014' | 104405 | | | 85\$: ENDSE | G | | 10001\$: | TRAP | C \$ ESEG |
| 8927 8928 8929 8930 | 040014° 040014° | 104401 | | | | | | L10144: | TRAP | C\$ETST |

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CZUAAA.P11
                                                                   TEST 27: LINK BYTE COUNTER TEST
                       11-JAN-83 09:29
   8931
                                                                    .SBTTL TEST 27: LINK BYTE COUNTER TEST
   8932
   8933
                                                                     **********************
   8934
                                                                    BYTE COUNTERS ARE INVOLVED BOTH WITH THE LINK TRANSMIT FUNCTION AND THE LINK RECEIVE FUNCTION. WHEN THE T-11 PREPARES A TRANSMIT BUFFER FOR TRANSMISSION OF A DATAGRAM, IT WRITES THE INTENDED BYTE COUNT IN THE SECOND WORD OF THE TRANSMIT BUFFER BEGINS, THE BYTE
   8935
   8936
   8937
   8938
                                                                    COUNT VALUE IS USED TO LOAD THE TRANSMIT BYTE COUNTER. THIS COUNTER IS DECREMENTED BY THE TRANSMIT STATE MACHINE AS THE DATAGRAM IS TRANSMITTED. THE DATAGRAM TRANSMISSION WILL CONTINUE UNTIL THE BYTE COUNTER IS DECREMENTED.
   8939
   8940
   8941
   8942
                                                                    TO ZERO.
   8943
                                                                    THE RECEIVER ALSO HAS A BYTE COUNTER. THIS COUNTER IS CLEARED AT THE START OF A DATAGRAM RECEPTION AND IS INCREMENTED BY THE RECEIVE STATE MACHINE AS THE
   8944
   8945
   8946
                                                                    DATAGRAM IS RECEIVED. THE VALUE IN THIS COUNTER IS WRITTEN INTO WORD TWO
   8947
                                                                    OF THE RECEIVE BUFFER AT THE END OF RECEPTION.
   8948
   8949
                                                                    THIS TEST WILL USE MICROMODULE 'D' MICROTEST #7.
   8950
                                                                    THIS TEST WILL VERIFY THE BYTE COUNT LOGIC BY LOOPING MESSAGES AND VERIFYING
                                                                    THAT THE BYTE COUNT APPEARING IN THE RECEIVE BUFFER CORRESPONDS TO THE BYTE COUNT THAT WAS WRITTEN TO THE TRANSMIT BYTE COUNTER. THE TEST WILL ALSO VERIFY THAT THE ACTUAL NUMBER OF BYTES TRANSFERRED TO THE RECEIVE BUFFER
   8951
   8952
   8953
   8954
                                                                    CORRESPONDS 10 THE INTENDED BYTE COUNT.
   8955
                                                                   THE TRANSMIT BYTE COUNT IS PASSED TO THE T-11 VIA THE PCBB+O. AFTER THE DATAGRAM LOOPBACK THE RECEIVE BYTE COUNT IS PLACED INTO PCBB+2 BY THE T-11 PROCESSOR. PCBB+4 IS LOADED BY THE T-11 PROCESSOR WITH THE ACTUAL NUMBER OF BYTES THAT WERE TRANSFERRED TO THE RECEIVER BUFFER.
   8956
   8957
   8958
   8959
   8960
   8961
                                                                    :PCBB+0: TRANSMIT BYTE COUNT
   8962
                                                                    PCBB+2: RECEIVE BYTE COUNT
   8963
                                                                    :PCBB+4: ACTUAL NUMBER OF BYTES RECEIVED
   8964
   8965
                                                                    :TEST SEQUENCE:
                                                                                1-LOAD MICROMODULE 'D' IF NOT ALREADY DONE SO
2-WRITE MINIMUM BYTE COUNT IN PCBB+0
3-CLEAR PCBB+2 AND PCBB+4
   8966
   8967
   8968
   8969
                                                                                 4-VERIFY MICROMONITOR IS IN 'INMON' STATE
                                                                                5-SELECT MICROTEST #7
6-VERIFY TRANSMIT BYTE COUNT SAME AS RECEIVE BYTE COUNT
7-VERIFY ACTUAL NUMBER OF BYTES RECEIVED IS CORRECT
8-WRITE '1' TO CLEAR 'DNI'
9-ADD 2 TO BYTE COUNT IN PCBB+0
10-REPEAT STEPS 3-9 UNTIL PCBB+0 REACHES MAXIMUM BYTE COUNT
   8970
   8971
   8972
   8973
   8974
   8975
   8976
   8977
                                                                     ************************************
   8978
   8979
             040016
                                                                   BGNTST
   8980
             040016
                                                                                                                                                                  127::
   8981
                                                                   CHECK TO SEE IF MODULE 'D' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS. START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI' AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
   8982
   8983
   8984
   8985
   8986
             040016
                                                                       BGNSEG
```

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| HARDWARE CZUAAA.P1 | TESTS | MACY11 3 | 30(1046) 09:29 | 11-JAN- | -83 10: TEST 27 | 13 PAGE : LINK B | 187 YTE COUNTER TEST | | | |
|--|---|--|----------------------------|-------------------------------|--------------------|-----------------------------|--|---|---------------------------------|------------------------------------|
| 8987 0 8988 0 8989 0 |)40016')40020')40026')40030' | 104404 022737 001004 122777 | 000104 | 0003261 | | CMP BNE | M'D, MICRO 5\$ | ; HAS MICROCODE MODULE 'D | | |
| 8990 0 8991 0 8992 0 8993 0 | 040036° 040040° 040046° | 001440 012737 004737 | 000001 000104 020252 | 140302 000326' | 5\$: | CMPB BEQ MOV JSR | WINMON, aPCSR1 20\$ W'D, MICRO PC, LODMIC | YES, IS THE MICROMONITO YES SKIP LOADING THE MI GO LOAD MICRO MODULE 'D | R ACTIVE | : ? . E |
| 8995 (8996 (8997 (| 040054 ' 040054 ' 040056' | 103002 104410 000334 | 000174 | 0003321 | 106. | BCC ESCAPE | 10\$ TST | ;OK ;WAIT FOR THE MICROMONIT | TRAP .WORD | C\$ESCAPE L10145 |
| 8999 (9000 (9001 (| 040066 ' 040072 ' | 012737 004737 103022 012737 | 000176 017330' | 0003101 | 103: | MOV JSR BCC MOV | #2*SECOND, METER PC, CHKDNI 20\$ #\$DNI, BITNAM | ;OK | OK . | |
| 9005 (| 0401241 | 012737 012737 012737 012737 | 001340° 001355° | 000312' 000314' 000316' | | MOV MOV MOV ERRHRD | #\$NSET.BITSTA #\$AFTER,PWHEN #\$GTCMD,PCOMND 146,LNKBYT,MSG1 | | TRAP | C\$ERHRD |
| 9007 (9008 (9009 (| 040126' 040130' | 104456 000222 003022' 012750' | | | | ESCAPE | 151 | | .WORD .WORD .WORD | 146 LNKBYT MSG1 |
| 9011 (9012 (9013 (| 040134' 040136' 040140' | 104410 000254 004737 103006 | 017374 | | 20\$: | JSR BCC | PC_CLRDNI | CLEAR DNI BIT | TRAP.WORD | CSESCAPE L10145 |
| 9015 (9016 (| 040146 | 104456 000223 003022' 012724' | | | | ERRHRD | 147,LNKBYT,RACMG7 | ;DNI DID NOT CLEAR! | TRAP .WORD .WORD .WORD | CSERHRD 147 LNKBYT RACMG7 |
| 9021 (9022 (9023 (| 040156° 040160° 040162° | 104410 | | | 25 \$: | ESCAPE | TST | | TRAP .WORD | CSESCAPE L10145 |
| 9025 (9026 (9027 | 040162° 040162° 040162° | 104405 | | | ENDSE | | THE MINIMUM DUTE COUR | 10000\$: | TRAP | C\$ESEG |
| 9028 9029 9030 (| 0401641 | 012737 | 000100 | 0006041 | :LUAD P | WOA | TH THE MINIMUM BYTE COUN #MINBYT, PCBB | vi :BEGIN WITH MINIMUM BYTE | COUNT | |
| 9031 9032 9033 9034 9035 9035 | | | | | :EXECUT | PCBB+2 A | ND PCBB+4, AIT FOR THE PEST #7 BY LOADING THE CO | MICROMONITOR TO ENTER THE DMMAND FIELD OF PCSRO WITH | 'INMON' | STATE |
| 9037 (| 040172° 040172° | ***** | | | 305: BGNSE | G | | | TRAP | C\$BSEG |
| 9038 (9039 (9040 | 040172 ' 040174 ' | 005037 | 000606 | | | CLR | PCBB+2 | THIS IS WHERE MICROCODE | | |
| 9041 9042 | 040200 | 005037 | 000610 | | | CLR | PCB9+4 | HERE IS WHERE MICROCODE ACTUAL NUMBER OF BYTES | WILL PERECEIVE | UT D |

| | | | | | | | c 15 | | | |
|--|---|--|----------------------------|-------------------|---|--|---|---|---------------------------------|------------------------------------|
| HARDWARE CZUAAA.F | TESTS | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN | -83 10: TEST 27 | 13 PAGE : LINK B | 188 YTE COUNTER TEST | | | |
| 9043 9044 9045 | 040204° 040210° 040212° 040212° | 004737 103006 | 017776* | | | JSR BCC ERRHRD | PC,CHKMON 35\$ 148,LNKBYT,MSG46 | ;WAIT FOR MICROMONITOR :OK :PRINT ERROR | | |
| ~~/ | 040212' 040214' 040216' 040220' | 104456 000224 003022 016700 | | | | | | | TRAP .WORD .WORD | C\$ERHRD 148 LNKBYT MSG46 |
| 9050 9051 | 040222 | 104410 | | | | ESCAPE | TST | ;LEAVE TEST | TRAP | C\$ESCAPE |
| 9052 9053 9054 9055 | 040214* 040216* 040222* 040222* 040222* 040226* 040226* 040256* 040256* | 000166 012777 012737 004737 103021 | 000007 000176 017330 | 140102 000332* | 35\$: | MOV MOV JSR | #7,@PCSRO #2*SECOND,METER PC,CHKDNI 40\$ | ;TELL T11 TO EXECUTE MI ;WAIT FOR DNI | .WORD CROTEST | L10145 |
| 9055 9056 9057 9058 | 040250 | 004737 | 020050 | | | BCC JSR BCC | PC, CHKINT | ; SEE IF ANY ERROR INTER | RUPTS O | CCURRED |
| 9059 9060 | 040256' 040256' | 104456 | | | | ERRHRD | 149,LNKBYT,MSG44 | ;NO, OK ;PRINT ERROR MESSAGE | TRAP | C\$ERHRD |
| 9061 9062 9063 9064 | 0402601 | 000225 003022' 016454' | | | | F06406 | • • • | | .WORD .WORD .WORD | 149 LNKBYT MSG44 |
| 9065 | 0402661 | 104410 | | | | ESCAPE | TST | | TRAP | CSESCAPE |
| 9066 9067 9068 | 040270' 040272' 040276' | 012702 | 000007 | | 36\$: | MOV | #7,R2 | ;MICROTEST #7 IS HUNG | .WORD | L10145 |
| 906° 9070 967 i 9072 | 049276° 040276° 040300° 040302° 040304° | 104456 000226 003022* 013500* | | | | ERRHRD | 150, LNKBYT, MSG12 | | TRAP .WORD .WORD .WORD | CSERHRD 150 LNKBYT MSG12 |
| 9073 9074 9075 9076 | 040306' 040306' 040310' | 104410 000102 | | | • | ESCAPE | TST | | TRAP.WORD | CSESCAPE L10145 |
| 9077 9078 9079 9080 9081 9082 | | | | | OK, CH BUFFER CHECK BUFFER IF NOT | ECK PCBB BY THE PCBB+4, , TO SEE PRINT A | +2, WHICH CONTAINS THE LINK, TO SEE IF IT IS WHICH IS THE ACTUAL NU IF IT IS THE SAME AS IN ERROR | BYTE COUNT WRITTEN INTO T THE SAME AS THE TRANSMIT B IMBER OF BYTES RECEIVED IN THE RECEIVE BYTE COUNT | HE RECEI | IVER NT. ALSO EIVER |
| 9083 | 040312 | | 000604 | | 40\$: | MOV | PCBB R1 | GET TRANSMIT BYTE COUN | IT | |
| 9084 9085 9086 9087 9088 | 040316' 040320' 040324' 04033C' | 013703 013704 020203 | 000606' 000610' | | | MOV MOV CMP BNE | R1,R2 PCBB+2,R3 PCBB+4,R4 R2,R3 45\$ | GET RECEIVE BYTE COUNT GET ACTUAL NUMBER OF B IS THE RECEIVE BYTE CO NO, ERROR | YTES TRA | ANSMITTED RECT? |
| 9089 9090 | 040332° 040334° 040336° | 020104 | | | | (MP BEQ | R1,R4 50\$ | IS THE ACTUAL NUMBER O | F BYTES | CORRECT? |
| 9091 9092 9093 9094 | 040340° 040340° 040342° | | | | 45\$: | ERRHRD | 151,LNKBYT,MSG19 | PRINT ERROR MESSAGE | TRAP .WORD .WORD | CSERHRD 151 LNKBYT |
| 9095 9096 | 040346' 040350' | 014064 | | | 50\$: | | | | WORD | MSG19 |
| 9097 9098 | 040350° 040350° | | | | ENDSE | G | | 10001\$: | | |

| HARDWAR CZUAAA. | E TESTS P11 1 | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN | -83 10: TEST 27 | 13 PAGE : LINK B | 189 YTE COUNTER TEST | | | | |
|--|--|-----------------------------|-------------------|---------------------------|--------------------|-----------------------|---|---|--------|-----------------------------|------------------------------|
| 9099 9100 9101 9102 | 040350* | 104405 | | | WRITE | '1' TO CI | LEAR THE 'DNI' BIT | | | TRAP | C\$ESEG |
| 9103 9104 | 040352' 040356' | 004737 103006 | 017374 | | • | JSR B(C | PC,CLRDNI 60\$ | CLEAR DNI BIT | | | |
| 9105 9106 9107 9108 9109 9110 | 040360' 040360' 040362 040364' | 104456 000230 003022 | | | | ERŘHRD | 152,LNKBYT,RACMG7 | ;ERROR DNI DID NOT | | ! TRAP .WORD .WORD | C\$ERHRD 152 LNKBYT |
| 9110 9111 9112 9113 | 040366' 040370' 040370' 040372' | 012726* 104410 000020 | | | | ESCAPE | TST | | | .WORD TRAP .WORD | RACMG7 CSESCAPE L10145 |
| 9114 9115 9116 | | | | | CONTINUUNTIL | JE CALLII THE BYTE | NG MICROTEST #7 EACH TIME COUNT REACHES THE MAXIME | E PASSING A LARGER UM COUNT ALLOWED | (EVEN) | BYTE | .OUNT |
| 9117 9118 9119 9120 | 040402' 040410' | 062737 023727 003670 | 000002 | 000604 ' 002756 | 60\$: | ADD CMP BLE | #2,PCBB PCBB,#MAXBYT 30\$ | ;UP THE BYTE COUNT ;HAVE WE DONE ALL I ;NO, CONTINE TESTION | EVEN B | YTE COL H NEW F | JNTS? BYTE COUNT |
| 9120 9121 9122 | 040412' 040412' 040412' | 104401 | | | ENDTST | | | | 0145: | TRAP | C\$ETST |

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HAR ...
            2515 MACY11 30(1046) 11-JAN-03 10:13 PAGE 190
(ZUAAn. 1 11-JAN-83 09:29
                                                   TEST 28: ODD BYTE TEST
  9123
                                                   .58TTL TEST 28. ODD BYTE TEST
  9125
  9126
9127
                                                   ITHIS TEST WILL VERIFY THAT THE LINK CAN TRANSMIT AND RECEIVE DATAGRAMS
  9128
9129
9130
                                                   IMAVING UN. / JUD BYTE COUNTS.
                                                   :THIS TEST IS IDENTICAL TO THE PREVIOUS BYTE COUNTER TEST WITH THE ONLY
                                                   EXCEPTION THAT IT PASSES ONLY OND BYTE COUNTS TO THE MICROCODE. IT ALSO
  9131
  9132
9133
9134
                                                   JUSES MICROMODULE 'D' MICROTEST #7
                                                   : TEST SEQUENCE:
  9135
                                                             1-LOAD MICROMODULE 'D' IF NOT ALREADY DONE SO
  9136
9137
                                                              2-WRITE MINIMUM ODD BYTE COUNT IN PCBB+0
                                                              3-CLEAR PCBB+2 AND PCBB+4
  9138
                                                              4-VERIFY MICROMONITOR IS IN 'INMON' STATE
  9139
                                                              5-SELECT MICROTEST #7
  9140
                                                              6-VERIFY TRANSMIT BYTE COUNT SAME AS RECEIVE BYTE COUNT
                                                             7-VERIFY ACTUAL NUMBER OF BYTES RECEIVED IS CORRECT
8-WRITE '1' TO CLEAR 'DNI'
9-ADD 2 TO BYTE COUNT IN PCBB+0
10-REPEAT STEPS 3-9 UNTIL PCBB+0 REACHES MAXIMUM BYTE COUNT
  9141
  9142
  9143
  9144
  9145
  9146
  9147
  9148
         040414'
                                                   BGNTST
  9149
         0404141
                                                                                                                           128::
  9150
                                                   CHECK TO SEE IF MODULE 'D' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS. START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI' AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
  9151
  9152
  9153
  9154
  9155
         040414
                                                      BGNSEG
         040414' 104404
  9156
                                                                                                                                      TRAP
                                                                                                                                              C$BSEG
          040416' 022737
  9157
                              000104 0003261
                                                             CMP
                                                                        #'D,MICRO
                                                                                                       :HAS MICROCODE MODULE 'D' BEEN LOADED
         040424 001004
  9158
                                                                                                      ;NO
                                                             BNE
                                                                        5$
         040426° 122777
040434° 001440
  9159
                              000001 137704
                                                                        #INMON, apcsr1
                                                                                                      YES, IS THE MICROMONITOR ACTIVE? YES SKIP LOADING THE MICROMODULE
                                                             (MPB
  9160
                                                             BFQ
                                                                        20$
         040436' 012737
040444' 004737
  9161
                              000104 000326 55:
                                                                        "'D, MICRO
                                                             MOV
                                                                                                       GO LOAD MICRO MODULE 'D'
         040444'
  9162
9163
                              0202521
                                                              JSR
                                                                        PC,LODMIC
                    103002
                                                             BCC
                                                                        10$
                                                                                                      : OK
         040450* 103002
040452* 104410
040454* 000340
040456* 012737
040464* 004737
  9164
                                                             ESCAPE
                                                                       TST
  9165
                                                                                                                                      TRAP
                                                                                                                                                C$ESCAPE
  9166
                                                                                                                                      WORD
                                                                                                                                               L10146-.
  9167
                              000176 0003321 108:
                                                             MOV
                                                                        #2*SECOND, METER
                                                                                                      :WAIT FOR THE MICROMONITOR
         040464 '
                              017330
  9168
                                                                        PC CHKDNI
                                                              JSR
                    103022
  9169
                                                             BCC
                                                                                                      :OK
                              000776' 000310' 001275' 000312' 001340' 000314'
                                                                       #SDNI, BITNAM
#SNSET, BITSTA
          040472' 012737
  9170
                                                             MOV
         040500' 012737
040506' 012737
  9171
                                                             MOV
  9172
                                                             MOV
                                                                        #SAFTER, PWHEN
         040514' 012737
                              001355' 000316'
  9173
                                                             MOV
                                                                        #SGTCMD,PCOMND
         040522' 104456
  9174
                                                             ERRHRD 153,000BYT,MSG1
  9175
                                                                                                                                     TRAP
                                                                                                                                                C$ERHRD
         040524' 000231
040526' 003060'
040530' 012750'
  9176
                                                                                                                                      .WORD
                                                                                                                                               153
  9177
                                                                                                                                      .WORD
                                                                                                                                                ODDBYT
  9178
                                                                                                                                      .WORD
                                                                                                                                               MSG1
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| HARDWARI CZUAAA.I | E TESTS P11 1 | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN | -83 10: TEST 28 | 13 PAGE : ODD BY | 191 TE TEST | | | |
|--|--|----------------------------|-------------------|--------|--------------------|--------------------------------|--|--|---|------------------------------------|
| 9179 9180 9181 9182 | 040532' 040532' 040534' 040536' | 000260 004737 | 017374' | | 20\$: | ESCAPE JSR | PC.CLRDNI | CLEAR DNI BIT | TRAP .WORD | CSESCAPE L10146 |
| 9181 9182 9183 9184 9185 9186 9187 9188 9189 | 040542* 040544* 040544* 040546* 040550* 040552* | 104456 | | | | BCC ERRHRD | 25\$ 154,0DDBYT,RACMG7 | ;DNI CID NOT CLEAR! | TRAP .WORD .WORD .WORD | CSERHRD 154 ODDBYT RACMG7 |
| 9189 9190 9191 9192 | 040554' 040556' 040560' | 104410 000236 | | | 25\$: | ESCAPE | TST | | TRAP.WORD | CSESCAPE L10146 |
| 9191 9192 9193 9194 9195 9196 9197 9198 | 040560° 040560° 040560° | 104405 | | | ENDSE | | T., T., F. M. 1., M. 1. | 10000\$: | TRAP | C\$ESEG |
| 9200 | 040562° 040570° | 012737 | 000101 | 000604 | 30\$: | MOA CRR+O MI | TH THE MINIMUM ODD BYTE #MINBYT+1,PCBB | ;BEGIN WITH MINIMUM ODD | BYTE CC | DUNT |
| 9201 9202 9203 9204 9205 9206 9207 9208 9209 9210 9211 9212 9213 | | | | | :STATE. | PCBB+2 A EXECUTE AIT FOR | MICROTEST #7 BY LOADING | MICROMONITOR TO ENTER THE G THE COMMAND FIELD OF PC: | : "INMON SRO WITH | l' 1 A |
| 9206 | 0405701 | | | | BGNSE | G | | | | |
| 9207 9208 9209 | 040570° 040572° | 104404 005037 | 000606' | | | CLR | PCBB+2 | THIS IS WHERE MICROCODE | TRAP E WILL P | C\$BSEG PUT |
| 9210 9211 | 0405761 | | 000610 | | | CLR | PCBB+4 | THIS IS WHERE MICROCODE RECEIVER BYTE COUNT HERE IS WHERE MICROCODE ACTUAL NUMBER OF BYTES | WILL P | PUT D |
| 9214 | 040602' 040606' 040610' | 103006 | 017776 | | | JSR BCC ERRHRD | PC,CHKMON 35\$ 156,ODDBYT,MSG46 | ;WAIT FOR MICROMONITOR :OK ;PRINT ERROR | | |
| 9215 9216 9217 9218 | 040610' 040612' 040614' 040616' | 000234 | | | | | | | TRAP .WORD .WORD .WORD | CSERHRL 156 ODDBYT MSG46 |
| 9219 9220 9221 9222 | 040620° 040620° 040622° 040632° 040640° | | 000007 | 137504 | 35\$: | ESCAPE | #7,aPCSRO | ; LEAVE TEST ; TELL T11 TO EXECUTE MIC | TRAP .WORD | C\$ESCAPE L10146 |
| 9223 9224 9225 | 040632° 040640° 040644° | 012737 004737 103021 | 000176 017330 | 000332 | 370. | MOV JSR BCC | #2 SECOND METER PC CHKDNI 40\$ | WAIT FOR DNI | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | |
| 9226 9227 | 040646' 040652' 040654' | 004737 | 020050 | | | JSR BCC ERRHRD | PC, CHKINT 36\$ 157, ODDBYT, MSG44 | ;SEE IF ANY ERROR INTERF ;NO, OK ;PRINT ERROR MESSAGE | ≀UPTS OC | CURRED |
| 9215 9216 9217 9218 9219 9220 9221 9223 9224 9225 9226 9227 9228 9230 9231 9232 9233 9233 | 040654 | 104456 | | | | CHRUKU | 177,000011,83044 | "LUTIAL ENVOY WESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 157 ODDBYT MSG44 |
| 9233 9234 | 040664 | 104410 | | | | ESCAPE | TST | | TRAP | C\$ESCAPE |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 192
CZUAAA.P11
              11-JAN-83 09:29
                                            TEST 28: ODD BYTE TEST
        040666' 000126
040670' 012702
                                                                                                                   .WORD
                                                                                                                           L10146-.
  9236
                          000007
                                            365:
                                                              #7.R2
                                                                                        :MICROTEST #7 IS HUNG
                                                     MOV
  9237
        0406741
                                                     ERRHRD
                                                             158,0DDBYT,MSG12
        040674
  9238
                 104456
                                                                                                                  TRAP
                                                                                                                           CSERHRD
        040676' 000236
  9239
                                                                                                                   .WORD
                                                                                                                           158
  9240
        040700' 003060'
                                                                                                                   .WORD
                                                                                                                           ODDBYT
        040702' 013500'
  9241
                                                                                                                   .WORD
                                                                                                                           MSG12
  9242
        0407041
                                                    ESCAPE TST
        0407041 104410
                                                                                                                  TRAP
                                                                                                                           C$ESCAPE
 9244
9245
9246
9247
        040706' 000106
                                                                                                                   . WORD
                                                                                                                           L10146-.
                                            CHECK PCBB+2 TO SEE IF IT IS THE SAME AS PCBB+O, THIS WILL VERIFY THE
                                            THE TRANSMIT AND RECEIVE BYTE COUNTS ARE THE SAME. THEN CHECK PCBB+4
  9248
                                            TO SEE IF IT IS ONE LARGER THAN THE RECEIVE BYTE COUNT. THIS IS BECAUSE
  9249
9250
                                            THE RECEIVE CAN ONLY ADDRESS LINK MEMORY IN WORD BOUNDARIES SO THE ACTUAL
                                            NUMBER OF BYTES THAT ARE CHANGED IS ONE MORE THAN WHAT WAS TRANSMITTED
  9251
  9252
        040710' 0 3701
                                            40$:
                                                             PCBB,R1
R1,R2
                          0006041
                                                                                        :GET TRANSMIT BYTE COUNT
  9253
        040714' 0:0102
                                                     MOV
  9254
        040716' 013703
                                                              PCBB+2,R3
                                                     MOV
                          000606
                                                                                        :GET RECEIVE BYTE COUNT
        040722' 013704
040726' 020203
  9255
                                                                                        GET ACTUAL NUMBER OF BYTES TRANSMITTED
                          000610'
                                                     MOV
                                                              PCBB+4,R4
  9256
9257
                                                             R2,R3
                                                                                        :15 THE RECEIVE BYTE COUNT CORRECT?
                                                     CMP
        040730' 001004
040732' 162704
040736' 020104
                                                                                        :NO. ERROR
                                                     BNE
  9258
                                                                                        ACCOUNT FOR THE GARBAGE BYTE
                          000001
                                                     SUB
                                                              #1,R4
                                                                                        IS THE ACTUAL NUMBER OF BYTES CORRECT?
  9259
                                                     CMP
                                                              R1,R4
        040740' 001404
                                                     BEQ
  9260
                                                              50$
                                                                                        YES
        040742'
040742' 104456
040744' 000237
  9261
                                            455:
                                                     ERRHRD
                                                             159,ODDBYT,MSG19
                                                                                        PRINT ERROR MESSAGE
  9262
                                                                                                                  TRAP
                                                                                                                           CSERHRD
  9263
                                                                                                                           159
                                                                                                                   .WORD
  9264
        040746' 003060'
                                                                                                                           ODDBYT
                                                                                                                   .WORD
        040750' 014064'
  9265
                                                                                                                   .WORD
                                                                                                                           MSG19
        0407521
  9266
                                            50$:
        0407521
  9267
                                              ENDSEG
                                                                                                         10001$:
  9268
        0407521
  9269
        040752' 104405
                                                                                                                  TRAP
                                                                                                                           C$ESEG
  9270
                                            WRITE '1' TO CLEAR 'DNI'
  9271
  9273
        040754' 004737
                          017374
                                                     JSR
                                                              PC.CLRDNI
                                                                                        :CLEAR DNI BIT
        040760' 103006
  9274
                                                     BCC
                                                              60$
        040762'
040762' 104456
  9275
                                                     ERRHRD
                                                             160,ODDBYT,RACMG7
                                                                                        :ERROR DNI DID NOT CLEAR!
                                                                                                                  TRAP
                                                                                                                           C$ERHRD
  9276
        040764 000240
  9277
                                                                                                                           160
                                                                                                                   .WORD
         040766' 003060'
  9278
                                                                                                                           ODDBYT
                                                                                                                   .WORD
  9279
         040770' 012726'
                                                                                                                           RACMG7
                                                                                                                   .WORD
        040772'
040772' 104410
  9280
                                                     ESCAPE TST
                                                                                                                  TRAP
                                                                                                                           CSESCAPE
  9281
                                                                                                                           L10146-.
  9282
         040774' 000020
                                                                                                                   .WORD
  9283
  9284
                                            REPEAT MICROTEST #7 EACH TIME CIVING IT A LARGER ODD BYTE COUNT. CONTINUE
  9285
                                            JUNTIL THE MAXIMUM BYTE COUNT IS REACHED
  9286
  9287
         040776' 062737
                                            60$:
                                                                                        :UP THE BYTE COUNT
                          000002 000604*
                                                     ADD
                                                              #2.PCBB
        041004' 023727
                          000604 002756
                                                                                        HAVE WE DONE ALL ODD BYTE COUNTS?
                                                     CMP
  9288
                                                              PCBB, MMAXBYT
        0410121
                                                                                        NO. CONTINUE TEST WITH NEW BYTE COUNT
  9289
                                                     BLE
                                                              30$
                 003666
        0410141
  9290
                                            ENDIST
```

HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 193 CZUAAA.P11 11-JAN-83 09:29 TEST 28: ODD BYTE TEST

9291 041014° 9292 041014° 104401 L10146:

RAP CSETST

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 194
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                   11-JAN-83 09:29
                                                        TEST 29: LINK MAXIMUM BYTE COUNTER TEST
  9293
                                                        .SBTTL TEST 29: LINK MAXIMUM BYTE COUNTER TEST
  9294
  9295
  9296
  9297
                                                        ;THE RECEIVE BYTE COUNTER IS A 12 BIT BINARY COUNTER THAT COUNTS THE NUMBER OF
                                                        BYTES THAT WERE RECEIVED DURING A DATAGRAM TRANSMISSION. THE BYTE COUNTER IS INCREMENTED AS EACH BYTE IS RECEIVED. THE RECEIVE BYTE COUNTER HAS LOGIC THAT DISABLES THE COUNTER IF THE MAXIMUM VALUE IS REACHED AND PREVENTS THE COUNTER.
  9298
  9299
  9300
  9301
                                                        FROM ROLLING OVER TO ZERO.
  9302
  9303
                                                        THIS TEST WILL CHECK THAT THE COUNTER 'TOPS OUT' AT THE MAXIMUM COUNTER VALUE. IT DO THIS MICROMODULE 'D' MICROTEST #9 IS USED. IT WILL TRANSMIT A DATAGRAM OF MAXIMUM COUNTER LENGTH OVER THE LOOPBACK. THE LINK CRC HARDWARE WILL BE ALLOCATED TO THE TRANSMIT SIDE SO THAT CRC BYTES WILL APPENDED TO THE DATAGRAM.
  9304
  9305
  9306
  9307
                                                        THE LENGTH OF THE DATAGRAM WILL THEREFORE EXCEED THE LENGTH OF THE RECEIVE BYTE COUNTER. THE RECEIVE COUNTER WILL BE CHECKED TO INSURE THAT THE LOUNTER
  9308
  9309
                                                        HAS REMAINED AT THE MAXIMUM VALUE, IF NOT AN ERROR IS PASSED TO THE HOST.
  9310
  9311
                                                        :TEST SEQUENCE:
  9312
                                                                   1-LOAD MICROMODULE 'D' IF NOT ALREADY DONE SO
  9313
                                                                   2-VERIFY MICROMONITOR IS IN THE 'INMON' STATE
  9314
                                                                   3-SELECT MICROTEST #9
  9315
                                                                   4-WAIT FOR 'DNI'
  9316
                                                                   5-CHECK FOR AN ERROR IN PCSR1
6-WRITE '1' TO CLEAR 'DNI'
  9317
  9318
  9319
  9320
  9321
          041016'
                                                       BGNTST
  9322
          041016'
                                                                                                                                      129::
  9324
                                                        CHECK TO SEE IF MODULE 'D' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS, START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI'.
  9325
  9326
                                                        AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
  9327
  9328
          041016
                                                          BGNSEG
          0410161 104404
  9329
                                                                                                                                                 TRAP
                                                                                                                                                            C$BSEG
          041020' 022737
  9330
                                 000104 000326
                                                                   CMP
                                                                              #'D_MICRO
                                                                                                                :HAS MICROCODE MODULE 'D' BEEN LOADED?
           041026' 001004
  9331
                                                                   BNE
                                                                              5$
                                                                                                                : NO
           041030' 122777
  9332
                                 000001 137302
                                                                   CMPB
                                                                              #INMON, @PCSR1
                                                                                                                YES, IS THE MICROMONITOR ACTIVE? YES SKIP LOADING THE MICROMODULE
           041036' 001440
  9333
                                                                   BEQ
                                                                              20$
          041040' 012737
041046' 004737
041052' 103002
  9534
                                 000104 000326 55:
                                                                   MOV
                                                                              #'D,MICRO
                                                                                                                GO LOAD MICROCODE MODULE D
                                                                              PC_LODMIC
  9335
                                 0202521
                                                                   JSR
  9336
                                                                              10$
                                                                   BCC
                                                                                                                :0K
  9337
           0410541
                                                                   ESCAPE
                                                                              TST
  9338
           0410541
                      104410
                                                                                                                                                 TRAP
                                                                                                                                                             CSESCAPE
          041056' 000256
041060' 012737
  9339
                                                                                                                                                            L10147-.
                                                                                                                                                  . WORD
                                 000176 000332 10$:
  9340
                                                                   MOV
                                                                              #2*SECOND_METER
                                                                                                                :WAIT FOR THE MICROMONITOR
   9341
           041066' 004737
                                                                              PC CHKDNI 20$
                                 0173301
                                                                   JSR
          041072' 103022
041074' 012737
  9342
9343
                                                                   BCC
                                                                                                                :OK
                                                                              #SDNI BITNAM
#SNSET BITSTA
#SAFTER, PWHEN
                                 000776' 000310'
                                                                   MOV
                                 001275' 000312'
001340' 000314'
  9344
           041102' 012737
                                                                   MOV
           041110' 012737
  9345
                                                                   MOV
          041116' 012737
                                 001355' 000316'
  9346
                                                                              #SGTCMD, PCOMND
                                                                   MOV
           0411241
  9347
                                                                   ERRHRD
                                                                             161, MAXENT, MSG1; PRINT ERROR MESSAGE
           041124' 104456
  9348
                                                                                                                                                 TRAP
                                                                                                                                                            CSERHRD
```

| HARDWAR CZUAAA. | E TESTS P11 11 | MACY11 I-JAN-83 | 30(1046) 09:29 | 11-JAN | -83 10: TEST 29 | 13 PAGE : LINK M | : 195 Maximum byte counter te | ST | | |
|--|---|--|-------------------|---------|--------------------|--------------------------------|---|---|---------------------------------|------------------------------------|
| 9349 9350 9351 | 041126' 041130' 041132' 041134' | 000241 003122' 012750' | | | | FCCADE | *** | | .WORD .WORD .WORD | 161 Maxent Msg1 |
| 9353 | በሬ11 የሬ" | 104410 | | | | ESCAPE | 131 | | TRAP | C\$ESCAPE |
| 9355 9356 9356 | 041136' 041140' 041144' 041146' | 000176 004737 103006 | 017374' | | 20\$: | JSR BCC | PC_CLRDN1 | :CLEAR DNI | .WORD | L10147 |
| 9355 9355 9355 9355 9355 9355 9355 9355 | 041146' 041150' 041152' 041154' 041156' 041160' 041162' | 104456 000242 003122' 012726' | | | | ERRHRD | 162, MAXCNT, RACMG7 | | TRAP .WORD .WORD .WORD | CSERHRD 162 MAXCNT RACMG7 |
| 9363 9364 9365 | 041156' 041160' 041162' | 104410 000154 | | | 25 \$: | ESCAPE | 151 | | TRAP.WORD | C\$ESCAPE £10147 |
| 9366 9367 9363 | 041162' 041162' 041162' | | | | ENDSE | G | | 10000\$ | TRAP | C\$ESEG |
| 9379 9371 9372 | | | | | WAIT FO | OR THE M OF PCSRC OR DNI | MICROMONITOR TO ENTER 1 WITH A 9 CAUSING THE | THE 'IN MONITOR' STATE, LO MICROMONITOR TO EXECUTE MI |)AD COMM/ CROTEST | AND #9. |
| 9374 | 041164 | 10//0/ | | | BGNSE | G | | | TRAP | C\$BSEG |
| 9376 9377 | 041164' 041166' 041172' 041174' | 004737 | 017776' | | | JSR BCC ERRHRD | PC,CHKMON 30\$ 163,MAXCNT,MSG46 | :WAIT FOR MICROMONITOR :OK :PRINT ERROR | INAF | CDSEG |
| 9379)380 9381 9382 | 041174' 041176' 041200' | 104456 000243 003122' 016700' | | | | | | | TRAP .WORD .WORD | C\$ERHRD 163 Maxcnt MSG46 |
| QZRL | 041204 | 104410 | | | | ESCAPE | TST | :LEAVE TEST | TRAP | C\$ESCAPE |
| 9385 9386 9387 9388 9389 9390 | | 012777 | 000011 | 137120 | 30\$: | MOV | #9.,aPCSRO | :TELL MICROMONITOR TO E | | L10147 |
| 9388 9389 9390 | 041216' 041224' 041230' | 004737 | 000176 017330 | 000332' | | MOV JSR B((| #2*SECOND, METER PC, CHKDNI 40\$ | :PUT SOME TIME ON THE N :WAIT FOR MICROTEST TO :OK, IT FINISHED | IETER FINISH | |
| 9391 9392 | 041230' 041232' 041236' | 004737 | 020050* | | | JŠŘ BCC | PC CHKINT 35\$ | SEE IF ANY ERROR INTER | RUPTS OF | CCURRED |
| 9391 9392 9393 9394 9395 9396 9397 | 041240' 041240' 041242' 041244' | 104456 | | | | EŘŘHRD | 164, MAXCNT, MSG44 | PRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 164 MAXCNT MSG44 |
| 9397 9398 9399 | 041250° 041250° | 104410 | | | | ESCAPE | TST | | TRAP | CSESCAPE |
| 9400 9401 | 041252° 0-1254° 041260° | 000062 | 000011 | | 35\$: | MOV | #9.,R2 | :MICROTEST # | .WORD | L10147 |
| 9402 9403 9404 | 041260° 041262° | 104456 | | | | ERRHRD | 165,MAXCNT,MSG12 | :TELL MICROTEST HUNG | TRAP.WORD | CSERHRD 165 |

| HARDWAR CZUAAA. | E TESTS P11 1 | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN | | | 196 AXIMUM BYTE COUNTER T | EST | | |
|--|-------------------------------|--------------------|-------------------|--------|------------------------|---------------|---|---|----------------|--------------------|
| 9405 9406 9407 | 041264' 041266' 041270' | 003122' 013500' | | | | ESCAPE | TST | | .WORD | MAXCNT MSG12 |
| 9407 9408 9409 9410 | 041270' | 104410 | | | | LJUARE | 131 | | TRAPWORD | CSESCAPE L10147 |
| 9411 9412 | | | | | MICROT | EST IS C | OMPLETE, NOW CHECK TO | SEE IF IT WAS SUCCESSFULL | | |
| 9413 | 0412741 | 122777 | 000003 | 137036 | 40\$: | CMPB | #INERR, apcsr1 | ;DID AN ERROR OCCUR? | | |
| 9414 9415 | 041302' 041304' | 001004 | | | | BNE ERRHRD | 50\$ 166,MAXCNT,MSG38 | :NO :PRINT ERROR MESSAGE | | |
| 9415 9416 | 041304 | 104456 | | | | | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | • | TRAP .WORD | C\$ERHRD 166 |
| 9418 | 041306' 041310' 041312' | 000246 | | | | | | | .WORD | MAXCNT |
| 9419 9420 | 041312' | 016046 | | | • | | | | .WORD | MSG38 |
| 9421 | | | | | WRITE | ONE TO C | LEAR THE DNI BIT | | | |
| 9422 9423 | 041314' | 004737 | 017374 | | 50 \$: | JSR | PC,CLRDNI | :CLEAR DNI | | |
| 9424 | 041320° 041322° | 103004 | | | | BCC ERRHRD | 55\$ 167,MAXCNT,RACMG7 | | | |
| 9426 | 041322" | 104456 | | | | LANNA | TOT, PIRACHT, RACHOT | | TRAP | C\$ERHRD |
| 9427 9428 | 041324' 041326' 041330' | 000247 | | | | | | | .WORD .WORD | 167 Maxent |
| 9429 | 041330 | 0127261 | | | cce. | | | | .WORD | RACMG7 |
| 9430 9431 | 041332' 041332' | | | | 55 \$: ENDSE | G | | | | |
| 9432 | 0413321 | 104405 | | | | | | 10001\$ | : TRAP | C\$ESEG |
| 9434 | 041332' 041334' | 104403 | | | ENDIST | | | . 424.7 | | |
| 9417 9418 9420 9422 9423 9425 9427 9428 9433 9433 9433 9435 | 041334' | | | | | | | L10147 | : TRAP | C \$ ETST |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 197
CZUAAA.P11
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                                                                            TEST 30: FIFO TEST
   9437
                                                                             .SBTTL TEST 30: FIFO TEST
   9438
   9439
   9440
                                                                            THERE ARE TWO FIFO'S USED IN THE DEUNA TO KEEP TRACK OF RECEIVER BUFFERS. THE FIRST IS CALLED THE 'RECEIVER BUFFER AVAILABLE FIFO' AND THE SECOND IS CALLED THE 'RECEIVER BUFFER DONE FIFO'.
   9441
    9442
    9443
   9444
                                                                            THE T11 LOADS THE RECEIVER BUFFER AVAILABLE FIFO WITH A LIST OF UNUSED 1K BUFFERS IN LINK MEMORY. WHEN THE DEUNA SENSES THAT A PACKET IS COMING IN IT PULLS AN AVAILABLE BUFFER ADDRESS FROM THE OUTPUT OF THE RECEIVER BUFFER AVAILABLE FIFO AND USES IT TO ADDRESS LINK MEMORY FOR THE STORAGE OF THE
   9445
    9446
    9447
    9448
                                                                             RECEIVED DATA. AFTER THE DATA HAS BEEN LOADED THE RECEIVER STATE MACHINE PUTS THE USED BUFFER ADDRESS INTO THE RECEIVER BUFFER DONE FIFO WHERE AN
    9449
    9450
    9451
                                                                             INTERRUPT IS GENERATED TO THE T11 WHEN IT BUBBLES TO THE TOP OF THE FIFO.
    9452
   9453
                                                                            THESE FIFO'S ARE 64 DEEP BY 4 BITS WIDE. THE OPERATIONAL MICROCODE ONLY FILLS THE FIFO TO A MAXIMUM OF 16. THE 4 BIT WIDTH REPRESENTS BITS 14-11 C' THE
    9454
                                                                             LINK MEMORY ADDRESS. THESE BITS ALLOW THE ADDRESSING OF A 1K BUFFER IN LINK
    9455
    9456
                                                                             :MEMORY.
   9457
                                                                            THIS TEST WILL VERIFY THAT THE RECEIVE BUFFER AVAILABLE FIFO AND THE RECEIVER BUFFER DONE FIFO OPERATE CORRECTLY. THIS WILL BE DONE BY LOADING THE RECEIVER BUFFER AVAILABLE FIFO WITH A 1K BUFFER ADDRESS THEN A PACKET WILL BE TRANSMITTED IN LOOPBACK MODE. AFTER THE RECEIVER INTERRUPT OCCURS THE RECEIVER BUFFER DONE FIFO IS READ AND THE ADDRESS IS COMPARED WITH WHAT WAS GIVEN THE RECEIVER BUFFER AVAILABLE FIFO. THEY SHOULD BE THE SAME IF EVERYTHING IS WORKING CORRECTLY. THE OPERATION IS PERFORMED WITH THE TRANSMITTER BUFFER SET TO 0 AND WILL BE REPEATED WITH RECEIVER BUFFERS 1-15. THIS TEST WILL USE MICROMODULE "D" MICROTEST #10.
   9458
    9459
    9460
    9461
    9462
    9463
    9464
    9465
   9466
   9467
   9468
                                                                             PARAMETERS PASSED TO THE MICROCODE WILL BE FORMATTED IN THE PCBB AS FOLLOWS:
   9469
   9470
                                                                             :PCBB+0: RECEIVE BUFFER ADDRESS
   9471
                                                                             :PCBB+2: RECEIVE BUFFER COMPLETED ADDRESS
   9472
   9473
                                                                             :TEST SEQUENCE:
                                                                                           1-LOAD MICROMODULE 'D' IF NOT ALREADY DONE SO
   9474
   9475
                                                                                            2-LOAD PCBB+O WITH A RECEIVER BUFFER
   9476
                                                                                            3-CLEAR PCBB+2
   9477
                                                                                            4-VERIFY MICROMONITOR IS IN THE 'INMON' STATE
   9478
                                                                                            5-SELECT MICROTEST #10
                                                                                           6-WAIT FOR 'DNI' BIT
7-VERIFY PCBB+2 SAME AS PCBB+0
8-WRITE '' TO CLEAR 'DNI'
9-REPEAT STEPS 2-8 FOR RECEIVER BUFFERS 1-15
   9479
   9480
   9481
   9482
    9483
   9484
    9485
   9485
              041336
                                                                            BGNTST
   9487
                                                                                                                                                                                       130::
              041336
    9488
                                                                            CHECK TO SEE IF MODULE 'D' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS. START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI'. AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
   9489
    9490
    9491
    9492
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| HARDWAR CZUAAA. | E TESTS P11 1 | MACY11 1-JAN-83 | | 11-JAN | -83 10: TEST 30 | 13 PAGE : FIFO T | 198 EST | | | |
|--|---|--|---|------------------------------|------------------------|---|--|--|---------------------------------|------------------------------------|
| 9493 9494 9495 9496 9497 9498 9499 9500 | 041336' 041336' 041340' 041346' 041350' 041356' 041366' 041372' 041374' | 104404 022737 001004 122777 001440 012737 004737 103002 | 000104 000001 000104 020252* | 000326° 136762 000326° | BGNSE | CMP BNE CMPB BEQ MOV JSR BCC ESCAPE | <pre>#'D,MICRO 5\$ #INMON,@PCSR1 20\$ #'D,MICRO PC,LODMIC 10\$</pre> | :HAS MICROCODE MODULE ':NO :NO :YES, IS THE MICROMONIT :YES SKIP LOADING THE M :GO LOAD MICRO MODULE ' | II CROMODU | /E? |
| 9497 9498 9500 9501 9502 9503 9504 9505 9506 9507 9508 9511 | 041376' 041400' 041406' 041412' 041414' 041422' 041430' 041436' | 104410 000326 012737 004737 103022 012737 012737 012737 | 000176 017330' 000776' 001275' 001340' 001355' | 000312' 000314' | 10\$: | MOV JSR BCC MOV MOV MOV MOV | #2*SECOND, METER PC, CHKDNI 20\$ #\$DNI, BITNAM #\$NSET, BITSTA #\$AFTER, PWHEN #\$GTCMD, PCOMND | ;WAIT FOR THE MICROMONI ;OK | TRAP .WORD TOR | CSESCAPE L10150 |
| 9512 9513 9514 9515 9516 9517 9518 9519 | 041444' 041444' 041446' 041450' 041452' | 104456 000250 003166' 012750' | | | | ERRHRD | 168,FIFTST,MSG1 | | TRAP .WORD .WORD .WORD | CSERHRD 168 FIFTST MSG1 |
| 9517 9518 9519 9520 9521 9522 9523 | 041454° 041454° 041456° 041460° | 104410 000246 004737 103006 | 017374 | | 20\$: | JSR BCC | PC_CLRDNI 25\$ | CLEAR DNI BIT | TRAP.WORD | CSESCAPE L10150 |
| 9524 9525 9526 | 041466' 041470' 041472' 041474' | 104456 000251 003166' 012726' | | | | ERRHRD | 169,FIFTST,RACMG7 | ;DNI DID NOT CLEAR! | TRAP .WORD .WORD .WORD | CSERHRD 169 FIFTST RACMG7 |
| 9527 9528 9529 9530 9531 | 041476' 041476' 041500' 041502' 041502' | 104410 000224 | | | 25 \$: ENDSE | ESCAPE G | 131 | | TRAP.WORD | CSESCAPE L10150 |
| 9532 9533 9534 | 041502' 041502' | 104405 | | | | • | | 10000\$: | TRAP | C\$ESEG |
| 9531 9532 9533 9534 9535 9536 9537 | | | | | :100000 | AS THE | ARTS AT MICROMEMORY AD TRANSMIT BUFFER ADDRES O THE MICROCODE WILL B | DRESS 100000, THE MICROTES S SO THE FIRST RECEIVE BUF E 104000 | T WILL I FER ADDI | JSE RESS |
| 9540 | 0415041 | 012701 | 104000 | | ; 20¢. | MOV | #LINADR+SIZ1K,R1 | :FIRST RECEIVE BUFFER S :BASE OF LINK MEMORY | TARTS 1 | (FROM |
| 9541 9542 9543 9544 9545 9546 9547 | 041510° 041510° | | | | :INTO P | CBB AND MICROTE | CLEAR PCBB+2. WAIT FOR | ICROCODE TO LOAD INTO THE THE MICROMONITOR TO BECOM COMMAND FIELD OF PCSRO WIT | IE READY. | . THEN |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 199
CZUAAA.P11
             11-JAN-83 09:29
                                           TEST 30: FIFO TEST
       041510' 104404
041512' 010137
041516' 005037
  9549
                                                                                                                         C$BSEG
  9550
                          000604
                                                    MOV
                                                            R1,P(BB
                                                                                       :PASS AVAILABLE RECEIVER BUFFER TO DEUNA
  9551
                          000606
                                                                                       HERE IS WHERE THE MICRO WILL PUT THE
                                                    CLR
                                                             PCBB+2
  9552
9553
                                                                                        'DONE' RECEIVE BUFFER FIFO ADDRESS
        041522'
041526'
041530'
                 004737
                          017776
                                                    JSR
                                                             PC, CHKMON
                                                                                       :WAIT FOR MICROMONITOR
  9554
                 103006
                                                    BCC
                                                                                       : 0K
  9555
                                                    ERRHRD
                                                            170 FIFTST MSG46
                                                                                       PRINT ERROR
  9556
        041530
                104456
                                                                                                                         CSERHRD
                                                                                                                TRAP
        041532'
041534'
  9557
                 000252
                                                                                                                 .WORD
                                                                                                                         170
                003166
  9558
                                                                                                                 .WORD
                                                                                                                         FIFTST
  9559
        0415361
                 016700'
                                                                                                                 .WORD
                                                                                                                         MSG46
  9560
        041540
                                                    ESCAPE TST
                                                                                       :LEAVE TEST
  9561
        041540
                 104410
                                                                                                                 TRAP
                                                                                                                         CSESCAPE
  9562
        0415421
                 000162
                                                                                                                 . WORD
                                                                                                                        L10150-.
        041544'
                          000012 136564 35$:
000176 000332'
  9563
                 012777
                                                    MOV
                                                            #10., aPCSRO
                                                                                       :TELL T11 TO EXECUTE MICROTEST #10
        0415521
  9564
                 012737
                                                    MOV
                                                            #2*SECOND_METER
                                                                                       :WAIT FOR DNI
        041560
  9565
                 004737
                          017330
                                                    JSR
                                                            PC, CHKDNI
        0415641
                                                            45$
  9566
                 103021
                                                    BCC
  9567
        0415661
                 004737
                                                                                       SEE IF ANY ERROR INTERRUPTS OCCURRED
                          020050'
                                                    JSR
                                                            PC, CHKINT
        041572'
  9568
                 103006
                                                    BCC
                                                             40$
                                                                                       ;NO, OK
  9569
        041574
                                                    ERRHRD
                                                            171 FIFTST MSG44
                                                                                       PRINT ERROR MESSAGE
  9570
        0415741
                104456
                                                                                                                 TRAP
                                                                                                                         (SERHRD
  9571
        041576
                000253
                                                                                                                 .WORD
                                                                                                                         171
  9572
9573
        0416001
                003166
                                                                                                                 .WORD
                                                                                                                         FIFTST
        0416021
                 016454'
                                                                                                                         MSG44
                                                                                                                 .WORD
        041604
  9574
                                                    ESCAPE TST
  9575
        0416041
                104410
                                                                                                                 TRAP
                                                                                                                          C$ESCAPE
                000116
  9576
        0416061
                                                                                                                 .WORD
                                                                                                                         L10150-.
  9577
        0416101
                 012702
                                           405:
                          000012
                                                            #10._R2
                                                                                       :MICROTEST #10 IS HUNG
  9578
        041614
                                                    ERRHRD 172, FIFTST, MSG12
                                                                                       PRINT ERROR MESSAGE
  9579
        041614
                                                                                                                 TRAP
                104456
                                                                                                                          CSERHRD
        0416161
  9580
                000254
                                                                                                                         172
                                                                                                                 .WORD
                003166
  9521
        0416201
                                                                                                                 .WORD
                                                                                                                         FIFTST
  9582
        0416221
                 013500
                                                                                                                 _WORD
                                                                                                                         MSG12
  9583
        0416241
                                                    ESCAPE TST
        041624' 104410
  9584
                                                                                                                TRAP
                                                                                                                         CSESCAPE
  9585
        041626' 000076
                                                                                                                 .WORD
                                                                                                                         L10150-.
  9586
  9587
                                           OK, THE MICROCODE HAS FILLED PCBB+2 WITH THE OUTPUT OF THE RECEIVER BUFFER
                                           DONE FIFO HOWEVER, THIS VALUE IS NOT IN ADDRESS FORM BECAUSE THERE ARE SOME
  9588
  9589
                                           UNUSED BITS (15,10:00) THAT COULD BE FLOATING SO, STRIP THESE BITS FIRST.
                                           THEN SET BIT 15 TO FORCE THE ADDRESS TO BE A LINK MEMORY ADDRESS. COMPARE THE ADDRESS GIVEN TO THE MICROCODE WITH THE ONE JUST GENERATED, THEY SHOULD
  9590
  9591
  9592
                                            BE IDENTICAL, IF NOT, PRINT ERROR.
  9593
                                                                                       STRIP OFF THE FLOATING BITS
  9594
        103777 000606
                                           45$:
                                                            #103777,PCBB+2
        0416361 052737
                          100000 0006061
                                                            #100000_PCBB+2
  9595
                                                                                       :MAKE IT A LINK MEMORY ADDRESS
                                                    BIS
        041644' 023737
  9596
                          000604 000606
                                                            PCBB.PCBB+2
                                                                                       IDID THE DEUNA USE THE BUFFER AVAILABLE
                                                    CMP
        0416521
  9597
                 001404
                                                    BEQ
                                                                                       :YES
        0416541
                                                                                       :NO. PRINT ERROR MESSAGE
  9598
                                                    ERRHRD
                                                            173, FIFTST, MSG35
  9599
        041654
                104456
                                                                                                                TRAP
                                                                                                                         CSERHRD
                                                                                                                         173
  9600
        041656' 000255
                                                                                                                 .WORD
        041660' 003166'
  9601
                                                                                                                         FIFTST
                                                                                                                 .WORD
        041662' 015704'
  9602
                                                                                                                         MSG35
                                                                                                                 .WORD
  9603
        0416641
                                           50$:
        041664
  9604
                                             ENDSEG
```

| HARDW, F CZUAAA. | E TESTS MAC P11 11-JA | Y11 30(1046) N-83 09:29 | | 13 PAGE : FIFO T | 200 EST | | | |
|--|--|----------------------------|----------------------------|-------------------------|---|---|------------------------------|--------------------------|
| 9605 9606 9607 9608 | 041664' 041664' 104 | 405 | ; WRITE | '1' TO C | LEAR 'DNI' BIT | 10061\$: | TRAP | C\$ESEG |
| 9606 9607 9608 9609 9611 9613 9613 9615 9617 9618 9621 9623 9623 9623 9626 9629 9630 | 041674' 041674' 104 041676' 000 041700' 003 | .006 456 256 166' | ; | JSR BCC ERRHRD | PC,CLRDNI 60\$ 174,FIFTST,RACMG7 | :GO CLEAR DNI :OK :ERROR DNI DID NOT CLEA | R! TRAP .WORD .WORD | CSERHRD 174 FIFTST |
| 9616 9617 9618 9619 9620 9621 | 041702' 012 041704' 041704' 104 041706' 000 | | CHECK | ESCAPE | F WE HAVE TRIED ALL 15 | RECEIVER BUFFER ADDRESSES | .WORD TRAP .WORD | RACMG7 CSESCAPE L10150 |
| 9623 9624 9625 9626 | 041710' 020 041714' 001 041716' 062 041722' 000 | 403 701 004000 | ; GENERA 60 \$: | CMP BEQ ADD BR | R1,#LINADR+ <siz1k+15. 70\$ #SIZ1K,R1</siz1k+15. | YES ALL DONE NO POINT TO NEXT RECEI | UFFERS | |
| 9628 9629 9630 9631 | 041724' 041724' 041724' 041724' 104 | | 70\$: ENDIST | DK | 30\$ | ;DO AGAIN L10150: | TRAP | C \$ ETST |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 201
CZUAAA.P11
                    11-JAN-83 09:29
                                                            TEST 31: RECEIVER LINK MEMORY ADDRESS TEST
   9632
9633
                                                            .SBTTL TEST 31: RECEIVER LINK MEMORY ADDRESS TEST
   9634
   9635
                                                            THIS TEST WILL VERIFY THAT BUFFERS 1-15 OF LINK MEMORY CAN BE ADDRESSED CORRECTLY BY THE RECEIVER. THIS WILL BE DONE BY DIRECTING THE MICROCODE TO TRANSMIT A DATA PATTERN FROM BUFFER O AND TO RECEIVE THE DATA IN BUFFER X
   9636
9637
   9638
                                                            WHERE X = 1-15. THEN A CHECK WILL BE MADE TO SEF IF THE PATTERN NOT ONLY ARRIVED IN THE CORRECT RECEIVER BUFFER BUT THAT THE PATTERN DOES NOT SHOW UP
   9639
   9640
   9641
                                                            ANYWHERE ELSE IN LINK MEMORY EXCEPT WHERE IT W'S SUPPOSE TO.
   9642
                                                             THIS TEST WILL USE MICROMODULE 'D' MICROTEST #11. THIS MICROTEST ACCEPTS 2
                                                            PARAMETERS: THE TRANSMIT BUFFER AND THE RECEIVER BUFFER. IT WILL SET UP A DATA PATTERN IN THE TRANSMIT BUFFER AND TELL THE LINK TO TRANSMIT, IN
   9644
   9645
                                                            LOOPBACK MODE, FROM THE TRANSMIT BUFFER GIVEN TO THE RECEIVER BUFFER GIVEN. AFTER THE RECEIVER INTERRUPT, THE DATA IS CHECKED IN THE EXPECTED RECEIVER BUFFER FOR THE CORRECT DATA PATTERN. THEN ALL OF LINK MEMORY (EXCEPT FOR THE TRANSMIT BUFFER) IS CHECKED TO SEE IF THE PATTERN ENDS UP ELSEWHERE. IF AN ERROR IS FOUND THE MICROCODE PASSES THE ADDRESS OF LINK MEMORY WHERE THE
   9646
   9647
   9648
   9649
   9650
   9651
                                                            ERROR WAS FOUND, THE DATA THAT WAS FOUND THERE ALONG WITH THE DATA THAT SHOULD
   9652
                                                            HAVE BEEN THERE.
   9653
   9654
                                                            :THE PARAMETERS FOR THE MICROCODE ARE FORMATED IN THE PCBB AS FOLLOWS:
   9655
   9656
                                                            :PCBB+O: RECEIVER BUFFER ADDRESS
                                                            :PCBB+2: TRANSMIT BUFFER ADDRESS
   9657
   9658
                                                            PCBB+4: LINK MEMORY ADDRESS (IF ERROR)
PCBB+6: GOOD DATA PATTERN (IF ERROR)
   9659
   9660
                                                            :PCBB+10: BAD DATA PATTERN (IF ERROR)
   9661
                                                            :TEST SEQUENCE:
   9662
                                                                        1-LOAD MICROMODULE 'D' IF NOT ALREADY DONE SO
2-SET PCBB+O WITH TRANSMIT BUFFER O ADDRESS
3-SET PCBB+2 WITH RECEIVER BUFFER ADDRESS
   9663
   9664
   9665
                                                                        4-WAIT FOR THE MICROMONITOR TO ENTER THE 'INMON' STATE 5-SELECT MICROTES! #11
   9666
   9667
                                                                        6-WAIT FOR 'DNI
   9668
                                                                        7-CHECK FOR ERROR IN PCSR1 IF SO PRINT ERROR MESSAGE
8-WRITE '1' TO CLEAR 'DNI'
9-REPEAT STEPS 2-8 WITH RECEIVER BUFFERS 1-15
   9669
   9670
   9671
   9672
9673
                                                             9674
   9675
            041726
                                                            BGNTST
                                                                                                                                                T31::
           041726
   9676
   9677
                                                            CHECK TO SEE IF MODULE 'D' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS, START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI'. AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
   9678
   9679
   9680
   9681
            041726
                                                               BGNSEG
   9682
            041726' 104404
                                                                                                                                                            TRAP
                                                                                                                                                                        CSBSEG
   9683
            041730' 022737
                                                                                                                        ; HAS MICROCODE MODULE 'D' BEEN LOADED
                                                                        CMP
                                                                                    M'D, MICRO
   9684
                                    000104 0003261
            041736 001004
                                                                                                                        ;NO
   9685
                                                                        BNE
                                                                                    58
            041740' 122777
                                                                                    #INMON, apcsR1
                                                                                                                        ; YES, IS THE MICROMONITOR ACTIVE?
                                    000001 136372
                                                                        CMPB
   9686
   9687
            041746' 001440
                                                                        BEQ
                                                                                    20$
                                                                                                                        YES SKIP LOADING THE MICROMODULE
```

| HARDWARE CZUAAA.P | TESTS | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN | -83 10: TEST 31 | 13 PAGE : RECEIV | 202 ER LINK MEMORY ADDRESS | TEST | | |
|--------------------------------------|--|--|---|--------------------|--------------------|--|---|--|------------------------|-------------------------------------|
| 9688 9689 9690 9691 9692 | 041750' 041756' 041762' 041764' | 012737 004737 103002 104410 | 000104 020252' | 000326 | 5\$: | MOV JSR BCC ESCAPE | #'D,MICRO PC,LODMIC 10\$ TST | ;GO LOAD MICRO MODULE ' | 'D' | C \$ ESCAPE |
| 9695 9696 9697 | 041776' 042002' | 004757 103022 012737 | 000176 017330' 000776' 001275' 001340' 001355' | 000312' 000314' | 10\$: | MOV JSR BCC MOV MOV MOV ERRHRD | #2*SECOND, METER PC, CHKDNI 20\$ #\$DNI, BITNAM #\$NSET, BITSTA #\$AFTER, PWHEN #\$GTCMD, PCOMND 175, RLNKAD, MSG1 | ;WAIT FOR THE MICROMON! | .WORD | L10151 |
| 9702 9703 9704 9705 9706 | 042034' 042036' 042040' 042042' 042044' | 104456 000257 003207' 012750' | | | | ESCAPE | TST | | TRAP .WORD .WORD .WORD | CSERHRD 175 RLNKAD MSG1 |
| 9707 9708 9709 9710 | 042044' 042046' 042050' 042054' | 104410 000242 004737 103006 | 017374 | | 20\$: | JSR BCC | PC,CLRDNI 25\$ | CLEAR DNI BIT | TRAP .WORD | C\$ESCAPE L10151 |
| 9711 9712 9713 9714 9715 | 042056' 042056' 042060' 042062' 042064' | 104456 000260 003207' 012726' | | | | ERRHRD | 176,RLNKAD,RACMG7 | ;DNI DID NOT CLEAR! | TRAP .WORD .WORD .WORD | C\$ERHRD 176 RLNKAD RACMG7 |
| 9718 9719 9720 | 042064' 042066' 042066' 042070' 042072' 042072' | 104410 000220 | | | 25\$: ENDSE | ESCAPE | 151 | | TRAPWORD | CSESCAPE L10151 |
| 9721 9722 9723 | 042072' | 104405 | | | • | | | 10000\$: | TRAP | C\$ESEG |
| 9724 9725 9726 9727 | | | | | LOAD P | | TH THE ADDRESS OF THE THE THE FIRST RECEIVER I | | | |
| 9727 9728 | 042074' 042100' | 012701 012737 | 002756 100000 | 000606 | • | MOV MOV | #MAXBYT,R1 #LINADR,PCBB+2 | TRANSMIT BYTE COUNT SET TRANSMIT BUFFER AT | BASE OF | LINK |
| 9731 | 042106* | 012737 | 104000 | 000604 | | MOV | #LINADR+SIZ1K,PCBB | :MEMORY :FIRST RECEIVE BUFFER S :BASE OF LINK MEMORY | TARTS 1K | . FROM |
| 9/32 | 042114' 042114' 042114' | 104404 | | | 30\$: BGNSE | E G | | | TRAP | C\$BSEG |
| 9736 9737 9738 | | | | | WAIT F | OR THE M | ICROMONITOR, THEN SELE WITH 11, WAIT FOR "D | CT MICROTEST #11 BY LOADIN NI' | IG THE CO | MMAND |
| 9739 9740 9741 9742 9743 | 042116' 042122' 042124' 042124' 042126' | 103006 104456 | 017776' | | • | JSR BCC ERRHRD | PC, CHKMON 35\$ 177, RLNKAD, MSG46 | :WAIT FOR MICROMONITOR :OK :PRINT ERROR | TRAP .WORD | CSERHRD |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 203
CZUAAA.P11 11-JAN-83 09:29 TEST 31: RECEIVER LINK MEMORY ADDRESS TEST
          042130' 003207'
042132' 016700'
042134' 104410
042136' 000152
042140' 012777
042146' 012737
   9744
                                                                                                                                              . WORD
                                                                                                                                                         RLNKAD
   9745
                                                                                                                                              .WORD
                                                                                                                                                         MSG46
   9746
                                                                 ESCAPE TST
                                                                                                             :LEAVE TEST
  9747
9748
                                                                                                                                              TRAP
                                                                                                                                                         C$ESCAPE
                                                                                                                                               . WORD
                                                                                                                                                        L10151-.
  9749
9750
                                 000013 136170 35$:
000176 000332'
                                                                            #11..aPCSRO
#2*SECOND, METER
PC, CHKDNI
45$
                                                                  MOV
                                                                                                             :TELL T11 TO EXECUTE MICROTEST #11
                                                                  MOV
                                                                                                              :WAIT FOR DNI
   9751
                                 0173301
                                                                  JSR
          042154 004757
042160' 103021
042162' 004737
042166' 103006
042170' 104456
  9752
9753
                                                                  BCC
                                 0200501
                                                                 JSR
BCC
                                                                            PC.CHKINT
                                                                                                              SEE IF ANY ERROR INTERRUPTS OCCURRED
  9754
9755
9756
9757
                                                                                                             NO, OK PRINT ERROR MESSAGE
                                                                  ERRHRD
                                                                            178, RLNKAD, MSG44
                                                                                                                                              TRAP
                                                                                                                                                         C$ERHRD
           042172' 000262
042174' 003207'
                                                                                                                                              .WORD
                                                                                                                                                         178
   9758
                                                                                                                                              .WORD
                                                                                                                                                         RLNKAD
   9759
           042176' 016454'
                                                                                                                                              . WORD
                                                                                                                                                         MSG44
   9760
           0422001
                                                                 ESCAPE TST
           042200' 104410
042202' 000106
   9761
                                                                                                                                              TRAP
                                                                                                                                                         C$ESCAPE
   9762
                                                                                                                                                         L10151-.
                                                                                                                                              .WORD
           042204' 012702
   9763
                                000013
                                                       405:
                                                                             #11.,R2
                                                                                                             :MICROTEST #11 IS HUNG
          042204' 012702

042210' 104456

042212' 000263

0422.4' 003207'

042216' 013500'

042220' 104410

042222' 000066
   9764
                                                                 FRRHRD
                                                                            179 RLNKAD MSG12
                                                                                                              PRINT ERROR MESSAGE
   9765
                                                                                                                                              TRAP
                                                                                                                                                         C$ERHRD
   9766
                                                                                                                                                         179
                                                                                                                                              .WORD
   9767
                                                                                                                                              .WORD
                                                                                                                                                         RLNKAD
   9768
                                                                                                                                              .WORD
                                                                                                                                                         MSG12
  9769
                                                                 ESCAPE TST
  9770
                                                                                                                                              TRAP
                                                                                                                                                         C$ESCAPE
   9771
                                                                                                                                              .WORD
                                                                                                                                                         L10151-.
  9772
9773
                                                       IF THE MICROCODE FOUND AN ERROR IT SETS PCSR1 TO THE ERROR STATE SO, CHECK
   9774
                                                       :PCSR1 TO SEE IF AN ERROR OCCURRED
  9775
                                                       IF SO PRINT ERROR MESSAGE
  9776
          042224' 122777
042232' 001004
042234' 104456
042236' 000264
042240' 003207'
042242' 016262'
042244'
  9777
                                000003 136106 45$:
                                                                            #INERR, aPCSR1
                                                                  CMPB
                                                                                                             :DID AN ERROR OCCUR?
   9778
                                                                 BNE
                                                                            50$
                                                                                                             :NO
   9779
                                                                 ERRHRD
                                                                            180, RLNKAD, MSG42
                                                                                                             YES, PRINT ERROR MESSAGE
  9780
9781
9782
9783
9784
9785
9786
9787
9788
9789
9790
                                                                                                                                              TRAP
                                                                                                                                                         CSERHRD
                                                                                                                                              .WORD
                                                                                                                                                         180
                                                                                                                                                         RLNKAD
                                                                                                                                              .WORD
                                                                                                                                              .WORD
                                                                                                                                                         MSG42
                                                       50S:
          042244
                                                         ENDSEG
                                                                                                                                   10001$:
           0422441 104405
                                                                                                                                              TRAP
                                                                                                                                                         C$ESEG
                                                       WRITE '1' TO CLEAR 'DNI'
          042246' 004737
042252' 103006
042254' 104456
042256' 000265
  9791
9792
9793
                                017374
                                                                  JSR
                                                                            PC, CLRDNI
                                                                                                             :GO CLEAR DNI
                                                                            60$
                                                                 BCC
                                                                                                             : 0K
                                                                 ERRHRD 181, RLNKAD, RACMG7
                                                                                                             ERROR DNI DID NOT CLEAR!
   9794
                                                                                                                                              TRAP
                                                                                                                                                         CSERHRD
   9795
                                                                                                                                              .WORD
                                                                                                                                                         181
          042260' 003207'
   9796
                                                                                                                                              .WORD
                                                                                                                                                         RLNKAD
           042262 012726
   9797
                                                                                                                                                         RACMG7
                                                                                                                                              .WORD
           0422641
   9798
                                                               ESCAPE TST
   9799
           042264' 104410
                                                                                                                                              TRAP
                                                                                                                                                         C$ESCAPE
```

```
HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 204
CZUAAA.P11 11-JAN-83 09:29 TEST 31: RECEIVER LINK MEMORY ADDRESS TEST
    9800 042266' 000022
                                                                                                                                                                                                 .WORD
                                                                                                                                                                                                             L10151-.
    9801
                                                                          THIS TEST IS TO BE REPEATED 15 TIMES ONECE FOR EACH RECEIVER BUFFER (1-15). CHECK TO SEE IF WE HAVE PASSED THE LAST RECEIVER BUFFER TO THE MICROCODE. IF SO STOP, ELSE ADD 1K TO THE CONTENTS OF PCBB TO MAKE THE NEW RECEIVER BUFFER AND REPEAT THE TEST AGAIN
    9802
    9803
    9804
    9805
    9806
              042270' 023727
042276' 001404
042300' 062737
042306' 000702
042310'
042310'
042310'
042310' 104401
                                                                                                        PCBB, #LINADR+<SIZ1K+15.> ; HAVE WE TRIED ALL 15 BUFFERS ; YES ALL DONE ; NO POINT TO NEXT RECEIVER BUFFER
    9807
                                             000604 174000
                                                                                         BEQ
    9808
                                                                                                        #SIZ1K,PCBB
    9809
                                             004000 000604
                                                                                         ADD
    9810
                                                                                                        30$
                                                                                                                                                     :DO AGAIN
                                                                                         BR
    9811
                                                                           70$:
    9812
9813
                                                                           ENDTST
                                                                                                                                                                                 L10151:
                                                                                                                                                                                                 TRAP
                                                                                                                                                                                                                C$ETST
    9814
    9815
```

```
HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 205
CZUAAA.P11
                                                      TEST 32: TRANSMITTER LINK MEMORY ADDRESS TEST
                 11-JAN-83 09:29
  9816
                                                       .SBTTL TEST 32: TRANSMITTER LINK MEMORY ADDRESS TEST
  9817
  9818
  9819
  9820
9821
9822
                                                       THIS TEST WILL VERIFY THAT BUFFERS 1-15 CAN BE CORRECTLY ADDRESSED BY THE TRANSMITTER. THIS TEST IS IDENTICAL TO THE RECEIVER ADDRESS TEST IN THAT IT USES THE SAME MICROCODE (MICROMODULE 'D' MICROTEST #11) EXCEPT IT
  9823
                                                       FIXES THE RECEIVER BUFFER AT O AND VARIES THE TRANSMIT BUFFER FROM 1-15.
  9824
9825
9826
9827
                                                       :TEST SEQUENCE:
                                                                 1-LOAD MICROMODULE 'D' IF NOT ALREADY DONE SO
2-SET PCBB+0 TO 100000 (BASE OF LINK MEMORY) AS REJEIVER BUFFER ADDRESS
3-SET PCBB+2 WITH A TRANSMITTER BUFFER ADDRESS
  9828
  9829
9830
                                                                  4-WALT FOR THE MICROMONITUR TO ENTER THE "INMON" STATE
                                                                  5-SELECT MICROTEST #11
  9831
                                                                 6-WAIT FOR 'DNI'
  9832
9833
                                                                 7-CHECK PCSR1 FOR AN ERROR CONDITION IF SO PRINT ERROR MESSAGE 8-WRITE '1' TO CLEAR 'DNI'
  9834
                                                                 9-REPEAT STEPS 2-8 FOR ALL TRANSMIT BUFFERS 1-15
  9835
  9836
                                                       ***************
  9837
  9838
          0423121
                                                      BGNTST
  9839
          0423121
                                                                                                                                   132::
  9840
                                                      CHECK TO SEE IF MODULE 'D' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS. START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI'. AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
  9841
  9842
  9843
  9844
          042312' 104404
042314' 022737
  9845
                                                         BGNSEG
  9846
                                                                                                                                              TRAP
                                                                                                                                                         C$BSEG
  9847
                                000104 0003261
                                                                 CMP
                                                                            #'D.MICRO
                                                                                                             :HAS MICROCODE MODULE 'D' BEEN LOADED
          042322' 001004
042324' 122777
042332' 001440
  9848
                                                                 BNE
                                                                            5$
                                                                                                             :NO
                                                                                                             YES, IS THE MICROMONITOR ACTIVE? YES SKIP LOADING THE MICROMODULE
  9849
                                000001 136006
                                                                 CMPB
                                                                            #INMON, aPCSR1
  9850
                                                                 BEQ
                                                                            20$
          042334' 012737
042342' 004737
  9851
                                000104 000326' 5$:
                                                                            #'D,MICRO
                                                                 MOV
                                                                                                             :GO LOAD MICRO MODULE 'D'
          042342' 004737
042346' 103002
042350' 104410
042352' 000322
042354' 012737
  9852
                                0202521
                                                                 JSR
                                                                            PC,LODMIC
  9853
                                                                 BCC
                                                                            10$
                                                                                                             : OK
  9854
                                                                 ESCAPE
                                                                            TST
  9855
                                                                                                                                              TRAP
                                                                                                                                                         C$ESCAPE
  9856
                                                                                                                                               WORD
                                                                                                                                                         L10152-.
                     012737
  9857
                                000176 000332 10$:
                                                                 MOV
                                                                            #2*SECOND_METER
                                                                                                             :WAIT FOR THE MICROMONITOR
          0423621
                                                                 JSR
                                                                            PC CHKDNI
                                017330
  9858
  9859
                     103022
                                                                 BCC
                                                                                                             : OK
                                                                            #SDNI BITNAM
#SNSET BITSTA
#SAFTER PWHEN
          042370' 012737
  9860
                                000776' 000310'
                                                                 MOV
          042376' 012737
042404' 012737
042412' 012737
042420'
042420' 104456
042422' 000266
                                001275' 000312' 001340' 000314'
  9861
                                                                  "ÖV
  9862
                                                                 MOV
  9863
                                001355' 000316'
                                                                 MOV
                                                                            #SGTCMD_PCOMND
  9864
                                                                 ERRHRD
                                                                            182, TLNKAD, MSG1
  9865
                                                                                                                                              TRAP
                                                                                                                                                         C$ERHRD
  9866
                                                                                                                                              .WORD
                                                                                                                                                         182
          042424 003260
  9867
                                                                                                                                              .WORD
                                                                                                                                                         TLNKAD
  9868
          042426' 012750'
                                                                                                                                              .WORD
                                                                                                                                                         MSG1
          0424301
  9869
                                                                 ESCAPE TST
          042430' 104410
  9870
                                                                                                                                              TRAP
                                                                                                                                                         (SESCAPE
          042432' 000242
  9871
                                                                                                                                              .WORD
                                                                                                                                                         L10152-.
```

| HARDWARE TESTS MACY11 30(1046) 11-JACZUAAA.P11 11-JAN-83 09:29 | N-83 10:13 PAG TEST 32: TRANS | E 206 MITTER LINK MEMORY ADDRE | SS TEST | | |
|---|----------------------------------|--|--|---------------------------------|------------------------------------|
| 9872 042434' 004737 017374' 9873 042440' 103006 | 20\$: JSR | PC_CLRDNI 25\$ | CLEAR DNI BIT | | |
| 9874 042442° 9875 042442° 104456 9876 042444° 000267 | BCC ERRHRD | 183,TLNKAD,RACMG7 | ;DNI DID NGT CLEAR! | TRAP .WORD .WORD .WORD | CSERHRD 183 TLNKAD RACMG7 |
| 9877 042446* 003260* 9878 042450* 012726* 9879 042452* 9880 042452* 104410 9881 042454* 000220 9882 042456* 9883 042456* 9884 042456* 9885 042456* 9887 9888 9889 | ESCAPE 25\$: | TST | | TRAP.WORD | C\$ESCAPE L10152 |
| 9884 042456' 9885 042456' 104405 | ENDSEG | | 10000\$: | TRAP | C\$ESEG |
| 9887 9888 9888 | LOAD PCBB+0 W BUFFER WILL B | ITH THE BASE ADDRESS OF E FIXED AT. LOAD PCBB+2 | LINK MEMORY. THIS IS WHER WITH THE ADDRESS OF BUFFE | E THE RI R #1 (1) | FCEIVER 04000) |
| 9890 042460' 012701 002756 9891 042464' 012737 100000 000604 9892 | MOV MOV | #MAXBYT,R1 #LINADR,℃CBB | TRANSMIT BYTE COUNT | BASE OF | LINK |
| 9893 042472° 012737 104000 000606 | • MOV | #LINADR+SIZ1K,PCBB+2 | :MEMORY :TRANSMIT BUFFER STARTS :BASE OF LINK MEMORY | 1K FRO | М |
| 9895 042500° 9896 | 30 \$: | | , BASE OF LINK MEMORY | | |
| 9893 042472° 012737 104000 000606 9894 9895 042500° 9896 9897 9898 9899 | WAIT FOR THE #11 BY LOADIN | MICROMONITOR TO ENTER TH G PCSRO COMMAND FIELD BI | E 'INMON' STATE. THEN EXE TS WITH A 11. WAIT FOR 'D | CUTE MI | CROTEST |
| 9900 042500' 9901 042500' 104404 9902 042502' 004737 017776' 9903 042506' 103006 | BGNSEG JSR ECC | PC, CHKMON 35\$ | :WAIT FOR MICROMONITOR | TRAP | C\$BSEG |
| 9904 042510' 9905 042510' 104456 9906 042512' 000270 9907 042514' 003260' 9908 042516' 016700' | ERRHRD | 184,TLNKAD,MSG46 | ;PRINT ERROR | TRAP .WORD .WORD .WORD | C\$ERHRD 184 TLNKAD MSG46 |
| 9908 042516' 016700' 9909 042520' 9910 042520' 104410 9911 042522' 000152 | ESCAPE | TST | ;LEAVE TEST | TRAP.WORD | CSESCAPE |
| 9912 042524 012777 000013 135604 9913 042532 012737 000176 000332 9914 042540 004737 017330 9915 042544 103021 | | #11.,@PCSRO #2*SECOND,METER PC,CHKDNI 45\$ | :TELL T11 TO EXECUTE MI :WAIT FOR DNI :OK | CROTEST | พา้า |
| 9916 042546' 004737 020050' 9917 042552' 103006 | JSR BCC | PC,CHKINT 40\$ | :SEE IF ANY ERROR INTER :NO, OK | RUPTS 0 | CCURRED |
| 9919 042554' 104456 9920 042556' 000271 9921 042560' 003260' 9922 042562' 016454' | ERRHRD | | PRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 185 TLNKAD MSG44 |
| 9924 042564' 104410 9925 042566' 000106 | ESCAPE | | .MICDOTECT MIL TO ANNO | TRAP.WORD | CSESCAPE L10152 |
| 9926 042570° 012702 000013 9927 042574° | 40\$: MOV ERRHRD | #11R2 186,TLNKAD,MSG12 | :MICROTEST #1' IS HUNG :PRINT ERROR MESSAGE | | |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 207 CZUAAA.P11 11-JAN-83 09:29 TEST 32: TRANSMITTE
                                              TEST 32: TRANSMITTER LINK MEMORY ADDRESS TEST
         042574' 104456
042576' 000272
042600' 003260'
                                                                                                                          TRAP
                                                                                                                                   C$ERHRD
  9929
9930
                                                                                                                          .WORD
                                                                                                                                   186
                                                                                                                          .WORD
                                                                                                                                   TLNKAD
  9931
9932
9933
         0426021
                  013500
                                                                                                                          .WORD
                                                                                                                                   MSG12
         042604
                                                        ESCAPE TST
         042604
                  104410
                                                                                                                          TRAP
                                                                                                                                   C$ESCAPE
  9935
9935
9936
9937
9938
         042606' 000066
                                                                                                                          .WORD
                                                                                                                                   L10152-.
                                               THE MICROCODE WILL SET PCSR1 TO AN ERROR CONDITION IF IT DETECTED AN ERROR.
                                               SO CHECK PCSR1 IF ERROR, PRINT ERROR MESSAGE
         042610' 122777
042616' 001004
                                                        CMPB
                            000003 135522
                                               455:
                                                                  #INERR, apcsr1
                                                                                              :DID AN ERROR OCCUR?
  9940
                                                        BNE
                                                                                              :NO
  9941
9942
9943
         0426201
                                                        ERRHRD
                                                                 187, TLNKAD, MSG42
                                                                                              YES, PRINT ERROR MESSAGE
        042620' 10'456
042622' 000273
042624' 003260'
042626' 016262'
                                                                                                                          TRAP
                                                                                                                                   CSERHRD
                                                                                                                          .WORD
                                                                                                                                   187
  9944
                                                                                                                          .WORD
                                                                                                                                   TLNKAD
  9945
                                                                                                                          .WORD
                                                                                                                                   MSG42
  9946
         0426301
                                               50$:
  9947
         042630'
                                                 ENDSEG
  9948
         0426301
                                                                                                                10001$:
  9940
         042630 104405
                                                                                                                          TRAP
                                                                                                                                   C$ESEG
  9950
  9951
                                               WRITE '1' TO CLEAR 'DNI'
  9952
  9953
         042632' 004737
042636' 103006
                            017374
                                                        JSR
                                                                  PC, CLRDNI
                                                                                              :GO CLEAR DNI
  9954
                                                                 60$
                                                        BCC
                                                                                              :OK
  9955
         0426401
                                                        ERRHRD
                                                                 188,TLNKAD,RACMG7
                                                                                              ERHOR DNI DID NOT CLEAR!
         042640' 104456
  9956
                                                                                                                          TRAP
                                                                                                                                   CSERHRD
         042642' 000274
042644' 003260'
042646' 012726'
  9957
                                                                                                                          .WORD
                                                                                                                                   188
  9958
                                                                                                                          . WORD
                                                                                                                                   TLNKAD
  9959
                                                                                                                          .WORD
                                                                                                                                   RACMG7
         0426501
  9960
                                                        ESCAPE TST
         0426501 104410
  9961
                                                                                                                                   C$ESCAPE
                                                                                                                          TRAP
         0426521 000022
  9962
                                                                                                                                   L10152-.
                                                                                                                          .WORD
  9963
  9964
                                               THIS TEST IS TO BE REPEATED FOR EACH TRANSMIT BUFFER SO CHECK IF THE MICROCODE
  9965
                                               HAS BEEN PASSED THE LAST TRANSMIT BUFFER, IF NOT, CHANGE PCBB+2 TO POINT
  9966
                                               TO THE NEXT TRANSMIT BUFFER BY ADDING 1K TO IT
  9967
  9968
         0006061 174000
                                               60$:
                                                        CMP
                                                                  PCBB+2,#LINADR+<SIZ1K+15.> ; TRIED BUFFERS 1-15 FOR TRANSMITTER?
         042662' 001404
  9959
                                                        BEQ
                                                                 70$
                                                                                              ; YES ALL DONE
  9970
         042664' 062737
                            004000 0006061
                                                                  #SIZ1K,PCBB+2
                                                                                              NO POINT TO NEXT TRANSMIT BUFFER
                                                        ADD
         042672' 000702
  9971
                                                        BR
                                                                  30$
                                                                                              :DO AGAIN
  9972
         0426741
                                               705:
  9973
         042674'
                                               ENDIST
  9974
         042674
                                                                                                                L10152:
                                                                                                                          TRAP
   99/5
         0426741 104401
                                                                                                                                   CSETST
```

9976

HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 208 CZUAAA.P11 11-JAN-83 09:29 TEST 33: LINK MEMORY ARBITRATION TEST

.SBTTL TEST 33: LINK MEMORY ARBITRATION TEST

THE LINK MEMORY CAN BE ACCESSED BY FOUR PROCESSES; THE T-11 PROCESSOR, THE DATE TO THE RECEIVE STATE MACHINE AND THE TRANSMIT STATE MACHINE. THE PORT MODULE HAS ARBITRATION CIRCUITRY TO MANAGE LINK MEMORY ACCESSES. THIS CIRCUITRY PREVENTS CONFLICKS BETWEEN PROCESSES AND ASSURES THAT HIGHER PRIORITY PROCESSES GET PRECEDENCE.

THIS TEST WILL VERIFY THE ABLILITY OF THE LINK MEMORY ARITRATOR TO HANDLE SIMULTANEOUS REQUESTS BY FOUR PROCESSES. EACH OF THESE PROCESSES WILL INVOLVE TASKS THAT REQUIRE HEAVY ACCESSES OF LINK MEMORY. DATA WILL BE MOVED INTO OR OUT OF LINK MEMORY BY EACH. WHEN THAT TASKS ARE FINISHED THE DATA WILL BE VERIFIED.

THE FOUR PROCESSES ARE:

1-TRANSMIT STATE MACHINE

WILL TRANSMIT A DATAGRAM OF MAXIMUM DATA LENGTH IN LOOPBACK MODE. THE DATA FIELD WILL CONTAIN A BIT PATTERN STRING OF TWO 1'S FOLLOWED BY TWO 0'S I.E. 31463 (OCTAL).

2-RECEIVE STATE MACHINE

WILL RECEIVE A DATAGRAM OF MAXIMUM DATA LENGTH OVER THE LOOPBACK. THE RECEIVE DATA BUFFER WILL BE FILLED WITH 0'S PRIOR TO THE PECEPTION.

3-T-11 MICROPROCESSOR DMA

A 1K BUFFER IN LINK MEMORY WILL BE FILLED WITH AN ALL 1'S DATA PATTERN PRIOR TO THE OPERATION THEN ALTERNATING 1'S AND O'S DATA PATTERN WILL BE WRITTEN.

4-DMA ENGINE

WILL TRANSFER A 1K BLOCK OF DATA FROM LINK MEMORY TO UNIBUS MEMORY. THE DATA IN LINK MEMORY WILL A BIT PATTERN STRING OF FOUR 1'S FOLLOWED BY A STRING OF FOUR 0'S. THE BUFFER IN UNIBUS MEMORY WILL BE CLEARED PRIOR TO THE OPERATION.

THE FOUR PROCESSES WILL WORK OUT OF FOUR SEPARATE AREAS OF LINK MEMORY.

BASE OF LINK MEMORY-->

RECEIVE BUFFER

BASE + 4000-->

TRANSMIT BUFFER

BASE + 10000-->

DMA ENGINE BUFFER

1-11 PROCESSOR BUFFER

ITHIS WILL ALLOW THE ARITRATION CIRCUITRY TO BE TESTED AND YET ALLOWS THE WAYA

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 209 CZUAAA.P11 11-JAN-83 09:29 TEST 33: LINK MEMORY
                                               TEST 33: LINK MEMORY ARBITRATION TEST
 10033
10034
                                                :TO BE VERIFIED EASILY AND ASSOCIATED WITH A SINGLE PROCESS.
                                               A DATAGRAM WILL BE LOOPED BACK FROM THE TRANSMIT BUFFER TO THE RECEIVE BUFFER. SAS THE DATAGRAM IS BEING TRANSFERRED. THE T-11 PROCESSOR WILL FILL IT'S BUFFER AND THE DMA ENGINE WILL TRANSFER IT'S BUFFER FROM LINK MEMORY TO UNIBUS MEMORY.
 10035
 10036
 10037
 10038
 10039
                                                WHEN THE RECEIVE STATE MACHINE IS DONE, THE T-11 WILL VERIFY THE DATA IN THE
 10040
                                                RECEIVE BUFFER. IF AN ERROR IS FOUND POSRI WILL BE SET TO INDICATE AN ERROR.
 10041
 10042
                                                THE HOST WILL WAIT FOR THE MICROCODE TO FINISH AND WHEN DONE, IT WILL VERIFY
 10043
                                                THE DATA TRANSFERRED BY THE DMA ENGINE TO UNIBUS MEMORY.
 10044
 10045
                                                THE FIRST 3 WORDS OF THE PCBB ARE USED FOR ERROR INFORMATION, THE REST
 10046
                                                WILL BE THE UNIBUS ADDRESS THAT THE DMA ENGINE WILL TRANSFER TO.
 10047
 10048
 10049
                                                  PCBB+0:
                                                                       EXPECTED PATTERN
 10050
 10051
                                                  PCBB+2:
                                                                        ACTUAL PATTERN
 10052
 10053
                                                  PCBB+4:
                                                                     LINK MEMORY ADDRESS
 10054
 10055
                                                                       DATA TRANSFERRED
                                                  PCBB+6:
 10056
                                                                             FROM
 10057
                                                                         LINK MEMORY
                                                                           BY THE
 10058
 10059
                                                                         DMA ENGINE
 10060
 10061
                                                  PCBB+4000:
 10062
 10063
 10064
                                                TEST SEQUENCE:
                                                         1-LOAD MICROMODULE 'D' IF NOT ALREADY DONE SO 2-LOAD PCSR2 AND PCSR3 WITH ADDRESS OF PCBB
 10065
 10066
                                                         3-CLEAR DMA ENGINE 'TG' BUFFER
 10067
                                                         4-WAIT FOR MICROMONITOR TO ENTER 'INMON' STATE
 10068
 10069
                                                         5-SELECT MICROTEST #8
 10070
                                                         6-WAIT FOR 'DNI'
                                                         7-CHECK FOR ERROR IN PCSR1
 10071
                                                         8-VERIFY DATA IN DMA 'TO' BUFFER
 10072
                                                         9-WRITE '1' TO CLEAR 'DNI'
 10073
 10074
 10075
 10076
 10077
         042676
                                               BGNTST
                                                                                                                  133::
 10078
         042676
 10079
                                                CHECK TO SEE IF MODULE 'D' HAS BEEN LOADED. IF NOT LOAD IT INTO
 10080
                                                THE TOP HALF OF WCS. START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI'.
 10081
 10082
 10083
 10084
         0426761
                                                  BGNSEG
         0426761 104404
                                                                                                                           TRAP
                                                                                                                                     C$BSEG
 10085
         042700' 022737
                                                                                               :HAS MICFOCODE MODULE 'D' BEEN LOADED
                                                         CMP
                                                                   #'D,MICRO
 10086
                            000104
                                      000326
          042706' 001004
 10087
                                                         BNF
         042710' 122777
                                                                                               :YES, IS THE MICROMONITOR ACTIVE?
                                                                   #INMON, apcsR1
 10088
                            000001 135422
                                                         CMPB
```

| HARDWARE TESTS MACY11 30 CZUAAA.P11 11-JAN-83 (| 0(1046) 11-JAN-83 1 09:29 TEST | 0:13 PAGE 33: LINK N | E 210 MEMORY ARBITRATION TEST | | | |
|--|--|------------------------------------|---|--|---------------------------------|-------------------------------------|
| 10089 042716' 001440 10090 042720' 012737 (10091 042726' 004737 (10092 042732' 103002 10093 042734' | 000104 000326' 5 \$: 020252' | BEQ MOV JSR BCC ESCAPE | 20\$ #'D,MICRO PC,LODMIC 10\$ TST | :YES SKIP LOADING THE ME GO LOAD MICRO MODULE GO | MICROMODU 'D' | ILE |
| 10094 042734 104410 10095 042736 000376 10096 042740 012737 (10097 042746 004737 (10098 042752 103022 10099 042754 012737 (| 000176 000332' 10\$: 017330' 000776' 000310' 001275' 000312' 001340' 000314' | MOV JSR BCC MOV MOV | #2*SECOND, METER PC, CHKDNI 20\$ #\$DNI, BITNAM #\$NSET, BITSTA | :WAIT FOR THE MICROMONI | TRAP .WORD LTOR | CSESCAPE L10153 |
| 10102 042776' 012737 (10103 043004' 10104 043004' 104456 10105 043006' 000275 10106 043010' 003334' 10107 043012' 012750' | 001340' 000314' 0(1355' 000316' | MOV MOV ERRHRD | #\$AFTER,PWHEN #\$GTCMD,PCOMND 189,LNKARB,MSG1 | | TRAP .WORD .WORD .WORD | CSERHRD 189 LNKARB MSG1 |
| 10109 043014' 104410 10110 043016' 000316 10111 043020' 004737 (10112 043024' 103006 | 017374' 20\$: | JSR BCC | PC_CLRDNI 25\$ | :CLEAR DNI BIT | TRAP .WORD | CSESCAPE L10153 |
| 10114 043026' 104456 10115 043030' 000276 10116 043032' 003334' 10117 043034' 012726' | | ERRHRD | 190,LNKARB RACMG7 | ;DNI DID NOT CLEAR! | TRAP .WORD .WORD .WORD | C\$ERHRD 190 LNKARB RACMG7 |
| 10120 043040 000274 10121 043042' 10122 043042' | 25 \$: END: | ESCAPE SEG | 151 | | TRAPWORD | CSESCAPE L10153 |
| 10123 043042' 10124 043042' 104405 10125 | | | | 10000\$ | TRAP | C\$ESEG |
| 10126 10127 | :SETUI :TELL | P PCBB TO MICROCODE | BE JUST AFTER LAST LOCAT WHERE PCBB IS BY LOADIN | ION USED BY THIS DIAGNOS G PCSR2 AND PCSR3 WITH 1 | TTIC THE PCBB | ADDRESS |
| 10128 10129 043044' 013777 0 10130 043052' 005077 1 | 000324° 135270 ; 135266 | MOV CLR | FREMEM, apcsr2 apcsr3 | ;TELL MICROCODE WHERE F | PCBB IS | |
| 10131 10132 10133 | FIRS THEN | T CLEAR TH | HE 3 WORDS THAT WILL BE U | SED BY THE MICROCODE IF S THE DMA ENGINE'S 'TO' | AN ERROR BUFFER. | OCCURS. |
| 10134 10135 043056' 013700 (10136 043062' 005020 | 000324' | MOV CLR | FREMEM,RO (RO) * | GET A POINTER TO POBB HERE IS WHERE MICROCOL | E WILL F | าบา |
| 10136 043062 005020 10137 10138 043064 005020 10139 043066 005020 | | CLR CLR | (RO)+ (RO)+ | EXPECTED DATA PATTERN :HERE, THE BAD DATA :AND HERE THE LINK MEMO | | |
| 10140 | 002000 | MOV CLR DEC BNE | #SIZ1K/2,R1 (RO)+ R1 30\$ | SIZE OF DMA ENGINE 'TO CLEAR THE AREA WHERE T WILL LOAD DATA |) BUFFER THE DMA E | NGINE |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 211
CZUAAA.P11 11-JAN-83 09:29
                                                 TEST 33: LINK MEMORY ARBITRATION TEST
 10145 043102°
10146 043102°
10147 043102° 104404
                                                  35$:
                                                    BGNSEG
                                                                                                                                 TRAP
                                                                                                                                           C$BSEG
 10148
 10149
10150
10151
                                                  WAIT FOR THE MICROMONITOR TO ENTER THE "INMON" STATE
                                                  SELECT MICROTEST #8 BY LOADING PCSRO COMMAND FIELD BITS WITH A #8.
                                                  ; WAIT FOR 'DNI'
 10152
10153
10154
10155
10156
10157
10158
         043104' 004737 017776' 043110' 103006 043112' 043112' 104456 043114' 000277 043116' 003334'
                                                            JSR
                                                                      PC, CHKMON
                                                                                                   :WAIT FOR MICROMONITOR
                                                           BCC
                                                                      36$
                                                                                                   :OK
                                                           ERRHRD
                                                                     191, LNKARB, MSG46
                                                                                                   :PRINT ERROR
                                                                                                                                 TRAP
                                                                                                                                           CSERHRD
                                                                                                                                 .WORD
                                                                                                                                           191
                                                                                                                                 .WORD
                                                                                                                                           LNKARB
         043120' 016700'
043122' 104410
043124' 000210
                                                                                                                                 .WORD
                                                                                                                                           MSG46
 10160
                                                           ESCAPE TST
                                                                                                   ;LEAVE TEST
 10161
                                                                                                                                 TRAP
                                                                                                                                           CSESCAPE
 10162
                                                                                                                                  - WORD
                                                                                                                                           L10153-.
         043126'
043134'
                                                                     #8..aPCSRO
#2*SECOND, METER
                                                                                                   :TELL T11 TO EXECUTE MICROTEST #8 ;WAIT FOR DNI
                   012777
                              000010 135202 36$:
                                                           VOM
 10164
                   012737
                              000176 0003321
                                                           MOV
         043142'
                   004737
                             0173301
                                                            JSR
                                                                     PC, CHKDN'
 10166
                   103021
                                                           BCC
                                                                     40$
 10167
         0431501
                   004737
                             0200501
                                                            JSR
                                                                     PC CHKINT
                                                                                                   :SEE IF ANY ERROR INTERRUPTS OCCURRED
          0431541
 10168
                   103006
                                                           BCC
                                                                                                    NO. OK
 10169
         043156
                                                                     192, LNKARB, MSG44
                                                           ERRHRD
                                                                                                   PRINT ERROR MESSAGE
 10170
         0431561
                   104456
                                                                                                                                 TRAP
                                                                                                                                           CSERHRD
 10171
10172
10173
          0431601
                   000300
                                                                                                                                 .WORD
                                                                                                                                           192
         0431621
                   003334
                                                                                                                                 .WORD
                                                                                                                                           LNKARB
         0431641
                   0164541
                                                                                                                                 .WORD
                                                                                                                                           MSG44
 10174
         043166
                                                           ESCAPE TST
         043166' 104410
043170' 000144
043172' 012702
 10175
                                                                                                                                 TRAP
                                                                                                                                           C$ESCAPE
 10176
                                                                                                                                           L10153-.
                                                                                                                                 .WORD
 10177
                             000010
                                                 37$:
                                                           MOV
                                                                     #8..R2
                                                                                                   :MICROTEST #8 IS HUNG
 10178
         043176
                                                           ERRHRD 193, LNKARB, MSG12
 10179
         043176' 104456
                                                                                                                                 TRAP
                                                                                                                                           CSERHRD
 10180
         043200' 000301
                                                                                                                                           193
                                                                                                                                 .WORD
         043202 003334 043204 013500
 10181
                                                                                                                                 .WORD
                                                                                                                                           LNKARB
 10182
                                                                                                                                 .WORD
                                                                                                                                           MSG12
 10183
         043206
                                                           ESCAPE TST
 10184
         043206' 104410
                                                                                                                                 TRAP
                                                                                                                                           C$ESCAPE
 10185
         043210' 000124
                                                                                                                                 - WORD
                                                                                                                                           L10153-.
 10186
 10187
                                                  CHECK MICROCODE FINISH STATUS BY CHECKING PCSR1 STATE BITS FOR AN ERROR
 10188
                                                  : IF ERROR, PRINT ERROR MESSAGE
 10189
         043212' 122777
043220' 001013
043222' 013701
043226' 013702
043232' 013703
 10190
                             000003 135120
                                                           CMPB
                                                                     #INERR, aPCSR1
                                                                                                   ;DID AND ERROR OCCUR?
 10191
                                                                     50$
                                                                                                   ;NO
                                                           BNE
                                                                    FREMEM,R1
FREMEM+2,R2
FREMEM+4,R3
194,LNKARB,MSG20
                             000324'
 10192
                                                                                                   YES. GET EXPECTED DATA PATTERN
                                                           MOV
 10193
                                                           MOV
                                                                                                   GET BAD DATA
 10194
                             000330
                                                                                                   GET LINK MEMORY ADDRESS
                                                           MOV
 10195
          0432361
                                                           ERRHRD
                                                                                                   PRINT ERROR MESSAGE
         043236' 104456
043240' 000302
 10196
                                                                                                                                 TRAP
                                                                                                                                           CSERHRD
 10197
                                                                                                                                           194
                                                                                                                                 .WCRD
         043242' 003334' 043244' 014160'
 10198
                                                                                                                                           LNKARB
                                                                                                                                 .WO3D
 10199
                                                                                                                                 .WORD
                                                                                                                                           MSG20
          043246 000410
 10200
                                                           BR
                                                                     60$
```

| HARDWARE TESTS MACY11 3 CZUAAA.P11 11-JAN-83 | 30(1046) 11-JAN-8 09:29 T | 33 10:13 P/ EST 33: LIN | AGE 212 C MEMORY ARBITRATION TES | ST | | |
|---|------------------------------|--|---|---|---------------------------------|------------------------------------|
| 10201 10202 10203 | | CHECK DATA | THAT THE DMA ENGINE TRAN | NSFERRED TO UNIBUS MEMORY | | |
| 10204 043250' 013701 | | 0\$: MOV | FREMEM,R1 | GET POINTER TO DMA ENGI | NE BUFF | ER |
| 10202 10203 10204 043250' 013701 10205 043254' 062701 10206 043260' 012704 10207 043264' 012702 10208 043270' 111103 10209 043272' 120211 10210 043276' 104456 10213 043300' 000303 10214 043302' 003334' 10215 043304' 014250' 10216 043306' 005201 10217 043310' 005304 10218 043312' 001366 10219 10220 10221 10222 10224 043322' 104456 10225 043322' 104456 10227 043324' 000304 10228 043322' 104456 10227 043332' 104456 10230 043332' 10231 043332' 10232 043332' 10233 043332' 10234 043334' 10235 043334' 10235 043334' | 000006 003774 000017 | ADD MOV MOV MOVB CMPB BEQ | #6,R1 #3774,R4 #17,R2 (R1),R3 R2,(R1) 70\$ | :NUMBER OF BYTES :DATA THAT SHOULD BE IN :GET DATA FROM BUFFER :IS DATA CORRECT? :YES | BUFFER | |
| 10211 043276' 10212 043276' 104456 10213 043300' 000303 10214 043302' 003334' 10215 043304' 014250' | | ERRHI | RD 195,LNKARB,MSG21 | ;NO, PRINT ERROR | TRAP .WORD .WORD | CSERHRD 195 LNKARB MSG21 |
| 10216 043306' 005201 10217 043310' 005304 10218 043312' 001366 10219 10220 | : | OS: INC DEC BNE | R1 R4 60\$ | CONTINUE CHECKING | | |
| 10221 10222 | | | CLEAR 'DNI' | | | |
| 10223 043314' 004737 10224 043320' 103004 | 017374' 8 | 30 \$: JSR BCC | PC,CLRDNI 90\$ | CLEAR DNI BIT | | |
| 10223 043314' 004737 10224 043320' 103004 10225 043322' 10226 043322' 104456 10227 043324' 000304 10228 043326' 003334' 10229 043330' 012726' 10230 043332' 10231 043332' | | ERRHI | | ;ERROR DNI DID NOT CLEAF | TRAP .WORD .WORD .WORD | CSERHRD 196 LNKARB RACMG7 |
| 10230 043332' 10231 043332' | 9 | 00 \$: ENDSEG | | | . 40110 | and in |
| 10232 043332 104405 10234 043334 10235 043334 1 | r | | | 10001\$: | TRAP | C\$ESEG |
| 10235 043334° 10235 043334° 104401 | t | NDTST | | L10153: | TRAP | C\$ETST |

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                     11-JAN-83 09:29
                                                                TEST 34: STATION ADDRESS PATTERN TEST
                                                                .SBTTL TEST 34: STATION ADDRESS PATTERN TEST
 10238
 10239
  10240
 10241
10242
                                                                 WITHOUT EITHER THE PROMISCUIOUS MODE OR THE MULTICAST MODE ENABLED, THE LINK
                                                                LOGIC WILL RECOGNIZE DATAGRAM ADDRESSES ONLY IF THE ADDRESS IS CONTAINED IN
  10243
                                                                THE STATIJN ADDRESS RAM.
 10244
 10245
                                                                WHEN A DATAGRAM ARRIVES, THE LINK LOGIC COMPARES THE DATAGRAM DESTINATION ADDRESS FIELD TO THE 12 ADDRESSES WRITTEN IN THE STATION ADDRESS RAM. IF THE
 10246
                                                                INCOMING ADDRESS MATCHES ONE OF THESE, THEN THE DATAGRAM WILL BE ACCEPTED BY THE LINK. THE "MATCH" BIT IS SET IN THE TRANSMIT BUFFER AND THE RECEIVING
  10247
 10248
 10249
                                                                PROCESS BEGINS.
 10250
 10251
                                                                THIS TEST WILL VERIFY THAT THE LINK CAN RECOGNIZE A DATAGRAM WHEN THE
 10252
                                                                DESTINATION ADDRESS OF THE DATAGRAM MATCHES ONE OF THE ADDRESSES STORED IN
 10253
                                                                :THE STATION ADDRESS RAM.
 10254
                                                              THIS TEST WILL USE MICROMODULE 'E' MICROTEST #1.

PATTERNS WILL BE USED FOR ADDRESSES IN CHECKING THE STATION ADDRESS LOGIC.

THE PATTERNS WILL BE SUPPLIED TO THE T-11 THROUGH THE PCBB. THE MICROCODE

WILL BE RESTARTED FOR EACH DIFFERENT PATTERN TO BE TESTED. UPON START-UP, THE

T-11 PROCESSOR WILL PICK UP THE CURRENT PATTERN/ADDRESS, LOAD THE SAME PATTERN

INTO ALL 12 LOCATIONS OF THE STATION ADDRESS RAM, FORMAT THE TRANSMIT BUFFER

AND LOGIC FOR A LOOPBACK, PRESET PCSR1 TO AN ERROR CONDITION, START THE LINK

AND WAIT FOR THE MATCH BIT IN THE TRANSMIT BUFFER. IF THE MATCH BIT SETS
 10255
 10256
 10257
 10258
 10259
 10260
 10261
 10262
 10263
                                                                THE PCSR1 ERROR CONDITION IS CLEARED AND THE T-11 WAITS FOR BOTH THE
 10264
                                                                TRANSMITTER AND RECEIVER INTERRUPTS BEFORE IT SETS 'DNI' TO INDICATE THE
 10265
                                                                :TEST WAS SUCCESSFUL
 10266
 10267
                                                                :THE PCBB WILL BE USED TO PASS THE 48 BIT STATION ADDRESS PATTERN:
 10268
 10269
 15270
                                                                :PCBB+0:
                                                                                                  STATION ADDRESS LOW
 10271
 10272
                                                                                               STATION ADDRESS MIDDLE !
                                                                :PCBB+2:
 10273
 10274
                                                                :PCBB+4:
                                                                                                  STATION ADDRESS HIGH !
 10275
 10276
                                                               THE FOLLOWING PATTERNS WILL BE USED:

-ALTERNATING 1'S AND 0'S

-ALTERNATING 0'S AND 1'S

-PAIR OF 0'S FOLLOWED BY PAIR OF 1'S

-FOUR 0'S FOLLOWED BY FOUR 1'S

-EIGHT 0'S FOLLOWED BY EIGHT 1'S

-SIXTEEN 1'S FOLLOWED BY SIXTEEN 0'S FOLLOWED BY 16 1'S

-TWENTYFOUR 1'S FOLLOWED BY TWENTYFOUR 0'S
 10278
 10279
 10280
 10281
 10282
10283
 10284
 10285
                                                                :TEST SEQUENCE:
 10287.
10288
                                                                            1-LOAD MICRMODULE 'E' IF NOT ALREADY DONE SO
                                                                            2-LOAD PCBB+0,+2,+4 WITH A PATTERN
 10289
10290
10291
                                                                            3-WALT FOR MICROMONITOR TO ENTER THE 'INMON' STATE
                                                                            4-SELECT MICROTEST #1
                                                                            5-WAIT FOR 'DNI
 10292
                                                                            6-IF NO DNI AND PCSR1 INDICATES ERROR THEN PRINT NO MATCH BIT SET
```

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 214
CZUAAA.P11 11-JAN-83 09:29 TEST 34: STATION ADDRESS PATTERN TEST
 10293
10294
                                                                  7-IF NO DNI AND PCSR1 INDICATES NO ERROR THEN PRINT MATCH BIT SET BUT DATAGRAM WAS NOT RECEIVED.
 10294
10295
10296
10297
10298
10299
10300
10301
10302
10303
10304
                                                                  8-WRITE '1' TO CLEAR 'DNI'
9-REPEAT STEPS 2-8 FOR ALL SEVEN DATA PATTERNS
                                                         043336'
043336'
                                                         BGNTST
                                                                                                                                          134::
                                                         CHECK TO SEE IF MODULE 'E' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS. START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI'. AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
 10306
10307
10308
           043336'
043336' 104404
043340' 022737
043346' 001004
043350' 122777
043356' 001440
                                                            BGNSEG
                                                                                                                                                     TRAP
                                                                                                                                                                 C$BSEG
                                                                                                              ; HAS MICROCODE MODULE 'E' BEEN LOADED
                                                                                #'E,MICRO
  10309
                                  000105 0003261
                                                                     CMP
                                                                                                                   NO.
                                                                                 5$
  10310
                                                                     BNE
                                                                                                                  YES, IS THE MICROMONITOR ACTIVE?
YES SKIP LOADING THE MICROMODULE
GO LOAD MICRO MODULE 'E'
                                                                                #INMON, apcsr1
 10311
                                  000001 134762
                                                                     CMPB
  10312
                                                                     BEQ
                                                                                20$
          043360' 012737
043366' 004737
043372' 103002
043374'
                                                                                #'E.MICRO
  10313
                                  000105 000326' 5$:
                                                                     MOV
  10314
                                  0202521
                                                                     JSR
                                                                                PC,LODMIC
                                                                                10$
  10315
                                                                     BCC
                                                                                                                   : 0K
  10316
                                                                     ESCAPE TST
           043374' 104410
043376' 000266
043400' 012737
                                                                                                                                                     TRAP
                                                                                                                                                                 CSESCAPE
  10317
                                                                                                                                                                L10154-.
  10318
                                                                                                                                                      _ WORD
                                                                                #2*SECOND, METER : WAIT FOR THE MICROMONITOR
                                  000176 000332' 10$:
017330'
  10319
                                                                     MOV
                                                                                PC, CHKDNI
20$
  10320
           043406' 004737
                                                                     JSR
 10321
10322
10323
10324
10325
           043412' 103022
                                                                     BCC
                                                                                                                   :OK
           043414' 012737
043422' 012737
043430' 012737
043436' 012737
                                  000776' 000310' 001275' 000312' 001340' 000314' 001355' 000316'
                                                                                #SDNI,BITNAM
                                                                     MOV
                                                                                #$NSET, BITSTA
                                                                     MOV
                                                                     MOV
                                                                                #$AFTER, PWHEN
                                                                     MOV
                                                                                #$GTCMD, PCOMND
 10326
10326
10327
10328
10329
10330
10331
10332
          043444' 104456

043446' 000305

043450' 003400'

043452' 012750'

043454' 104410

043456' 000206

043466' 004737 017374'

043466' 103006

043466' 00306

043470' 000306

043472' 003400'

043476' 104410
           043444
                                                                     ERRHRD 197.STAPAT.MSG1
                                                                                                                                                     TRAP
                                                                                                                                                                 C$ERHRD
                                                                                                                                                      .WORD
                                                                                                                                                                 197
                                                                                                                                                                 STAPAT
                                                                                                                                                     .WORD
                                                                                                                                                     .WORD
                                                                                                                                                                 MSG1
                                                                     ESCAPE TST
                                                                                                                                                                 C$ESCAPE
                                                                                                                                                     TRAP
                                                                                                                                                     .WORD
                                                                                                                                                                 L10154-.
 10334
10335
10336
10337
10338
                                                                                PC_CLRDNI
25$
                                                         20$:
                                                                     JSR
                                                                                                 :CLEAR DNI BIT
                                                                     BCC
                                                                     ERRHRD 198, STAPAT, RACMG7 : DNI DID NOT CLEAR!
                                                                                                                                                                 CSERHRD
                                                                                                                                                     TRAP
                                                                                                                                                      .WORD
                                                                                                                                                                 198
                                                                                                                                                                 STAPAT
  10339
                                                                                                                                                      .WORD
                                                                                                                                                      .WORD
                                                                                                                                                                 RACMG7
                                                                     ESCAPE IST
  10341
           043476 104410
 10342
                                                                                                                                                                 CSESCAPE
                                                                                                                                                     TRAP
           043500° 000164
043502°
                                                                                                                                                                 L10154-.
                                                                                                                                                      .WORD
                                                         25$:
  10344
           0435021
                                                         ENDSEG
           0435021
                                                                                                                                          10000$:
  10346
                                                                                                                                                     TRAP
                                                                                                                                                                 CSE SEG
           0435021 104405
  10347
  10348
```

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HAPDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 215
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                                           TEST 34: STATION ADDRESS PATTERN TEST
 10349
10350
                                           ;SELECT ONE OF THE PATTERNS FROM THE STATION ADDRESS PATTERN TABLE AND LOAD
                                           IT INTO THE PCBB
10351
        043504' 012701
                         0005321
                                                            #SPAT1,R1
                                                   MOV
                                                                                      ; POINT TO STATION ADDRESS PATTERN TABLE
        043510' 012705
                          000007
                                                                                      # OF ADDRESS PATTERNS
                                                            #7.R5
                                                   MOV
                                                            (R1),PCBB
        043514' 011137
 10354
                         0006041
                                                                                      LOAD PCBB WITH AN ADDRESS PATTERN
                                                   MOV
 10355
        043520' 016137
                          000002
                                  0006061
                                                            2(R1)_P(BB+2
                                                   MOV
                                                                                      :MIDDLE ORDER
 10356
        043526' 016137
                                  0006101
                         000004
                                                   MOV
                                                            4(R1), PCBB+4
                                                                                      :UPPER ORDER
 10357
        0435341
                                             BGNSEG
 10358
        0435341 104404
                                                                                                                TRAP
                                                                                                                        CSBSEG
 10359
 10360
                                           WAIT FOR THE MICROMONITOR TO ENTER THE "INMON" STATE. SELECT MICROTEST #1
 10361
                                           BY LOADING PCSRO COMMAND FIELD BITS WITH A 1. WAIT FOR DNI.
 10362
        043536' 004737
                                                                                      :WAIT FOR MICROMONITOR
                         017776
                                                            PC.CHKMON
 10364
        043542' 103006
                                                                                      ;OK
                                                   BCC
 10365
        043544
                                                            199, STAPAT, MSG46
                                                   ERRHRD
                                                                                      :PRINT ERROR
 10366
        0435441 104456
                                                                                                                TRAP
                                                                                                                        CSERHRD
 10367
        043546' 000307
                                                                                                                .WORD
                                                                                                                        199
 10368
        043550' 003400'
                                                                                                                .WORD
                                                                                                                        STAPAT
        0435521
 10369
                016700'
                                                                                                                .WORD
                                                                                                                        MSG46
        0435541
 10370
                                                   ESCAPE TST
                                                                                      :LEAVE TEST
 10371
        0435541 104410
                                                                                                                TRAP
                                                                                                                        CSESCAPE.
 10372
        0435561 000106
                                                                                                                WORD
                                                                                                                        L10154-.
 10373
                                                                                      ; TELL T11 TO EXECUTE MICROTEST #1
        043560' 012777
                          000001 134550 30$:
                                                   MOV
                                                            #1,aPCSRO
                                  000332
 10374
        043566' 012737
                          000176
                                                            #2*SECOND, METER
                                                   MOV
                                                                                      :WAIT FOR DNI
 10375
        043574' 004737
                          0173301
                                                   JSR
                                                            PC, CHKDNI
10376
10377
10378
10379
        043600' 103015
                                                   BCC
                                           DNI DID NOT SET WHICH INDICATES THAT THE RECEIVE INTERRUPT NEVER HAPPENED.
                                           THE REASON MIGHT BE BECAUSE THE MATCH BIT NEVER SET IN THE TRANSMIT
                                           STATUS REGISTER INDICATING THAT THE STATION ADDRESS COMPARATOR FAILED TO RECOGNIZE THE DATAGRAM DESTINATION ADDRESS. THE MICROCODE CHECKS
 10380
 10381
 10382
                                           FOR THE MATCH BIT AND IF IT IS NOT SET IT PUTS AN ERROR STATUS IN PCSR1.
 10383
                                           IF PCSR1 DOES NOT HAVE AN ERROR STATE THEN THE RECEIVER INTERRUPT FAILED
 10384
                                           FOR SOME OTHER REASON AND ITS NOT THE STATION ADDRESS RECOGNITION'S FAULT.
 10385
                                                                                      :SEE IF ANY ERROR INTERRUPTS OCCURRED
 10386
        043602' 004737
                         020050
                                                    JSR
                                                            PC, CHKINT
 10387
        043606' 103006
                                                   BCC
                                                                                      :NO
        043610
 10388
                                                   ERRHRD
                                                            200, STAPAT, MSG44
                                                                                      PRINT ERROR MESSAGE
 10389
        043610' 104456
                                                                                                                TRAP
                                                                                                                        CSERHRD
        043612' 000310
                                                                                                                .WORD
 10390
                                                                                                                        200
        043614' 003400'
 10391
                                                                                                                        STAPAT
                                                                                                                .WORD
 10392
        043616' 016454'
                                                                                                                .WORD
                                                                                                                        MSG44
 10393
        0436201
                                                   ESCAPE TST
                                                                                      :LEAVE TST
 10394
        043620' 104410
                                                                                                                TRAP
                                                                                                                        C$ESCAPE
        043622' 000042
 10395
                                                                                                                .WORD
                                                                                                                        L10154-.
 10396
        0436241
                                                                                      :STATION ADDRESS PATTERN WAS NOT
                                           35$:
                                                    ERRHRD 201, STAPAT, MSG25
 10397
        043624' 104456
                                                                                                                TRAP
                                                                                                                        CSERHRD
                                                                                                                .WORD
 10398
        0436261 000311
                                                                                                                        201
 10399
        043630' 003400'
                                                                                                                .WORD
                                                                                                                        STAPAT
        0436321
                                                                                                                .WORD
                                                                                                                        MSG25
 10400
                0146261
 10401
                                                                                      :RECOGNIZED! ERROR!
 10402
                                           WRITE '1' TO CLEAR 'DNI'
 10403
 10404
```

| HARDWAR CZUAAA. | P11 1 | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN-85 10:1 TEST 34: | IS P | AGE 216 TION ADDRESS PATTERN TEST | | | | | | |
|--|--|--|-------------------|----------------------------|-------------------|--------------------------------------|-----------|------------------|-----------------|------------|-----------------------------|------------------------------------|
| 10405 | 043634' 043640' | 004737 103004 | 017374' | 405: | JSR | PC_CLRDNI 50\$ | CLEAR DI | NI BIT | | | | |
| 10406 10407 10408 10409 10410 10411 | 043642' 043642' 043644' 043646' | 104456 000312 003400' 012726' | | | BCC ERRH | | ;ERROR DI | NI DID | NOT C | 1 | RAP WORD WORD WORD | CSERHRD 202 STAPAT RACMG7 |
| 10412 10413 10414 10415 10416 | 043652° 043652° 043652° | 104405 | | 50 \$: ENDSE(| G | | | | 1000 | | TRAP | C\$ESEG |
| 10417 10418 | | | | REPEAT | THE | TEST WITH ALL SEVEN PATTER | RNS | | | | | |
| 10419 10420 10421 10422 | 043654' 043660' 043662' | 062701 005305 001314 | 000006 | • | ADD DEC BNE | #6,R1 R5 27\$ | POINT TO | D NEXT WITH A | PATTE LL ADD | RN RESS | PATTE | RNS? |
| 10424 10424 10425 | 043664° 043664° 043664° | 104401 | | ENDIST | | | | | L101 | | TRAP | C\$ETST |

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CZUAAA.P11
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                                                             TEST 35: STATION ADDRESS REJECTION TEST
 19426
19427
19428
                                                              .SBITL TEST 35: STATION ADDRESS REJECTION TEST
 10429
                                                              THIS TEST WILL VERIFY THAT THE STATION ADDRESS DETECTION LOGIC DOES NOT
 10431
                                                              RECOGNIZE A DATAGRAM WHEN THE DATAGRAM ADDRESS IS NOT CONTAINED IN THE
 10432
                                                              STATION ADDRESS RAM.
 10433
 10434
                                                             THE MICROCODE WILL FILL THE STATION ADDRESS RAM WITH 0'S. THE DESTINATION FIELD OF THE TRANSMIT BUFFER IS FILLED WITH 1'S. A TRANSMISSION IS STATED IN LOOPBACK MODE AND THE T-11 WILL WAIT FOR A RECEIVER INTERRUPT. OF COURSE,
 10435
 10436
                                                             THE RECEIVER INTERRUPT SHOULD NEVER HAPPEN BECAUSE THE STATION ADDRESS LOGIC SHOULD NOT GET A SUCCESSFUL COMPARISON BETWEEN O'S IN THE DESTINATION ADDRESS OF THE INCOMING DATAGRAM AND THE 1'S IN THE STATION ADDRESS RAM. THE T-11 WILL BE PUT INTO A LOOP WAITING FOR A RECEIVER INTERRUPT AND THE
 10437
 10438
 10439
 10440
 10441
                                                             DEUNA TIMER IS STARIED. IF THE LOOP IS BROKEN BY THE RECEIVER INTERRUPT AN ERROR WILL BE PRESENTED IN POSRI BY THE MICROCODE. IF THE LOOP IS BROKEN
 10442
 10443
                                                              BY THE TIMER THEN THE TEST WAS SUCCESSFUL.
 10444
 10445
                                                              :TEST SEQUENCE:
 10446
                                                                          1-LOAD MICROMODULE 'E' IF NOT ALREADY DONE SO
 10447
                                                                          2-WAIT FOR THE MICROMONITOR TO ENTER THE 'INMON' STATE
 10448
                                                                          3-SELECT MICROTEST #2
 10449
                                                                          4-WAIT FOR 'DNI
 10450
10451
10452
10453
                                                                         5-CHECK PCSR1 FOR AN ERROR CONDITION 6-WRITE '1' TO CLEAR 'DNI'
10454
10455
10456
10457
10458
10459
           0436661
                                                             BGNTST
           0436661
                                                                                                                                                   T35::
                                                             CHECK TO SEE IF MODULE 'E' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS. START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI'. AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
 10460
 10461
 10462
           043666
                                                                BGNSEG
           043666' 104404
043670' 022737
 10463
                                                                                                                                                                TRAP
                                                                                                                                                                            C$BSEG
 10464
                                                                                     #"E,MICRO
                                    000105 000326
                                                                         CMP
                                                                                                                           :HAS MICROCODE MODULE 'E' BEEN LOADED
           043676' 001004
 10465
                                                                         BNE
                                                                                      5$
                                                                                                                           :NO
           043700' 122777
                                                                                                                          YES, IS THE MICROMONITOR ACTIVE?
YES SKIP LOADING THE MICROMODULE
GO LOAD MICRO MODULE 'E'
                                    000001 134432
                                                                                      #INMON, aPCSR1
                                                                          CMPB
           043706' 001440
 10467
                                                                                      20$
                                                                         BEQ
           043710' 012737
043716' 004737
 10468
                                    000105 000326' 5$:
                                                                          MOV
                                                                                      #'E.MICRO
 10469
10470
                                    0202521
                                                                                      PC,LODMIC
                                                                          JSR
           043722 103002
043724 104410
                                                                         BCC
                                                                                      10$
                                                                                                                           : 0K
10471
10472
10473
                                                                         ESCAPE
                                                                                     TST
                                                                                                                                                                TRAP
                                                                                                                                                                            C$ESCAPE
           043726' 000255
043730' 012737
                                                                                                                                                                .WORD
                                                                                                                                                                           L10155-.
 10474
                                    000176 000332 10$:
                                                                                      #2*SECOND_METER
                                                                         MOV
                                                                                                                           :WAIT FOR THE MICROMONITOR
           043736' 004737
043742' 103022
043744' 012737
043752' 012737
043760' 012737
 10475
                                                                                     PC CHKDNI
                                    017330
                                                                          JSR
 10476
                                                                         BCC
                                                                                                                           : 0K
                                                                                     #$DNI,BITNAM
#$NSET,BITSTA
#$AFTER,PWHEN
                                    000776' 000310' 001275' 000312' 001340' 000314'
 10477
                                                                         MOV
 10478
                                                                         MOV
 10479
                                                                         MOV
                                    001355' 000316'
 10480
            043766' 012737
                                                                                      #SGTCMD_PCOMND
                                                                         MOV
 10481
            043774
                                                                                     203, STAREJ, MSG1
                                                                         ERRHRD
```

| HARDWARE CZUAAA.F | TESTS | MACY11 I-JAN-83 | 30(1046) 09:29 | 11-JAN | -83 10: TEST 35 | 13 PAGE : STATIO | 218 IN ADDRESS REJECTION TEST | | | |
|---|---|--|-------------------|---------|--------------------|----------------------|---------------------------------------|---|---------------------------------|-------------------------------------|
| 10482 10483 10484 10485 | 043774° 043776° 044000° 044002° | 104456 000313 003444' 012/50' | | | | ESCAPE | TCT | | TRAP .WORD .WORD .WORD | CSERHRD 203 STAREJ MSG1 |
| 10487 10488 10489 | 044004' | 104410 000176 004737 | 017374 | | 20\$: | JSR | PC, CLRDNI | :CLEAR DNI BIT | TRAP.WORD | C\$ESCAPE L10155 |
| 10490 | 044014' | 103006 | | | | BCC ERRHRD | 25\$ 204,STAREJ,RACMG7 | :DNI DID NOT CLEAR! | | |
| 10492 | 044016' 044020' 044022' 044026' 044026' | 104456 | | | | | | , UNI DID NOT CLEAR. | TRAP .WORD .WORD .WORD | C\$ERHRD 204 STAREJ RACMG7 |
| 10497 10498 10498 | 044026' 044030' 044032' | 104410 000154 | | | 25\$: | ESCAPE | 131 | | TRAP.WORD | CSESCAPE L10155 |
| 10500 | 0440321 | | | | ENDSE | G | | 40000 | | |
| 10501 10502 10503 | 044032' 044032' | 104405 | | | • | | | 10000\$: | TRAP | C\$ESEG |
| 10504 10505 10506 | | | | | WAIT F BY LOA | OR THE M DING PLS | IICROMONITOR TO ENTER THE RO WITH A 2 | "INMON" STATE, SELECT M | ICROTEST | #2 |
| 10507 | 0440341 | 404404 | | | BGNSE | G | | | *** | 1 4 0.55 |
| 10508 10509 10510 | 044034' 044036' 044044' | 104404 004737 103006 | 017776 | | | JSR BCC | PC,CHKMON 30\$ | :WAIT FOR MICROMONITOR | TRAP | C\$BSEG |
| 10511 10512 | 044044 | 104456 | | | | ERRHRD | 205,STAREJ,MSG46 | PRINT ERROR | TRAP | C\$ERHRD |
| 10513 10514 10515 | 044046' 044050' 044052' | 003444 | | | | | | | .WORD .WORD .WORD | 205 STAREJ MSG46 |
| 10516 10517 | 044054' | 104410 | | | | ESCAPE | TST | :LEAVE :EST | TRAP | C\$ESCAPE |
| 10518 | 044056 | 000126 | 000275 | 0007721 | 706. | MOV | M7.CECOND METED | .TIMEOUT MUCT DE CDEATE | .WORD | L10155 |
| 1051 9 10520 | 044060 | | 000275 | | 3∪≱ : | MOV | #3*SECOND, METER | :TIMEOUT MUST BE GREATE :PERIOD IN THE MICROCOD :TELL T11 TO EXECUTE MI | E. | IMEK |
| 10521 10522 10523 | 044066' | 012777 004737 | 000002 017330 | 134242 | | MOV JSR | #2.aPCSRO PC.CHKDNI | ; TELL TIL TO EXECUTE MI ; WAIT FOR DNI | LROTEST | # 2 |
| 10524 10525 10526 | 044100' 044102' 044106' | 103021 004737 103006 | 020050 | | | BCC JSR BCC | 40\$ PC.CHKINT 35\$ | ;SEE IF ANY ERROR INTER | RUPTS OC | CURRED |
| 10521 10522 10523 10524 10525 10526 10527 10528 10529 10531 10531 | 044110' 044112' 044114' 044116' | 104456 000316 | | | | ERRHRD | 206,STAREJ,MSG44 | PRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 206 STAREJ MSG44 |
| 10532 | 044120' | | | | • | ESCAPE | 151 | | TRAP | CSESCAPE |
| 10534 10535 | 044122' | 000062 | 000002 | | 35\$: | MOV | #2,R2 | ;MICROTEST #2 IS HUNG | WORD | 110155 |
| 10536 10537 | 044130° 044130° | 104456 | | | | ERRHRD | 207,STAREJ,MSG12 | | TRAP | CSERHRD |

| HARDWAR CZUAAA. | E TESTS MACY ¹ P11 11-JAN | 11 30(1046) -83 09:29 | 11-JAN | -83 10: TEST 35 | 13 PAGE : STATIO | 219 N ADDRESS REJECTION T | TEST | | |
|--|--|--------------------------|--------|------------------------|---------------------|---|--|---------------------------------------|-------------------------------|
| 10538 10539 10540 | 044132' 00031 044134' 00344 044136' 01350 044140' | 44' | | | ESCAPE | TCT | | .WORD .WORD .WORD | 207 STAREJ MSG12 |
| 10542 10543 10544 | 044140 10441 | | | | LJUAFE | | | TRAP.WORD | CSESCAPE L10155 |
| 10545 10546 10547 | | | | OK 'DN BROKE | I SET I | NDICATING EITHER THE , CHECK PCSR1 TO FIND | RECEIVER INTERRUPT HAPPENED D OUT WHICH | OR THE | TIMER |
| 10548 | 044144° 12277 044152° 00100 | | 134166 | 40\$: | CMPB | #INERR, aPCSR1 | :DID AN ERROR OCCUR? | | |
| 10549 10541 10542 10543 10544 10545 10546 10549 10551 10551 10553 10554 | 044154' 1044! 044154' 1044! 044156' 00033 044160' 00344 | 66 20 | | | BNE ERRHRD | 50\$ 208,STAREJ | ;NO ;YES, PRINT ERROR MESSA | GE TRAP .WORD .WORD .WORD | CSERHRD 208 STAREJ 0 |
| 10554 10555 10556 10557 10558 | | | | WRITE | '1' TO C | LEAR 'DNI' | | | |
| 10558 | 044164 0047 | 7 017374 | | 5 0 \$: | JSR | PC, CLRDNI | CLEAR DNI BIT | | |
| 10559 10560 10561 10562 10563 10564 10565 10566 | 044170' 10300 044172' 044172' 1044! 044174' 00332 | 56 21 44 | | | BCC ERRHRD | 60\$ 209,STAREJ,RACMG7 | ;ERROR DNI DID NOT CLEA | TRAP .WORD .WORD | CSERHRD 209 STAREJ |
| 10565 10566 | 044200' 01272 044202' 044202' | 26 * | | 60\$: ENDSE | G | | | .WORD | RACMG7 |
| 10568 | 044202' 044202' 1044(044204' |)5 | | ENDIST | | | 10001\$: | TRAP | C\$ESEG |
| 10569 10570 10571 | 044204° 044204° 10440 |)1 | | | | | L10155: | TRAP | CSETST |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 FAGE 220 EZUAAA.P11 11-JAN-83 09:29 TEST 36: STATION ADI
                                                 TEST 36: STATION ADDRESS RAM POSITION TEST
 10572
10573
10574
10575
                                                  .SBITL TEST 36: STATION ADDRESS RAM POSITION TEST
 10576
                                                  :THE STATION ADDRESS RAM CAN HOLD UP TO 12 STATION ADDRESSES. WHEN A DATAGRAM
 10577
                                                  IS RECEIVED THE STATION ADDRESS COMPARISON LOGIC DOES A BIT-WISE COMPARISON
 10578
                                                  OF ALL 12 RAM STATION ADDRESS WITH THE INCOMING DATAGRAM STATION ADDRESS.
 10579
 10580
                                                 :THIS TEST WILL VERIFY THAT THE DEUNA CAN RECOGNIZE A STATION ADDRESS
 10581
                                                  REGARDLESS OF THE LOCATION OF THE ADDRESS IN THE STATION ADDRESS RAM.
 10582
 10583
                                                 THIS TEST WILL USE MICROMODULE 'E' MICROTEST #3. THE MICROCODE WILL WRITE A STATION ADDRESSES OF ALL 1'S INTO A SINGLE LOCATION OF THE STATION ADDRESS.
 10584
                                                 RAM. THE OTHER ELEVEN LOCATION WILL BE LOADED WITH O'S. A DATAGRAM WITH
 10585
 10586
                                                 :AN ALL 1'S DESTINATION ADDRESS WILL BE TRANSMITTED IN LOOPBACK MODE. THE TEST
 10587
                                                  WILL VERIFY THAT THE DATAGRAM IS RECEIVED. THE TEST WILL BE REPEATED FOR ALL
 10588
                                                  TWELVE LOCATIONS OF THE STATION ADDRESS RAM.
 10589
 10590
                                                 THE MICROTEST WILL BE REPLATED FOR EACH OF THE 12 TEST ITERATIONS. THE PCBB
 10591
                                                 :WILL BE USED TO PASS TO THE MICROCODE WHICH POSITION IS TO BE LOADED WITH
                                                 ;1'S. WHEN THE STATION ADDRESS IS LOADED, THE STATION ADDRESSES MUST BE ROTATED ORTHOGONALLY, I.E. BIT O OF ALL STATION ADDRESSES LOADED TOGETHER, THEN BIT 1, THEN BIT 2 ETC. THIS MAKES IT DIFFICULT TO DESCRIBE THE POSITION
 10592
 10593
 10594
 10595
                                                  OF ANY SINGLE STATION ADDRESS IN TERMS OF AN OFFSET FROM THE RAM BASE ADDRESS.
 10596
 10597
                                                  :THE PCBB IS FORMATTED AS FOLLOWS:
 10598
 10599
 10600
                                                                         RAM ADDRESS POSTION !
                                                  :PCBB+0:
 10601
 10602
 10603
                                                  :TEST SEQUENCE:
                                                           1-LOAD MICROMODULE 'E' IF NOT ALREADY DONE SO.
2-LOAD PLBB+O WITH THE RAM POSTION TO BE TESTED
3-WAIT FOR THE MICROMONITOR TO ENTER THE 'INMON' STATE
 10604
 10605
 10606
 10607
                                                           4-SELECT MICROTEST #3
 10608
                                                           5-WAIT FOR 'DNI'
 10609
                                                           6-CHECK PCSR1 FOR AN ERROR CONDITION 7-WRITE '1' TO CLEAR 'DNI'
 10610
 10611
                                                           8-REPEAT STEPS 2-7 FOR ALL 12 RAM POSTIONS
 10612
 10613
 10614
 10615 0442061
                                                 BGNTST
         0442061
 10616
                                                                                                                       136::
 10617
                                                 CHECK TO SEE IF MODULE 'E' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS, START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI'.
 10618
 10619
 10620
                                                 AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
 10621
 10622
         044206
                                                   BGNSEG
 10623
         044206' 104404
                                                                                                                                 TRAP
                                                                                                                                          C$BSEG
         044210' 022737
 10624
                             000105 000326
                                                                                                   ; HAS MICROCODE MODULE "E" BEEN LOADED
                                                           CMP
                                                                     #'E,MICRO
         044216' 001004
 10625
                                                                     5$
                                                                                                   ;NO
                                                           BNE
                                                                                                   :YES, IS THE MICROMONITOR ACTIVE?
         044220' 122777
 10626
                             000001 134112
                                                                     #INMON, aPCSR1
                                                           CMPB
         044226' 001440
 10627
                                                           BEQ
                                                                     20$
                                                                                                   YES SKIP LOADING THE MICROMODULE
```

| HARDWARE TESTS MACY11 30(1046) 11 CZUAAA.P11 11-JAM-33 09:29 | -JAN-83 10:13 PAG TEST 36: STATI | SE 221 ION ADDRESS RAM POSITION | I TEST | | |
|---|---------------------------------------|---|--|---------------------------------|------------------------------------|
| 10629 044236' 004737 020252' | 326' 5\$: MOV JSR BCC ESCAPE | #'E,MICRO PC,LODMIC 10\$ TST | :GO LOAD MICRO MODULE 'E | TRAP | C \$ ESCAPE |
| 10633 044246' 000306 10634 044250' 012737 000176 000 10635 044256' 004737 017330' 10636 044262' 103022 10637 044264' 012737 000776' 000 10638 044272' 012737 001275' 000 | 312' MOV 314' MOV | #2*SECOND, METER PC, CH (DNI 20\$ #\$DNI, BITNAM #\$NSET, BITSTA #\$AFTER, PWHEN #\$GTCMD, PCOMND 210, STAPOS, MSG1 | | .WORD | L10156 |
| 10642 044314' 104456 10643 044316' 000322 10644 044320' 003512' 10645 044322' 012750' | 555405 | | | TRAP .WORD .WORD .WORD | CSERHRD 210 STAPOS MSG1 |
| 10647 044324° 104410 10648 044326° 000226 | ESCAPE 20\$: JSR BCC | PC,CLRDNI 25\$ | | TRAP .WORD | C\$ESCAPE L10156 |
| 10651 044336' 10652 044336' 104456 10653 044340' 000323 10654 044342' 003512' 10655 044344' 012723' | ERRHRI | | | TRAP .WORD .WORD .WORD | CSERHRD 211 STAPOS RACMG7 |
| 10656 044346' 10657 044346' 104410 10658 044350' 000204 10659 044352' 10660 044352' | ESCAPE 25 \$: ENDSEG | : 151 | | TRAP.WORD | CSESCAPE L10156 |
| 10661 044352' 10662 044352' 104405 10663 | <u>:</u> | Tus Dam Doction to D | | TRAP | C\$ESEG |
| 10664 10665 10666 044354' 012701 000001 10667 044360' | RT WILL CONTA | AIN THE RAM POSTION TO B | BEGIN WITH RAM POSTION | # 1 | |
| 10668 10669 10670 10671 10672 | THE RAM POST | MICROMONITOR TO ENTER T ION TO BE TESTED, SELECT 3, AND WAIT FOR "DNI" T | THE 'INMON' STATE, LOAD PCBB MICROTEST #3 BY LOADING PC O SET. | WITH SRO COM | 1MAND |
| 10673 044360' 10674 044360' 104404 10675 044362' 004737 017776' 10676 044366' 103006 | BGNSEG JSR BCC | PC.CHKMON | ;WAIT FOR MICROMONITOR :OK | TRAP | C\$BSEG |
| 10677 044370' 10678 044370' 104456 10679 044372' 000324 | ERRHRI | 212,STAPOS,MSG46 | | TRAP .WORD .WORD | CSERHRD 212 STAPOS MSG46 |
| 10680 044374 003512 10681 044376 016700 10682 044400 10683 044400 104410 | ESCAPI | T ST | :LEAVE TEST | TRAP | C\$ESCAPE |

| HARDW/RE TESTS MACY11 30(1046) 11-JAN CZUAAA.P11 11-JAN-83 09:29 | 4-83 10:13 PAGE 222 TEST 36: STATION ADDRESS RAM POSITION TO | |
|--|---|---|
| 10684 044402' 000152 10685 044404' 010137 000604' 10686 044410' 012777 000003 133720 10687 044416' 012737 000275 000332' 10688 044424' 004737 017330' | | :TELL MICROCODE WHICH RAM POSTION TO USE :TELL TIT TO EXECUTE MICROTEST #3 :WAIT FOR DNI |
| 10689 044430' 103021 10690 044432' 004737 020050' 10691 044436' 103006 10692 044440' | BCC 40\$ JSR PC,CHKINT BCC 36\$ | :SEE IF ANY ERROR INTERRUPTS OCCURRED :NO. OK |
| 10693 044440* 104456 10694 044442* 000325 10695 044444* 003512* 10696 044446* 016454* | ĒRRHRD 213,STAPOS,MSG44 | ;NO, OK ;PRINT ERROR MESSAGE TRAP C\$ERHRD .WORD 213 .WORD STAPOS .WORD MSG44 |
| 10697 044450' 10698 044450' 104410 10699 044452' 000102 10700 044454' 012702 000003 10701 044460' 10702 044460' 104456 | ESCAPE TST 36\$: MOV #3,R2 ERRHRD 214,STAPOS,MSG12 | TRAP CSESCAPE .WORD L10156 |
| 7/1//14 //////////////////////////////// | | TRAP CSERHRD .WORD 214 .WORD STAPOS .WORD MSG1? |
| 10706 044470' 10707 044470' 104410 10708 044472' 000062 | ESCAPE TST | TRAP CSESCAPE .WORD L10156 |
| 10709 10710 | CHECK POSRT TO SEE IF THE DATAGRAM WAS | RECEIVED |
| 10704 044464' 003512' 10705 044466' 013500' 10706 044470' 10707 044470' 104410 10708 044472' 000062 10709 10710 10711 10712 044474' 122777 600003 133636 10713 044502' 001004 10714 044504' 10715 044504' 104456 | 40\$: CMPB #INERR,@PCSR1 BNE 45\$ ERRHRD 215,STAPOS,MSG26 | :DID AN ERROR OCCUR? :NO :PRINT ERROR MESSAGE |
| 10715 044504' 104456 10716 044506' 000327 10717 044510' 003512' 10718 044512' 015014' | | TRAP (\$ERHRD .WORD 215 .WORD STAPOS .WORD MSG26 |
| 10719 044514' 10720 044514' | 45 \$: ENDSEG | 10001\$: |
| 107 1 0445141 1672 0445141 104405 10723 | • | TRAP CSESEG |
| 10724 10725 | WRITE '1' TO CLEAR 'DNI' | |
| 10726 044516' 10727 044516' 104404 10728 044520' 004737 017374' 10729 044524' 103006 | BGNSEG JSR PC_CLRDNI BCC 50\$ | GO CLEAR DNI |
| 10730 044526° 10731 044526° 104456 10732 044530° 000330 | ERRHRD 216, STAPOS, RACMG7 | :OK :ERROR OCCURRED PRINT MESSAGE TRAP CSERHRD .bORD 216 .WORD STAPOS .WORD RACMG7 |
| 10733 044532 003512 10734 044534 012726 10735 044536 10736 044536 104410 10737 044540 000014 10738 044542 | ESCAPE TST | TRAP (SESCAPE |
| 10738 044542° 10739 044542° | 50 \$: ENDSEG | |

| HARDWARE TESTS CZUAAA.P11 11 | MACY11 30(1046) -JAN-83 09:29 | 11-JAN-83 10:13 TFST 36: S | PAGE 223 STATION ADDRESS RAM POSITION | TEST | |
|--|-----------------------------------|-------------------------------|---------------------------------------|---|-------------|
| 10740 044542° 10741 044542° 10742 10743 | 104405 | REPEAT TE | EST FOR ALL 12 RAM POSTIONS | 10002\$: | TRAP LSESEG |
| 10745 044544 ' 10746 044546 ' | 005201 020127 000014 103702 | ; IN CM BL ENDIST | MP R1,#12. | DO NEXT RAM POSTION; HAVE WE DONE ALL 12 RAM NO KEEP GOING | 1 POSTIONS? |
| | 104401 | | | L10156: | TRAP CSETST |

-≪ <u>1</u>

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 224
CZUAAA.P11
              11-JAN-83 09:29
                                                TEST 37: MULTICAST ADDRESS TEST
 10751
                                                .SBTTL TEST 37: MULTICAST ADDRESS TEST
 10752
 10754
10755
                                                MULTICAST ADDRESSING PERMITS THE DEUNA TO RESPOND TO MESSAGES AIMED AT LOGICALLY RELATED DEVICES ON THE NETWORK. THE MSB OF THE DESTINATION ADDRESS
 10756
 10757
                                                OF THESE MESSAGES IS A 1. THIS BIT IS DETECTED BY THE ADDRESS REGOGNITION
 10758
                                                :LOGIC.
 10759
 10760
                                                :THIS TEST WILL VERIFY THAT THE DEUNA CAN RECOGNIZE AND ACCEPT MESSAGES WITH
 10761
10762
                                                THE MULTICAST BIT DESIGNATION.
 10763
                                                THIS TEST WILL USE MICROMODULE 'E' MICROTEST #4.
 10764
                                                THE MICROCODE WILL PREPARE A DATAGRAM WITH THE DESTINATION ADDRESS HAVING THE MULTICAST BIT SET. THE DEUNA WILL BE SETUP IN LOOPBACK MODE WITH "ENABLE
                                                ; ALL MULTICAST. THE DATAGRAM WILL BE TRANSMITTED AND THE T-11 WILL BE PUT IN
 10766
 10767
10768
                                                :A LOOP WAITING FOR A RECEIVER INTERRUPT. THE TIMER WILL INTERRUPT THE LOOP
                                                IF THE RECEIVER INTERRUPT DOES NOT OCCUR. IF THIS HAPPENS, POSRI WILL INDICATE AN ERROR, OTHERWISE WHEN THE RECEIVER INTERRUPT OCCURS IT WILL BREAK THE LOOP
 10769
 10770
                                                AND POSRI WILL INDICATE A SUCCESSFULL COMPLETION OF THE TEST.
 10771
 10772
                                                :TEST SEQUENCE:
 10773
                                                         1-LOAD MICROMODULE 'E' IF NOT ALREADY DONE SO
                                                         2-WAIT FOR MICROMONITOR TO ENTER THE 'INMON' STATE
 10774
                                                         3-SELECT MICROTEST #4
 10775
 10776
                                                         4-WAIT FOR 'DNI'
 10777
                                                         5-CHECK PCSR1 FOR AN ERROR CONDITION
 10778
                                                         6-WRITE '1' TO CLEAR 'DNI'
 10779
 10780
                                                10781
 10782
         0445561
                                               BGNTST
 10783
         0445561
                                                                                                                   T37::
 10784
                                               CHECK TO SEE IF MODULE 'E' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS. START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI'. AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
 10785
 10786
 10787
 10788
 10789
         0445561
                                                  BGNSEG
         044566°
044566°
 10790
                  104404
                  022737
                                                                                                :HAS MICROCODE MODULE 'E' BEEN LOADED
                            000105 0003261
                                                         CMP
                                                                   M'E,MICRO
 10792
                  001004
                                                         BNE
                                                                                                :NO
                                                                   5$
 10793
10794
         0445701
                                                                                               YES, IS THE MICROMONITOR ACTIVE? YES SKIP LOADING THE MICROMODULE
                                                                   #INMON, aPCSR1
                                                         CMPB
                   122777
                             000001 133542
         0445761
                   001440
                                                         BEQ
                                                                   20$
 10795
         044600
                   012737
                                                                                                GO LOAD MICRO MODULE 'E
                                                         MOV
                                                                   #'E,MICRO
                             000105 000326 58:
 10796
10797
798
                                                                   PC,LODMIC
10$
                   004737
                             0202521
         044606
                                                         JSR
         044612
                   103002
                                                         BCC
                                                                                                : 0K
         0446141
                                                         ESCAPE
                                                                   151
 10.99
         044614 1
                   104410
                                                                                                                            TRAP
                                                                                                                                      CSESCAPE
                  000256
 106 70
         0446161
                                                                                                                             .WORD
                                                                                                                                      L10157-.
 1080.
         044620
                             000176 000332 10$:
                                                         MOV
                                                                   #2*SECOND_METER
                                                                                               :WAIT FOR THE MICROMONITOR
         044626
                                                                   PC CHKDNI
20$
 10802
                   104737
                             0173301
                                                         JSR
 10803
         0446321
                   103022
                                                         BCC
                                                                                                : 0K
                                                                   #$DNI.BITNAM
#$NSET.BITSTA
         044634' 012737
                            000776' 000310'
001275' 000312'
 10804
                                                         MOV
 10805
                                                         MOV
         044650' \12737
                             001340' 000314'
                                                                   #SAFTER, PWHEN
 10806
                                                         MOV
```

| HARDWARE TESTS MACY1: 30(1046) 11-JACZUAAA.P11 11-JAN-33 09:29 | N-83 10:13 PAG TEST 37: MULTI | E 225 CAST ADDRESS TEST | | | |
|--|----------------------------------|-----------------------------|----------------------------|---------------------------------|------------------------------------|
| 10807 044656' 012737 001355' 000316 | MOV ERRHRD | #\$GTCMD,PCOMND | | | |
| 10809 044664' 104456 10810 044666' 000331 10811 044670' 003563' 10812 044672' 012750' | - | | | TRAP .WORD .WORD .WORD | CSERHRD 217 MUCAST MSG1 |
| 10813 044674' 10814 044674' 104410 | ESCAPE | 151 | | TRAP | CSESCAPE |
| 10815 044676' 000176 10816 044700' 004737 017374' 10817 044704' 103006 | 20\$: JSR BCC | PC,CLRDNI 25\$ | CLEAR DNI BIT | .WORD | L10157 |
| 10818 044706' 10819 044706' 104456 10820 044710' 000332 10821 044712' 003563' 10822 044714' 012726' | ERRHRD | 218, MUCAST, RACMG7 | ;DNI DID NOT CLEAR! | TRAP .WORD .WORD .WORD | CSERHRD 218 MUCAST RACMG7 |
| 10823 044716' 10824 044716' 104410 | ESCAPE | TST | | ; QAP | C\$ESCAPE |
| 10825 044720' 000154 10826 044722' | 25 \$: | | | .WORD | L10157 |
| 10827 044722 ' 10828 044722 ' | ENDSEG | | 10000\$: | | |
| 10829 044722° 104405 10830 | : | | | TRAP | C\$ESEG |
| 10831 10832 | WAIT FOR THE | MICROMONITOR TO ENTER TH | E 'INMON' STATE | | |
| 10833 044724' 10834 044724' 104404 10835 044726' 004737 017776' 10836 044732' 103006 | BGNSEG | PC,CHKMON 30\$ | :WAIT FOR MICROMONITOR | TRAP | C\$BSEG |
| 10839 044736' 000333 10840 044740' 003563' 10841 044742' 016700' | BCC ERRHRD | 219,MUCAST,MSG46 | OK PRINT ERROR | TRAP .WORD .WORD | CSERHRD 219 MUCAST MSG46 |
| 10842 044744° 10843 044744° 104410 10844 044746° 000126 10845 044750° | ESCAPE 30\$: | 151 | :LEAVE TEST | TRAP.WORD | C\$ESCAPE L10157 |
| 10846 10847 | EXECUTE MICRO | TEST #4 BY LOADING THE CO | DMMAND FIELD OF PCSRO WITH | 4 A 4 | |
| 10848 10849 044750° 012777 000004 133360 | , mov | #4,aPCSRO | :TELL T11 TO EXECUTE MIC | CROTEST | #4 |
| 10850 10851 10852 10853 | | 3 SECONDS FOR TEST TO FI | INISH BECAUSE MICROCODE WA | AITS 2 S | SECONDS |
| 10855 10854 044756' 012737 000275 000332 10855 044764' 004737 017330' | JSR | #3*SECOND, METER PC, CHKDN1 | ; WAIT FOR DNI | | |
| 10854 044756' 012737 000275 000332 10855 044764' 004737 017330' 10856 044770' 103021 10857 044772' 004737 020050' 10858 044776' 103006 10859 045000' 104456 | B(C JSR B(C | 40\$ PC,CHKINT 35\$ | SEE IF ANY ERROR INTERF | RUPTS OC | CURRED |
| 10859 045000° 10860 045000° 104456 10861 045002° 000334 10862 045004° 003563° | ERRHRD | 220,MUCAST,MSG44 | PRINT ERROR MESSAGE | TRAP .WORD .WORD | CSERHRD 220 MUCAST |

| HARDWARE TESTS MACY11 30(1046) CZUAAA.P11 11-JAN-83 09:29 | 11-JAN-83 10:13 PAGE 226 TEST 37: MULTICAST ADDRESS | TEST | |
|---|--|--|----|
| 10863 045006' 016454' 10864 045010' | ESCAPE TST | .WORD MSG44 | 4 |
| 10865 045010' 104410 10866 045012' 000062 10867 045014' 012702 000004 10868 045020' | 35\$: MOV #4,R2 ERRHRD 221,MUCAST, | TRAP (SES) .WORD L1015 | |
| 10869 045020' 104456 10870 045022' 000335 10871 045024' 003563' 10872 045026' 013500' 10873 045030' | | TRAP (\$ERFWORD 221WORD MUCASWORD MSG12 | ST |
| 10874 045030 104410 10875 045032 000042 10876 10877 10878 10879 10880 045034 122777 000003 | ESCAPE TST | TRAP CSESC .WORD L1015 | |
| 10877 10878 10879 | OK, EITHER THE TIMER BROKE WHICH WAS IT? | THE LOOP OR THE RECEIVER INTERRUPT DID. | |
| 10880 045034° 122777 000003 10881 045042° 001004 | 133276 40\$: CMPB #INERR, apcs BNE 50\$ | R1 ;DID AN ERROR OCCUR? | |
| 10882 045044' 10883 045044' 104456 10884 045046' 000336 | ERRHRD 222, MUCAST | YES, PRINT ERROR MESSAGE TRAP (SERFLUMORD 222 WORD MUCAS WORD 0 | |
| 10887 10888 10880 | WRITE '1' TO CLEAR 'DNI' | | |
| 10890 045054' 004737 017374' 10891 045060' 103004 | 50\$: JSR PC,CLRDNI BCC 60\$ | ;CLEAR DNI BIT | |
| 10892 045062° 10893 045062° 104456 10894 045064° 000337 | ĔŘŘHRJ ŽŽŠ,MUCAST, | RACMG7 ;ERROR DNI DID NOT CLEAR! TRAP (\$ERF .WORD 223 .WORD MUCAS .WORD RACMO | ST |
| 10895 045066' 003563' 10896 045070' 012726' 10897 045072' 10898 045072' 10899 045072' 10900 045072' 104405 | 60\$: ENDSEG | 10001\$: TRAP CSESE | FG |
| 10901 045074° 10902 045074° 10903 045074° 104401 | ENDIST | L10157: TRAP CSETS | |

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HARDWARE TESTS MACY11_30(1046) 11-JAN-83 10:13 PAGE 227
CZUAAA.P11
               11-JAN-83 09:29
                                             TEST 38: CRC DATA PATTERN TEST
 10904
                                             .SBTTL TEST 38: CRC DATA PATTERN TEST
 10905
 10906
                                             10907
 10908
                                             ;THE LINK MODULE HAS HARDWARE TO GUARANTEE THAT DATAGRAMS HAVE NOT BEEN
 10909
                                             CORRUPTED DURING TRANSMISSION AND RECEPTION. THE HARDWARE GENERATES A CRC
 10910
                                             FOR DATAGRAMS TRANSMITTED AND VERIFIES THE CRC FOR DATAGRAMS RECEIVED.
                                             THE CRC IS A 32 BIT NUMBER GENERATED BY DIVIDING THE DATAGRAM BIT STREAM BY A CRC POLYNOMIAL. THE DIVISION RESULTS IN A UNIQUE NUMBER THAT CAN ONLY BE REPRODUCED IN CRC CALCULATIONS IF THE BIT STREAM EXACTLY MATCHES THE ORIGINAL. THE CRC IS CALCULATED DURING DATAGRAM TRANSMISSION AND IS APPENDED TO THE
 10911
 10912
 10913
 10914
 10915
                                             PACKET. THE CRC IS TRANSMITTED AS PART OF THE PACKET. THE CRC IS AGAIN
 10916
                                             CALCULATED WHEN THE DATAGRAM IS RECEIVED AND THE CALCULATED IS COMPARED TO
 10917
                                             THE CRC TRANSMITTED. IF THE DATAGRAM HAS BEEN FAITHFULLY TRANSMITTED. THE
 10918
                                             CRC'S SHOULD MATCH EXACTLY.
 10919
 10920
                                             :THE DEUNA CALCULATES THE CRC WITH DEDICATED CRC LOGIC. THE LOGIC IS EITHER
 10921
                                             DEDICATED TO THE CALCULATION OF THE OUTGOING DATAGRAM OR THE CALCULATION OF
 10922
                                             THE INCOMING DATAGRAM, BUT NOT BOTH.
 10923
 10924
                                             THIS TEST WILL VERIFY THE OPERATION OF THE CRC CALCULATION CIRCUITRY. MICROMODULE 'F' MICROTEST #1 WILL BE USED.
 10925
 10926
                                             THE MICROCODE WILL TRANSMIT DATAGRAMS IN LOOPBACK MODE. THE CRC HARDWARE WILL
 10927
                                             BE DEDICATED TO THE TRANSMITTER. WHEN THE DATAGRAM IS RECEIVED THE T-11 WILL
 10928
                                             CALCULATE A CRC ON THE DATA RECEIVED (INCLUDING THE TRANSMITTED CRC).
 10929
                                             THE RESULT OF THIS CALCULATION WILL BE A 32 BIT CONSTANT. THIS CONSTANT IS
 10930
                                             THEN COMPARED TO WHAT WAS EXPECTED AND IF THEY DO NOT MATCH. AN ERROR IS
 10931
                                             :PLACED IN PCSR1.
 10932
10933
                                             :PATTERNS WILL BE PASSED TO THE MICROCODE THROUGH THE PCBB. THE MICROCODE WILL
 10934
                                             :FILL THE TRANSMIT BUFFER WITH THIS PATTERN BEFORE EACH TRANSMISSION TAKES
 10935
                                             PLACE.
10936
10937
                                             THE PCBB WILL BE FORMATTED AS FOLLOWS:
10938
10939
10940
                                             :PCBB+0:
                                                               ! DATA PATTERN !
10941
10942
10943
                                             :TEST SEQUENCE:
10944
                                                     1-LOAD MICROMODULE 'F' IF NOT ALREADY DONE SO
 10945
                                                     2-PLACE A DATA PATTERN IN PCBB+0
10946
                                                      3-WAIT FOR THE MICROMONITOR TO ENTER THE 'INMON' STATE
 10947
                                                     4-SELECT MICROTEST #1
10948
                                                     5-WAIT FOR 'DNI
                                                     6-CHECK PCSR1 FOR AN ERROR CONDITION 7-WRITE '1' TO CLEAR 'DNI'
10949
 10950
 10951
10952
                                            10953
 10954 0450761
                                            BGNTST
 10955 0450761
                                                                                                           138::
 10956
                                            CHECK TO SEE IF MODULE 'F' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS, START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI'. AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
 10957
 10958
 10959
```

| HARDWARE TESTS MACY11 30(1046) 11 CZUAAA.P11 11-JAN-83 09:29 | -JAN-83 10:13 PAG TEST 38: CRC D | E 228 ATA PATTERN TEST | | | |
|--|---|--|---|----------------------------|------------------------------------|
| 10960 10961 045076 ' | ; BGNSEG | | | | |
| 10962 045076' 104404 10963 045100' 022737 000106 000 10964 045106' 001004 | 326 CMP BNE | #'F,MICRO | ; HAS MICROCODE MODULE ' | | |
| 10965 045110' 122777 000001 133 10966 045116' 001440 10967 045120' 012737 000106 000 10968 045126' 004737 020252' | 222 CMPB BEQ 326' 5\$: MOV JSR | #INMON,@PCSR1 20\$ #'f,MICRO PC,LODMIC | YES, IS THE MICROMONITE YES SKIP LOADING THE M GO LOAD MICRO MODULE | DR ACTIV ICROMODU F' | /E? JLE |
| 10967 045120' 012737 000106 000 10968 045126' 004737 020252' 10969 045132' 103002 10970 045134' 104410 | BCC ESCAPE | 10\$ | ; OK | | |
| 10972 045136 000276 | 332° 10\$: MOV | #2*SECOND,METER | ; WAIT FOR THE MICROMONI | TRAP .WORD TOR | C\$ESCAPE L10160 |
| 10974 045146' 004737 017330' 10975 045152' 103022 10976 045154' 012737 000776' 000 | JSR BCC MOV | PC, CHKDNI 20\$ | ; OK | | |
| 10978 045170 012737 001340 000 10979 045176 012737 001355 000 | 312' MOV 314' MOV 316' MOV | #\$DNI.BITNAM #\$NSET.BITSTA #\$AFTER.PWHEN #\$GTCMD.PCOMND | | | |
| 10981 0452041 104456 | ERRHRD | | | TRAP .WORD .WORD .WORD | CSERHRD 224 CRCDAT MSG1 |
| 10985 045214° 10986 045214° 104410 10987 045216° 000216 | ESCAPE | TST | | TRAPWORD | CSESCAPE L10160 |
| 10987 045216' 000216 10988 045220' 004737 017374' 10989 045224' 103006 10990 045226' | 20\$: JSR BCC | PC,CLRDNI 25\$ | CLEAR DNI BIT | | |
| 10991 045226' 174456 10992 045230' 000341 10993 045232' 003621' 10994 045234' 012726' | ERRHRD | | ;DNI DID NOT CLEAR! | TRAP .WORD .WORD .WORD | CSERHRD 225 CRCDAT RACMG7 |
| 10995 045236' 10996 045236' 104410 10997 045240' 000174 | ESCAPE | TST | | TRAPWORD | CSESCAPE L10160 |
| 10998 0452421 | 25 \$: ENDSEG | | 10000\$: | | |
| 11001 045242° 104405 11002 | ; | | | TRAP | C\$E SE G |
| 11003 11004 11005 | SELECT A DATA AND LOAD IT I | N PATTERN FROM A TABLE OF INTO PCBB+O FOR THE MICR | F PREDEFINED DATA PATTERNS OCODE | | |
| 11000 045242' 11001 045242' 104405 11002 11003 11004 11005 11006 045244' 012701 000516' 11007 045250' 012705 000005 11008 045254' 012137 000604' | MOV MOV 27 \$: MOV | #PATERN,R1 #5,R5 (R1)+,PCBB | GET ADDRESS OF DATA PA W OF DATA PATTERNS LOAD POBB WITH A DATA | | ABLE |
| 11009 045260' 11010 045260' 104404 11011 | BGNSEG | | | TRAP | C\$BSEG |
| 11012 11013 | WAIT FOR THE | MICROMONITOR TO ENTER TO | HE "INMON" STATE | | |
| 11014 045262' 004737 017776' 11015 045266' 103006 | . JSR BCC | PC,CHKMON 30\$ | :WAIT FOR MICROMONITOR :OK | | |

| HARDWAR CZUAAA. | E TESTS P11 1 | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN | -83 10: TEST 38 | 13 PAGE 3: CRC DA | 229 TA PATTERN TEST | | | |
|---|--|--|-----------------------------|-------------------|--------------------|-----------------------|--|---|---------------------------------|------------------------------------|
| 11016 11017 11018 11019 11020 | 045270' 045270' 045272' 045274' 045276' | 000343 | | | | ERRHRD | 227, CRCDAT, MSG46 | ;PRINT ERROR | TRAP .WORD .WORD .WORD | CSERHRD 227 CRCDAT MSG46 |
| 11021 11022 11023 11024 | 045276' 045300' 045300' 045302' 045304' | 104410 000132 | | | 30\$: | ESCAPE | TST | LEAVE TEST | TRAP.WORD | C\$ESCAPE L10160 |
| 11025 11026 11027 | | | | | EXECUT | E MICROT | EST #1 BY LOADING PCSRO | COMMAND FIELD WITH A 1 | | |
| 11028 11029 11030 11031 | 045304' 045312' 045320' | 012777 012737 004737 | 000001 000176 017330' | 133024 000332* | <i>;</i> | MOV MOV JSR | #1,aPCSRO #2*SECOND,METER PC,CHKDNI | :TELL T11 TO EXECUTE MI :WAIT FOR DNI | CROTEST | #1 |
| 11033 | 045326' 045332' | 004737 | 020050' | | | BCC JSR BCC | 40\$ PC,CHKINT 35\$ | :SEE IF ANY ERROR INTER :NO. OK | RUPTS O | CCURRED |
| 11018 11019 11020 11021 11023 11024 11025 11026 11027 11028 11030 11031 11033 11035 11036 11037 11038 11039 11040 | 045334' 045336' 045340' 045342' | 012737 004737 103021 004737 103006 104456 000344 003621' 016454' | | | | ERRHRD | 228, CRCDAT, MSG44 | ;PRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 228 CRCDAT MSG44 |
| 11041 11042 | 045344 | 104410 000066 | 000005 | | 35\$: | ESCAPE MOV | #5_R2 | ;MICROTEST #1 IS HUNG | TRAPWORD | C\$ESCAPE L10160 |
| 11043 11044 11045 11046 11047 11048 11049 11050 | 045350° 045354° 045354° 045356° 045360° 045362° | 104456 | | | | ERRHRD | 229, CRCDAT, MSG12 | | TRAP .WORD .WORD .WORD | CSERHRD 229 CRCDAT MSG12 |
| 11051 | 045364° 045366° | 104410 | | | | ESCAPE | TST | | TRAP.WORD | C\$ESCAPE L10160 |
| 11052 11053 11054 | | | | | CHECK | PCSR1 TO | SEE IF THE MICROCODE D | ETECTED AN ERROR IN THE C | RC CALCI | JLATION |
| 11055 11056 11057 | 045370° 045376° 045400° | 001004 | 000003 | 132742 | 40\$: | CMPB BNE ERRHRD | #INERR, apcsr1 50\$ 230, crcdat | :DID AN ERROR OCCUR? :NO :PRINT ERROR MESSAGE | | |
| 11053 11054 11055 11056 11057 11058 11069 11061 11063 11064 11065 11066 11067 11068 11069 11070 | 045400° 045402° | 000346 003621 | | | | | | | TRAP .WORD .WORD .WORD | CSERHRD 230 CRCDAT 0 |
| 11063 11064 | | | | | : | | LEAR 'DNI' | | | |
| 11065 11066 11067 | 045410° 045414° 045416° | 004737 103004 | 017374 | | 50\$: | JSR BCC ERRHRD | PC,CLRDNI 55\$ 231,CRCDAT,RACMG7 | CLEAR DNI BIT CERROR DNI DID NOT CLEA | , p | |
| 11068 11069 11070 11071 | 045416° 045420° 045422° | 104456 | | | | £ mmv | 2 J. J. C. | , children bits bib ito teen | TRAP .WORD .WORD .WORD | CSERHRD 231 CRCDAT RACMG7 |

| HARDWAF CZUAAA. | RE TESTS MACY11 30(1046) P11 11-JAN-83 09:29 | 11-JAN-83 10:13 PAGE 230 TEST 38: CRC DATA PATTERN TEST | | | | | | |
|---|---|--|----------|----------|-----------------|------|------------------|--|
| 11072 11073 11074 11075 11076 11077 11078 | 045426' 045426' 045426' 045426' 104405 | 555: ENDSEG REPEAT THE TEST EACH TIME WITH A NEW DATA | PATTERI | | 0001 5 : | RAP | C \$ ESEG | |
| 11080 11081 11082 | 045430' 005305 045432' 001310 045434' | DFC R5 ; HA BNE 27\$; NO | AVE WE 1 | TESTED W | TH ALL | DATA | PATTERNS? | |
| 11083 | 045434° 045434° 104401 | | | L | 10160: T | RAP | C\$ETST | |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 231 CZUAAA.P11 11-JAN-83 09:29 TEST 39: CRC ERROR
                                              TEST 39: CRC ERROR TEST
 11085
                                              .SBTTL TEST 39: CRC ERROR TEST
 11086
 11087
 11088
 11089
11090
                                              :THIS TEST WILL VERIFY THAT THE LINK CRC CIRCUITRY CAN DETECT A BAD CRC.
                                              MICROMODULE 'F' MICROTEST #2 WILL BE USED. THE MICROCODE WILL TRANSMIT DATAGRAMS IN LOOPBACK MODE. EACH DATAGRAM WILL HAVE AN ERRONEOUS CRC
 11091
 11092
 11093
                                              APPENDED TO THE DATA FIELD. THE DEUNA CRC LOGIC WILL BE SETUP SUCH THAT
 11094
                                              THE CRC LOGIC WILL BE DEDICATED TO THE RECEIVER. THIS IS EXPECTED TO CAUSE
 11095
                                              A CRC ERROR.
 11096
 11097
                                              THE DATA FIELDS OF EACH DATAGRAM WILL CONSIST OF PATTERNS. THE PATTERNS
 11098
                                              WILL BE PASSED TO THE MICROCODE VIA THE PCBB.
 11099
 11100
                                              AFTER THE RECEIVER INTERRUPT THE MICROCODE WILL PASS THE RECEIVER STATUS WORD
                                              :0 BACK VIA PCBB+2. THE CRC BIT IN THIS WORD IS CHECKED TO SEE IF IT IS SET.
 11101
 11102
 11103
                                              THE POBB IS FORMATTED AS FOLLOWS:
 11104
 11105
 11106
                                              :PCBB+0:
                                                                       DATA PATTERN
 11107
 11108
                                                                    RECEIVER STATUS WORD
                                              :PCBB+2:
 11109
 11110
11111
                                              :TEST SEQUENCE:
11112
                                                       1-LOAD MICROMODULE 'F' IF NOT ALREADY DONE SO 2-PLACE A DATA PATTERN IN PCBB+0
11113
11114
                                                       3-WAIT FOR THE MICROCODE TO ENTER THE 'INMON' STATE
11115
                                                       4-SELECT MICROTEST #2
11116
                                                       5-WAIT FOR 'DNI'
11117
                                                       6-VERIFY CRC BIT AND ERROR SUMMARY BIT SET IN FCBB+2 7-WRITE '1' TO CLEAR 'DNI'
11118
11119
11120
11121
11122
        0454361
                                              BGNTST
11123
        045436
                                                                                                              139::
11124
11125
                                              CHECK TO SEE IF MODULE 'F' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS, START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI'.
11126
11127
                                              AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
11128
11129
        0454361
                                                BGNSEG
        045436' 104404
11130
                                                                                                                        TRAP
                                                                                                                                 C$BSEG
11131
        045440' 022737
                           000106 000326
                                                       CMP
                                                                #'F,MICRO
                                                                                            :HAS MICROCODE MODULE 'F' BEEN LOADED
 11132
         045446' 001004
                                                       BNE
                                                                                            :NO
11133
        0454501
                                                                #INMON, aPCSR1
                  122777
                           000001 132662
                                                       CMPB
                                                                                            ; YES, IS THE MICROMONITOR ACTIVE?
 11134
        0454561
                  001440
                                                       BEQ
                                                                20$
                                                                                            YES SKIP LOADING THE MICROMODULE
                  012737
11135
        0454601
                           000106
                                    000326' 5$:
                                                                #'f,MICRO
                                                       MOV
                                                                                            GO LOAD MICRO MODULE 'F'
                           0202521
 11136
        045466
                 004737
                                                       JSR
                                                                PC,LODMIC
11137
        0454721
                  103002
                                                                10$
                                                       BCC
                                                                                            :OK
        0454741
11138
                                                       ESCAPE
                                                                TST
11139
        045474' 104410
                                                                                                                        TRAP
                                                                                                                                 CSESCAPE
        045476' 000326
11140
                                                                                                                        .WORD
                                                                                                                                L10161-.
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| HARDWARE TESTS MACY11 30(1046) 11-J CZUAAA.P11 11-JAN-83 09:29 | AN-83 10:13 PAGE 232 TEST 39: CRC ERROR TEST | |
|---|---|--|
| 11141 045500' 012737 000176 00033 11142 045506' 004737 017330' 11143 045512' 103022 | JSR PC.CHKDNI | ; WAIT FOR THE MICROMONITOR |
| 11144 045514' 012737 000776' 00031 11145 045522' 012737 001275' 00031 | 2' MÖV #\$NSET.BITSTA 4' MOV #\$AFTER.PWHEN | ;OK |
| 11146 045530' 012737 001340' 00031 11147 045536' 012737 001355' 00031 11148 045544' 11149 045544' 104456 11150 045546' 000350 11151 045550' G03656' 11152 045552' 012750' 11153 045554' 11154 045554' 104410 11155 045556' 000246 11156 045560' 004737 017374' 11157 045566' 103006 11158 045566' 11159 045566' 104456 11160 045570' 000351 | ESCAPE TST | TRAP CSERHRD .WORD 232 .WORD CRCERR .WORD MSG1 |
| 11154 045554' 104410 11155 045556' 000246 11156 045560' 004737 017374' 11157 045564' 103006 | 20\$: JSR PC_CLRDNI BCC 25\$ | TRAP CSESCAPE .WORD L10161 |
| 11161 045572' 003656' 11162 045574' 012726' | ERRHRD 233, CRCERR, RACMG7 | ;DNI DID NOT CLEAR! TRAP CSERHRD .WORD 233 .WORD CRCERR .WORD RACMG7 |
| 11163 045576' 11164 045576' 104410 11165 045600' 000224 11166 045602' 11167 045602' | ESCAPE TST 25\$: ENDSEG | TRAP CSESCAPE .WORD L10161 |
| 11158 0456021 | ENDSEG | 10000\$: TRAP C\$ESEG |
| 11169 045602' 104495 11170 11171 11172 11173 | CLEAR PCBB+2, GET A DATA PATTERN FROM AND PLACE IT IN PCBB+0 FOR THE MICROC | A LIST OF PRESELECTED DATA PATTERNS ODE |
| 11174 045604' 005037 000606' 11175 | CLR PCBB+2 | HERE IS WHERE MICROCODE WILL PUT |
| 11176 045610' 012701 000516' 11177 045614' 012705 000005 11178 045620' 012137 000604' | MOV #PATERN,R1 MOV #5,R5 27\$: MOV (R1)+,PCBB | GET ADDRESS OF DATA PATTERN TABLE W OF DATA PA.TERNS LOAD PCBB WITH A DATA PATTERN |
| 11180 11181 | WALT FOR THE MICROMONITOR TO BECOME R | EADY |
| 11179 11180 11181 11182 045624' 11183 045624' 104404 11184 045626' 004737 017776' 11185 045632' 103006 | BGNSEG JSR PC, CHKMON BCC 30\$ | TRAP C\$BSEG :WAIT FUR MICROMONITOR :OK |
| 11185 045626' 004737 017776' 11185 045632' 103006 11186 045634' 11187 045634' 104456 11188 045636' 000352 11189 045640' 003656' 11190 045642' 016700' 11191 045644' 11192 045646' 000156 | ERRHRD 234, CRCERR, MSG46 | ;PRINT ERROR TRAP C\$ERHRD .WORD 234 .WORD CRCERR .WORD MSG46 |
| 11191 045644' 11192 045644' 104410 11193 045646' 000156 11194 045650' | ESCAPE TST 30\$: | ; LEAVE TEST TRAP CSESCAPE .WORD L10161 |
| 11195 11196 | EXECUTE MICROTEST #2 BY LOADING THE C | OMMAND FIELD OF PCSRO WITH A 2 |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 233
CZUAAA.P11
              11-J N-83 09:29
                                               TEST 39: CRC ERROR TEST
                                                ; WAIT FOR 'DNI'
 11197
 11198
                            000002
000176
         045650' 012777
 11199
                                                         MOV
                                                                   #2.apcsR0
                                                                                               :TELL T11 TO EXECUTE MICROTEST #2
         045656 012737
 11200
                                      0003321
                                                         MOV
                                                                   #2 * SECOND, METER
                                                                                               :WAIT FOR DNI
11201
11202
11203
         0456641 004737
                            0173301
                                                         JSR
                                                                   PC_CHKDNI
         045670' 103021
                                                                   40$
                                                         BCC
         045672' 004737
045676' 103006
                            0200501
                                                         JSR
                                                                   PC_CHKINT
                                                                                               :SEE IF ANY ERROR INTERRUPTS OCCURRED
 11204
                                                                   35$
                                                         BCC
                                                                                                :NO. OK
         0457001
                                                                   235, CRCERR, MSG44
                                                                                                PRINT ERROR MESSAGE
                                                         ERRHRD
 11206
11207
11208
11209
11210
         0457001 104456
                                                                                                                            TRAP
                                                                                                                                     C$ERHRD
         045702' 000353
                                                                                                                            .WORD
                                                                                                                                     235
         045704' 003556'
                                                                                                                            .WORD
                                                                                                                                     CRCERR
         045706' 016454'
                                                                                                                                     MSG44
                                                                                                                            .WORD
         0457101
                                                         ESCAPE TST
 11211
         045710' 104410
                                                                                                                            TRAP
                                                                                                                                     C$ESCAPE
 11212
11213
11214
         045712' 000112
045714' 012702
                                                                                                                            .WORD
                                                                                                                                     L10161-.
                   012702
                                               35$:
                                                                   #2,R2
                                                                                               :MICROTEST #2 IS HUNG
                            000002
                                                         MOV
                                                                  236, CRCERR, MSG12
         0457201
                                                         ERRHRD
 11215
         045720' 104456
                                                                                                                            TRAP
                                                                                                                                      C$ERHRD
 11215
11216
11217
11218
11219
11220
11221
11222
11223
11224
11225
         0457221
                   000354
                                                                                                                                     236
                                                                                                                            .WORD
                   003656
                                                                                                                                      CRCERR
                                                                                                                            .WORD
         0457261
                   013500
                                                                                                                                     MSG12
                                                                                                                            .WORD
         0457301
                                                         ESCAPE TST
         045730' 104410
                                                                                                                            TRAP
                                                                                                                                      CSESCAPE
         0457321
                                                                                                                            .WORD
                  000072
                                                                                                                                     L10161-.
                                                OK, TEST IS COMPLETED, NOW CHECK PCBB+2. PCBB+2 CONTAINS THE RECEIVER STATUS
                                                WORD, IT SHOULD HAVE THE CRC ERROR BIT SET AND THE ERROR SUMMARY BIT SET
         045734' 013704
045740' 012703
 11226
11227
11228
11229
11230
                                                                                               :THIS IS THE RECEIVER STATUS WORD :BIT CRC SHOULD BE SET
                                                405:
                                                                   PCBB+2,R4
#BIT11,R3
                            000606
                                                         MOV
                                                         MOV
                            004000
                                                                                               IS CRC BIT SET?
         045744 030304
                                                                   R3,R4
45$
                                                         BIT
         045746' 001004
                                                                                               YES, OK
NO, PRINT ERROR MESSAGE
                                                         BNE
         0457501
                                                                   237, CRCERR, MSG27
                                                         ERRHRD
                                                                                                                            TRAP
                                                                                                                                      C$ERHRD
         0457501
                  104456
 11231
         045752'
045754'
                                                                                                                                      237
                                                                                                                            .WORD
 11232
                   000355
                                                                                                                                      CRCERR
 11233
                   003656
                                                                                                                            _WORD
                                                                                                                                     MSG27
 11234
         0457561
                   015060
                                                                                                                            .WORD
         045760
                                                                                                :ERROR SUMMARY BIT SHOULD BE SET
 11235
                   012703
                                                45$:
                                                         MOV
                                                                   #BIT14,R3
                            040000
 11236
11237
11238
11239
                                                                                                : IS ERROR SUMMARY BIT SET?
         045764
                   030304
                                                         BIT
                                                                   R3,R4
         0457661
                                                                                               YES, GOOD
NO, PRINT ERROR MESSAGE
                                                                   50$
                   001004
                                                         BNE
         0457701
                                                         ERRHRD
                                                                   238, CRCERR, MSG28
                                                                                                                                     CSERHRD
238
                                                                                                                            TRAP
         0457701
                   104456
                   000356
                                                                                                                            .WORD
 11240
         0457721
 11241
11242
11243
                                                                                                                                      CRCERR
         045774 003656
                                                                                                                            .WORD
                                                                                                                                     MSG28
         045776' 015126'
                                                                                                                            .WORD
 11244
                                                WRITE '1' TO CLEAR 'DNI'
 11245
 11245
11247
                                                50$:
                                                         JSR
                                                                   PC, CLRDNI
         046000 004737
                            017374
                                                                                               :CLEAR DNI BIT
         046004' 103004
                                                         BCC
 11248
                                                                   239, CRCERR, RACMG7
                                                                                               :ERROR DNI DID NOT CLEAR!
         046006
                                                         ERRHRD
                                                                                                                            TRAP
                                                                                                                                      CSERHRD
         0460061
 11249
                                                                                                                                      239
         0460101
                                                                                                                            .WORD
 11250
                   000357
                                                                                                                                      CRCERR
         0460121
                                                                                                                            .WORD
 11251
                   003656
                                                                                                                                      RACMG?
         046014' 012726
                                                                                                                            .WORD
 11252
```

| HARDWAR CZUAAA. | E TESTS MACY11 30(1046) 11 P11 11-JAN-83 09:29 | -JAN-83 10:13 PAGE 234 TEST 39: CRC ERROR TEST | |
|---|---|---|-----------------------------|
| 11253 11254 11255 11256 11257 11258 11259 | 046016' 046016' 046016' 046016' 104405 | 55\$: ENDSEG REPEAT TEST WITH ALL DATA PATTERNS | 100015: TRAP CSESEG |
| 11259 11260 11261 11262 11263 11264 | 046020' 005305 046022' 001276 | ; | 'ED WITH ALL DATA PATTERNS? |
| 11263 11264 11265 | 046024° 046024° 046024° 104401 | ENDIST | L10161: TRAP CSETST |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 235
CZUAAA.P11
                11-JAN-83 09:29
                                                TEST 40: CRC PATTERN LENGTH TEST
 11266
11267
                                                .SBTTL TEST 40: CRC PATTERN LENGTH TEST
 11268
 11269
 11270
                                                ;THIS TEST WILL VERIFY THAT THE RECEIVE CRC HARDWARE CAN CALCULATE CRC FOR
                                                :DATAGRĀMS OF VARYING LENGTHS.
 11272
                                                DATAGRAMS WILL BE TRANSMITTED FOR THE TRANSMIT BUFFER TO THE RECEIVE BUFFER
                                                IN LOOPBACK MODE. THE TRANSMIT CRC WILL BE DISABLED WHICH WILL ASSIGN THE CRC LOGIC TO CALCULATION OF INCOMING DATAGRAMS. THE CRC FOR TRANSMIT DATAGRAMS WILL BE CALCULATED BY THE MICROCODE. IT IS EXPECTED THAT THE CRC LOGIC WILL
 11274
 11275
 11276
 11277
                                                EVERIFY THE CRC APPENDED TO THE DATAGRAM AS IT IS BEING RECEIVED.
 11278
 11279
                                                PATTERNS WILL BE USED TO FILL THE DATAGRAM DATA FIELD. THE PATTERNS WILL BE
 11280
                                                PASSED TO THE MICROCADE THROUGH THE POBB ALONG WITH THE BYTE COUNT TO BE USED.
 11281
 11282
                                                AFTER THE RECEPTION OF THE DATAGRAM THE RECEIVER STATUS WORD WILL BE PASSED
 11283
                                                BACK VIA THE PCBB SO IT CAN BE CHECKED
 11284
 11285
                                                :THE PCBB IS FORMATTED AS FOLLOWS:
 11286
 11287
 11288
                                                :PCBB+0:
                                                                          DATA PATTERN
 11289
 11290
                                                :P(BB+2:
                                                                           BYTE COUNT
 11291
 11292
                                                :PCBB+4:
                                                                      RECEIVE STATUS WORD
 11293
 11294
 11295
                                                :TEST SEQUENCE:
 11296
                                                          1-LOAD MICROMODULE 'F' IF NOT ALREADY DONE SO
 11297
                                                          2-PLACE A PATTERN IN PCBB+0
 11298
                                                          3-PREPARE A MINIMUM BYTE COUNT
 11299
                                                          4-PLACE BYTE COUNT IN PCBB+4
 11300
                                                          5-WAIT FOR MICROMONITOR TO ENTER 'INMON' STATE
 11301
                                                          6-SELECT MICROTEST #3
 11302
                                                          7-WAIT FOR 'DNI'
 11303
                                                         8-VERIFY NO ERRORS IN PCBB+4
9-WRITE '1' TO CLEAR 'DNI'
11304
11305
11306
11307
                                                         10-MULTIPLY BYTE COUNT BY 2
11-REPEAT STEPS 4-10 UNTIL MAXIMUM BYTE COUNT IS REACHED
12-REPEAT STEPS 2-11 WITH ALL DATA PATTERNS
11308
11309
                                                11310
 11311
         0460261
                                               BGNTST
11312
         0460261
                                                                                                                   140::
                                                CHECK TO SEE IF MODULE 'F' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS. START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI'. AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
 11314
 11315
11316
11317
 11318
         0460261
                                                  BGNSEG
         046026' 104404
 11319
                                                                                                                             TRAP
                                                                                                                                      C$BSEG
         046030 022737
 11320
                                                                   #"I ,MICRO
                            000106 000326
                                                                                                :HAS MICROCODE MODULE 'F' BEEN LOADED
         046036 001004
 11321
                                                         BNE
                                                                                                :NO
```

| HARDWARE TESTS MACY11 30(1046 CZUAAA.P11 11-JAN-83 09:29 |) 11-JAN-83 10:13 PAGE TEST 40: CRC PA | E 236 ATTERN LENGTH TEST | | | |
|--|---|---------------------------------|---|--------------------|----------------------------------|
| 11322 046040' 122777 000001 11323 046046' 001440 11324 046050' 012737 000106 11325 046056' 004737 020252 11326 046062' 103002 11327 046064' 11328 046064' 104410 | BEQ | 20\$ #'F,4ICRO PC,LODMIC | YES, IS THE MICROMONITOR YES SKIP LOADING THE MIC GO LOAD MICRO MODULE 'F' OK | ROMODULE | S ESCAPE |
| 11329 046066' 000320 11330 046070' 012737 000176 11331 046076' 004737 017330 | 0 000332' 10\$: MOV JSR BCC 0' 000310' MOV 0' 000312' MOV 0' 000314' MOV ERRHRD | PC, CHKDNI | | WORD L | 10162 |
| 11338 046134' 104456 11339 046136' 000360 11340 046140' 003704' 11341 046142' 012750' | | | • | .WORD 2 .WORD C | SERHRD 240 RCPAT ISG1 |
| 11342 046144' 11343 046144' 104410 11344 046146' 000240 11345 046150' 004737 017374 11346 046154' 103006 | ESCAPE 20\$: JSR BCC | | | | SESCAPE 10162 |
| 11347 046156' 11348 046156' 104456 11349 046160' 000361 11350 046162' 003704' 11351 046164' 012726' | ERRHRD | 241, CRCPAT, RACMG7 | • | .WORD 2 | SERHRD 241 RCPAT RACMG7 |
| 11352 046166' 11353 046166' 104410 11354 046170' 000216 11355 C46172' | ESCAPE 25\$: | 121 | | | SESCAPE 10162 |
| 11356 Č46172' 11357 046172' 11358 046172' 104405 11359 | ENDSEG | OF DATA PATTERNS | 10000\$: | TRAP C | SESEG |
| 11361 11362 046174° 012701 000516 11363 046200° 012705 000005 11364 | MOV MOV | #PATERN,R1 | GET ADDRESS OF DATA PATT # OF DATA PATTERNS ACE IT I. PCBB+0 | IERN TABL | .E |
| 11366 11367 046204' 11368 046204' 012137 000604 11369 046210' 11370 046210' 104404 | 27\$: | | :LOAD PCBB WITH A DATA PA | | S S BSEG |
| 11371 11372 11373 | GENERATE A MIN | NIMUM BYTE COUNT | | | |
| 11374 046212° 012703 000100 11375 046216° 11376 11377 | 28\$: | WBI16, P3 NT INTO THE PCBB+4 | ;R3 WILL BE BYTE COUNT | | |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 237
CZUAAA.P11 11-JAN-83 09:29
                                              TEST 40: CRC PATTERN LENGTH TEST
 11378
         046216' 104404
046220' 010337
 11379
                                                BGNSEG
 11380
                                                                                                                       TRAP
                                                                                                                                 C$BSEG
 11381
                           000606
                                                                R3.PCBB+2
                                                                                            :LOAD BYTE COUNT INTO PCBB
 11382
 11383
                                              WAIT FOR THE MICROCODE TO ENTER THE 'INMON' STATE
                                              EXECUTE MICROTEST #3 BY LOADING THE COMMAND FIELD OF PCSRO WITH A 3
 11385
                                              ; WAIT FOR 'DNI'
 11386
 11387
         046224' 004737
                           017/76
                                                                PC CHKMON 30$
                                                                                            :WAIT FOR MICROMONITOR
         046230' 103006
046232' 104456
046234' 000362
 11388
                                                       BCC
                                                                                            ;OK
 11389
                                                       ERRHRD
                                                                242, CRCPAT, MSG46
                                                                                            :PRINT ERROR
 11390
                                                                                                                       TRAP
                                                                                                                                 CSERHRD.
 11391
                                                                                                                                 242
                                                                                                                        .WORD
 11392
         0462361
                  0037041
                                                                                                                        .WORD
                                                                                                                                 CRCPAT
 11393
         046240' 016700'
                                                                                                                        .WORD
                                                                                                                                MSG46
         0462421
 11394
                                                       ESCAPE TST
                                                                                            :LEAVE TEST
 11395
                  104410
                                                                                                                       TRAP
                                                                                                                                 C$ESCAPE
 11396
         046244
                  000142
                                                                                                                        . WORD
                                                                                                                                L10162-.
 11397
                  012777
         0462461
                           000003 132062 30$:
                                                       MOV
                                                                #3.apcsro
                                                                                            :TELL T11 TO EXECUTE MICROTEST #3 :WAIT FOR DNI
 11398
         0462541
                  012737
                           000176 0003321
                                                       MOV
                                                                #2*SECOND_METER
 11399
         0462621
                  004737
                           0173301
                                                       JSR
                                                                PC, CHKDNI
         0462661
 11400
                  103021
                                                                40$
                                                       BCC
                                                                PC, CHKINT
         0462701
                  004737
 11401
                           0200501
                                                       JSR
                                                                                            ;SEE IF ANY ERROR INTERRUPTS OCCURRED
         0462741
 11402
                  103006
                                                       BCC
                                                                                            :NO. OK
;PR!NT ERROR MESSAGE
 11403
         0462761
                                                       ERRHRD
                                                                243, CRCPAT, MSG44
 11404
         0462761
                  1044 56
                                                                                                                       TRAP
                                                                                                                                 CSERHRD.
         0463001 000353
 11405
                                                                                                                        .WORD
                                                                                                                                 243
         046302'
                  0037041
 11406
                                                                                                                        .WORD
                                                                                                                                 CRCPAT
 11407
                  0164541
                                                                                                                        .WORD
                                                                                                                                MSG44
 11408
         0463061
                                                       ESCAPE TST
11409
         046306' 104410
                                                                                                                       TRAP
                                                                                                                                 C$ESCAPE
         046310' 000076
 11410
                                                                                                                        .WORD
                                                                                                                                L10162-.
         0463121
 11411
                  012702
                           000003
                                             35$:
                                                                #3.R2
                                                                                            :MICROTEST #3 IS HUNG
                                                                244 CRCPAT MSG12
 11412
         0463161
                                                       ERRHRD
 11413
         0463161 10/456
                                                                                                                       TRAP
                                                                                                                                 CSERHRD.
         046320' 000364
 11414
                                                                                                                        .WORD
                                                                                                                                 244
         046322' 003704'
046324' 013500'
 11415
                                                                                                                        .WORD
                                                                                                                                 CRCPAT
 11416
                                                                                                                        .WORD
                                                                                                                                MSG12
        046326' 104410
046326' 000056
 11417
                                                       ESCAPE TST
 11418
                                                                                                                       TRAP
                                                                                                                                 CSESCAPE
 11419
                                                                                                                        _WORD
                                                                                                                                L10162-.
 11420
11421
11422
11423
11424
11425
11426
11427
11428
                                              CHECK THE RECEIVER STATUS WORD, WHICH THE MICROCODE PLACED IN PCBB+4, FOR ANY
                                              :ERRORS
         046332' 005737
046336' 001404
046340'
                                                                                            ; ANYTHING SET IN RECEIVER STATUS WORD O
                           0006101
                                              405:
                                                                PCBB+4
                                                       TST
                                                                50$
                                                       BEQ
                                                                                            NO, OK
                                                       ERRHRD
                                                                245, CRCPAT, MSG29
                                                                                            :PRINT ERROR MESSAGE
         046340' 104456
046342' 000365
                                                                                                                       TRAP
                                                                                                                                C$ERHRD
                                                                                                                                245
                                                                                                                        .WORD
         0463441
                                                                                                                        .WORD
                  003704
                                                                                                                                CRCPAT
         046346' 015174'
 11430
                                                                                                                        .WORD
                                                                                                                                MSG29
 11431
                                              :WRITE '1' TO CLEAR 'DNI'
 11433
```

| HARDWAR CZUAAA. | E TESTS P11 1 | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN-83 10: TEST 40 | :13 PAGE): CRC PA | 238 ATTERN LENGTH TEST | | | |
|--|------------------------------------|--------------------|-------------------|--------------------------|-----------------------|---------------------------|---|---------------|----------------|
| 11434 | 046350 | 004737 | 017374' | 50\$: | JSR | PC_CLRDNI 55\$ | CLEAR DNI BIT | | |
| 11435 11436 | 046356 | 004737 | | | BCC ERRHRD | 246,CRCPAT,RACMG7 | ERROR DNI DID N | OT CLEAR! | |
| 11437 11438 | 046356' 046360' | 104456 | | | | | | TRAP.WORD | CSERHRD 246 |
| 11439 11440 | በፈፈፕሉጋ፣ | 0037041 | | | | | | .WORD | CRCPAT |
| 11441 | 046364' 046366' 046366' | 012726 | | 55 \$: | | | | .WORD | RACMG7 |
| 11442 11443 | 046366 ' 046366 ' | | | ENDSE | G | | | 10002\$: | |
| 11444 | 0463661 | 104405 | | | | | | TRAP | C\$ESEG |
| 11445 | | | | GENERA | ATE A NEW | BYTE COUNT BY SHIFT | ING IT OVER ONE PLACE | TO THE LEFT. | |
| 11447 | | | | THIS E | FFECTIVE | LY MULTIPLIES THE NU | ING IT OVER ONE PLACE MBER BY TWO. | | |
| 11449 | | | | ; REPEAT | THE TES | F THE NEW NUMBER IS | COUNT | | |
| 11450 | 0463701 | 006303 | | ; | ASL | R3 | :UP THE BYTE COU | NT TO NEXT BI | T POSTION |
| 11452 | 0463721 | 020327 | 002000 | | CMP | R3,#BIT10 | :UP THE BYTE COU :HAVE WE CHECKED :THE BYTE COUNT | ALL BIT POST | IONS IN |
| 11454 | 0463761 | 001307 | | | BNE | 28\$ | NOT YET | REGISTER! | |
| 11455 11456 | 046400° 046400° | | | ENDSE | G | | | 10001\$: | |
| 11457 | 046400 | 104405 | | | | | | TRAP | C\$ESEG |
| 11444 11445 11446 11447 11448 11449 11450 11451 11453 11454 11455 11456 11459 11460 | | | | GET A | NEW DATA | A PATTERN FROM THE LI | ST OF PRESELECTED DAT | A PATTERNS | |
| 11460 11461 | | | | | | TH NEW DATA PATTERN | | - | |
| 11462 | 0464021 | 005305 | | • | DEC | R5 | HAVE WE TESTED | WITH ALL DATA | PATTERNS? |
| 11463 11464 | 0464041 | 001277 | | | BNE | 27\$ | ; NOT YET | | |
| 11465 11466 | 046406 | | | ENDIST | | | | 10143- | |
| 11467 | 046406 | 104401 | | | | | ŀ | L10162: TRAP | CSETST |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 239
CZUAAA.P11
             11-JAN-83 09:29
                                           TEST 41: RECEIVER BUFFER RECOVERY - RUNT TEST
 11468
                                           .SBITL TEST 41: RECEIVER BUFFER RECOVERY - RUNT TEST
 11469
 11470
 11471
 11472
                                           ;THIS TEST WILL CHECK THE ABILITY OF THE RECEIVE STATE MACHINE TO REJECT A
 11473
                                           DATAGRAM OF LESS THAN 64 BYTES AND TO RECOVER THE RECEIVER BUFFER.
 11474
 11475
                                           THIS TEST WILL USE MICROMODULE 'F' MICROTEST #4.
  1476
                                            EACH TRIAL WILL CONSIST OF TWO DATAGRAM TRANSMISSIONS IN LOOPBACK MODE. EACH
 11477
                                            TRANSMISSION WILL LOOPBACK A DATAGRAM FILLED WITH UNIQUE DATA. THE FIRST
 11478
                                            DATAGRAM WILL BE A RUNT OF LESS THAN 64 BYTES. THE SECOND WILL BE A DATAGRAM
 11479
                                           OF LEGAL SIZE.
 11480
 11481
                                            EACH TRIAL WILL START WITH THE LINK BUFFER POINTER RESET TO THE FIRST LINK
                                           BUFFER. THE RUNT WILL BE TRANSMITTED, THEN THE VALID DATAGRAM. IF THE BUFFER PECOVERY IS WORKING CORRECTLY, THE SECOND DATAGRAM IS EXPECTED TO BE WRITTEN INTO THE SAME LINK MEMORY BUFFER AS WAS THE RUNT.
 11482
 11483
 11484
 11485
 11486
                                           THIS TEST WILL BE REPEATED WITH VARIOUS RUNT PACKET SIZES.
 11487
 11488
                                           :THE BYTE COUNT FOR THE RUNT PACKET TRANSMISSION WILL BE PASSED VIA THE PCBB.
 11489
                                           AFTER THE TWO TRANSMISSIONS, THE MICROCODE WILL PASS BACK THE CONTENTS OF THE
 11490
                                            BUFFER DONE FIFO, AND THE CONTENTS OF THE FIRST DATA WORD OF THE RECEIVER
 11491
                                           BUFFER.
 11492
 11493
                                           THE PCBB WILL BE FORMATTED AS FOLLOWS:
 11494
 11495
 11496
                                           :P(BB+0:
                                                                      RUNT BYTE COUNT
 11497
 11498
                                           :P(BB+2:
                                                                BUFFER DONE FIFO CONTENTS
 11499
 11500
                                           :P(BB+4:
                                                            ! FIRST DATA WORD OF BUFFER
 11501
 11502
                                           :TEST SEQUENCE:
 11503
                                                    1-LOAD MICROMODULE 'F' IF NOT ALREADY DONE SO
 11504
 11505
                                                    2-PLACE A RUNT BYTE COUNT IN PCBB+0
                                                    3-CLEAR PCBB+2,+4
 11506
 11507
                                                    4-WAIT FOR MICROMONITOR TO ENTER THE "INMON" STATE
 11508
                                                    5-SELECT MICROTEST #4
 11509
                                                    6-WAIT FOR 'DNI'
                                                    7-CHECK PCSR1 FOR AN ERROR CONDITION (RECEIVER INTERRUPT OCCURRED
 11510
 11511
                                                      ON RUNT PACKET RECEPTION)
 11512
                                                    8-CHECK PCBB+2 FOR CORRECT BUFFER DONE ADDRESS
                                                    9-CHECK PCBB+4 FOR CORRECT DATA PATTERN
 11513
 11514
                                                    10-WRITE '1' TO CLEAR 'DNI'
 11515
                                                    11-REPEAT STEPS 2-10 WITH A NEW RUNT BYTE COUNT
 11516
 11517
 11518
 11519
        046410
                                           BGNTST
 11520
        046410
                                                                                                       141::
 11521
                                           CHECK TO SEE IF MODULE 'F' HAS BEEN LOADED. IF NOT LOAD IT INTO
 11522
 11523
                                           THE TOP HALF OF WCS. START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI'.
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HARDWARE TESTS MACY11_30(1046) 11-JAN-83 10:13 PAGE 240
CZUAAA.P11 11-JAN-83 09:29 TEST 41: RECEIVER BUFFER RECOVERY - RUNT TEST
 11524
11525
                                                  :AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
                                                  BGNSEG
 11526
         046410'
 11527
         046410' 104404
                                                                                                                                   TRAP C$BSEG
                                                                      # F , MICRO
                                                                                                     ; HAS MICROCODE MODULE 'F' BEEN LOADED
 11528 046412' 022737
                              000106 0003261
                                                            CMP
 11529 046420' 001004
                                                                                                     :NO
                                                            BNE
                                                                      #INMON, apcsr1
                                                                                                     ; YES, IS THE MICROMONITOR ACTIVE?
 11530 046422' 122777
                              000001 131710
                                                            CMPB
                                                                                                     YES SKIP LOADING THE MICROMODULE GO LOAD MICRO MODULE 'F'
                                                                      20$ W'F,MICRO
 11531
         046430 001440
                                                            BEQ
         046432 012737 046440 004737
                              000106 000326 55:
 11532
                                                            MÖV
 11533
11534
11535
                              0202521
                                                                      PC,LODMIC
                                                            JSR
          046444
                   103002
                                                                      10$
                                                                                                    ; OK
          046446
                                                            ESCAPE TST
 11536
          046446' 104410
                                                                                                                                   TRAP
                                                                                                                                              C$ESCAPE
                                                                      #2*SECOND, METER ; WAIT FOR THE MICROMONITOR
PC.CHKDNI
          046450 000370
                                                                                                                                    .WORD L10163-.
                             000176 000332' 10$: MOV
017330' JSR
BCC
000776' 000310' MOV
001275' 000312' MOV
001340' 000314' MOV
001355' 000316' MOV
ERRHR
         046452 012737
 11538
11538 046452' 012737
11539 046460' 004737
11540 046464' 103022
11541 046466' 012737
11542 046474' 012737
11543 046502' 012737
11544 046510' 012737
11545 046516' 104456
11547 046520' 000367
                                                                      PC, CHKDNI
                                                                       20$
                                                                                                    : Ok
         046466' 012737 000776' 000310' 046474' 012737 001275' 000312' 046502' 012737 001340' 000314' 046510' 012737 001355' 000316'
                                                                      #SDNI BITNAM
#SNSET BITSTA
                                                                      #SAFTER, PWHEN
                                                                     #$GTCMD_PCOMND
                                                            ERRHRD 247, RBRRUN, MSG1
                                                                                                                                  TRAP
                                                                                                                                              CSERHRD
 11547 046520' 000367
11548 046522' 003743'
11549 046524' 012750'
                                                                                                                                   .WORD
                                                                                                                                              247
                                                                                                                                   .WORD
                                                                                                                                              RBRRUN
                                             ESCAPE TST
                                                                                                                                   _WORD
                                                                                                                                              MSG1
 11550 0465261
         046526' 104410
046530' 000310
 11551
                                                                                                                                  TRAP
                                                                                                                                              CSESCAPE
11552 046530' 000310
11553 046532' 004737 017374' 20$:
11554 046536' 103006
                                                                                                                                  .WORD
                                                                                                                                           L10163-.
                                                                       PC, CLRDNI ; CLEAR DNI BIT
                                                             JSR
                                                            BCC 25$
ERRHRD 248,RBRRUN,RACMG7 ;DNI DID NOT CLEAR!
 11555
11556
                                                                                                                                              C$ERHRD
                                                                                                                                   TRAP
          046540' 104456
         046542' 000370 046544' 003743'
                                                                                                                                    .WORD
 11557
                                                                                                                                              248
                                                                                                                                   .WORD
                                                                                                                                              RBRRUN
 11558
                                   ESCAPE TST
 11559
          046546' 012726'
                                                                                                                                    .WORD
                                                                                                                                              RACMG7
 11560
          046550
                                                                                                                                   TRAP
                                                                                                                                              C$ESCAPE
 11561
          046550' 104410
 11562
                                                                                                                                   . WORD
          046552' 000266
                                                                                                                                             L10163-.
                                             25$:
ENDSEG
         0465541
 11564
          0465541
                                                                                                                         10000$:
 11565
          0465541
                                                                                                                                   TRAP
          0465541 104405
                                                                                                                                              C$ESEG
 11566
 11567
 11568
                                                  RI WILL CONTAIN THE RUNT BYTE COUNT TO BE USED BY THE MICROCODE
 11569
         046556° 012701 000001
046562°
                                                                                                     :BEGIN WITH BYTE COUNT OF 1
 11570
                                                            MOV
                                                                       #1,R1
 11571
                                                   30$:
 11572
                                                   PASS THE BYTE COUNT TO MICROCODE THROUGH PCBB+, CLEAR PCBB+2 AND PCBB+4
 11573
 11574
                                                BGNSEG
         046562'

046562' 104404

046564' 010137 063604'

046570' 005037 000606'
 11575
 11576
11577
                                          MOV
CLR
                                                                                                                                              C$BSEG
                                                                                                   PASS BYTE COUNT TO MICROCODE HERE IS WHERE THE MICRO WILL PUT THE DONE RECEIVE BUFFER FIFO ADDRESS
                                                                      R1,PCBB
PCBB+2
  11578
  11579
```

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 241
                                       TEST 41: RECEIVER BUFFER RECOVERY - RUNT TEST
CZUAAA.P11 11-JAN-83 09:29
 11580 046574' 005037 000610'
                                                   CLR
                                                           PCBB+4
                                                                                     :HERE IS WHERE THE MICRO WILL PUT THE
 11581
                                                                                    FIRST WORD OF DATA FROM THE RECEIVE BUFFER
 11582
 11583
                                          WAIT FOR THE MICROCODE TO ENTER THE 'INMON' STATE, START MICROTEST #4 BY
 11584
                                          LOADING THE COMMAND FIELD OF PCSRO WITH A 4. WAIT FOR "DNI"
 11585
 11586
        946600 004737
                         017776
                                                           PC, CHKMON
                                                                                     :WAIT FOR MICROMONITOR
        045604' 103006
 11587
                                                           35$
249,RBRRUN,MSG46
                                                   BCC
                                                                                    :OK
        0466061
 11588
                                                   ERRHRD
                                                                                     PRINT ERROR
 11589
        046606' 104456
                                                                                                              TRAP
                                                                                                                      CSERHRD
        046610 000371
046612 003743 
046614 016700
 11590
                                                                                                              .WORD
                                                                                                                      249
 11591
                                                                                                              . WORD
                                                                                                                      RBRRUN
 11592
                                                                                                              . WORD
                                                                                                                      MSG46
 11593
        0466161
                                                  ESCAPE TST
                                                                                     :LEAVE TEST
 11594
        0466161
                104410
                                                                                                              TRAP
                                                                                                                      CSESCAPE
 11595
        046620' 000220
                                                                                                              WORD
                                                                                                                      L10163-.
        0466221
                012777
012737
 11596
                         000004 131506 35$:
                                                   MOV
                                                           #4,aPCSRO
                                                                                    :TELL T11 TO EXECUTE MICROTEST #4
        046630'
 11597
                         000275
                                 000332'
                                                   MOV
                                                           #3*SECOND_METER
                                                                                     :WAIT FOR DNI
 11598
        0466361
                004737
                         0173301
                                                   JSR
                                                           PC, CHKDNI
 11599
        0466421
                103021
                                                           40$
                                                   BCC
 11600
        046644' 004737
                         0200501
                                                   JSR
                                                           PC, CHKINT
                                                                                    SEE IF ANY ERROR INTERRUPTS OCCURRED
        0466501
 11601
                103006
                                                  BCC
                                                           36$
                                                                                    :NO. OK
 11602
        0466521
                                                  ERRHRD
                                                           250 RBRRUN MSG44
                                                                                     :PRINT ERROR MESSAGE
 11603
        0466521
                104456
                                                                                                              TRAP
                                                                                                                      CSERHRD
 11604
        046654' 000372
                                                                                                              .WORD
                                                                                                                      250
 11605
        0466561
                003743
                                                                                                              .WORD
                                                                                                                      RBRRUN!
11606
        0466601
                0164541
                                                                                                              .WORD
                                                                                                                      MSG44
11607
        0466621
                                                  ESCAPE TST
        0466621
11608
                104410
                                                                                                              TRAP
                                                                                                                      CSESCAPE
        046664' 000154
11609
                                                                                                              .WORD
                                                                                                                      L10163-.
        0466661
11610
                012702
                         000004
                                                           #4,R2
                                          36$:
                                                                                    :MICROTEST #4 IS HUNG
        046672°
046672°
046674°
11611
                                                  ERRHRD 251, RBRRUN, MSG12
                                                                                    PRINT ERROR MESSAGE
11612
                104456
                                                                                                              TRAP
                                                                                                                      C$ERHRD
11613
                000373
                                                                                                                      251
                                                                                                              .WORD
        046676
11614
                003743
                                                                                                              .WORD
                                                                                                                      RBRRUN
        046700
11615
                013500
                                                                                                                      MSG12
                                                                                                              .WORD
       046702' 104410
046704' 000134
11616
11617
                                                  ESCAPE TST
                                                                                                              TRAP
                                                                                                                      CSESCAPE
11618
                                                                                                              .WORD
                                                                                                                      L10163-.
11619
                                          : 'DNI' SET INDICATING THE TEST IS FINISHED, NOW CHECK POSRT FOR AN ERROR
11620
11621
                                          CONDITION. THIS CONDITION WILL BE SET IF, AFTER THE MICROCODE TRANSMITTED THE
                                          RUNT PACKET, A RECEIVER INTERRUPT OCCURRED. THIS SHOULD NOT HAPPEN BECAUSE
11622
11623
                                          THE RECEIVER STATE MACHINE SHOULD GO THROUGH A BAD PACKET STATE AND NOT
11624
                                          :CAUSE A RECEIVER INTERRUPT
11625
11626
        046706 122777
                         000003 131424 408:
                                                           #INERR, apcsr1
                                                  CMPB
                                                                                    :DID AN ERROR OCCUR?
11627
        046714' 001005
                                                           458
                                                  BNE
                                                                                    :NO
11628
        0467161
                                                          252, RBRRUN, MSG30
                                                  ERRHRD
                                                                                    :YES, PRINT ERROR MESSAGE
11629
        046716' 104456
                                                                                                              TRAP
                                                                                                                      CSERHRD
        046720 000374
11630
                                                                                                                      252
                                                                                                              .WORD
 11631
        0467221 0037431
                                                                                                              .WORD
                                                                                                                      RBRRUN
        046724' 015276'
11632
                                                                                                              .WORD
                                                                                                                      MSG30
11633
        046726' 000425
                                                  BR
                                                           55$
11634
11635
                                          OK. NO RECLIVER INTERRUPT. NOW CHECK PCBB+2, WHICH IS THE CONTENTS OF THE
```

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 242
CZUAAA.P11
            11-JAN-83 09:29
                                          TEST 41: RECEIVER BUFFER RECOVERY - RUNT TEST
                                          BUFFER DONE FIFO AFTER THE SECOND PACKET WAS RECEIVED. BITS 14:11 SHOULD
11636
11637
                                           ALL BE ZERO INDICATING BUFFER O WAS RECOVERED BY THE RECEIVER STATE MACHINE.
 11638
        046730' 042737
046736' 005737
                                 000606' 45$:
                         103777
                                                           #103777_PCBB+2
                                                                                     STRIP OFF THE FLOATING BITS
11639
                                                   BIC
                         000606
                                                                                     :DID DEUNA RECOVER RECEIVE BUFFER?
 11640
                                                   TST
                                                            PCBB+2
        046742' 001407
                                                            50$
 11641
                                                   BEQ
                                                                                     :YES
11642
                                                            #100000_PCBB+2
                                 000606
                                                                                     NO. MAKE IT A LINK MEMORY ADDRESS
                         100000
                                                   BIS
        046752'
046752' 104456
                                                   ERRHRD 253_RBRRUN_MSG31
                                                                                     PRINT ERROR MESSAGE
 11644
                                                                                                               TRAP
                                                                                                                       CSERHRD
 11645
        0467541 000375
                                                                                                               .WORD
                                                                                                                       253
        046756' 003743'
                                                                                                               .WORD
 11646
                                                                                                                       RBRRUN
        046760' 015344'
                                                                                                               .WORD
 11647
                                                                                                                       MSG31
 11648
11649
                                           NOW CHECK THE DATA THAT WAS RECEIVED INTO THE RECFIVER BUFFER. IT SHOULD
 11650
                                           BE AN ALTERNATING 1'S AND O'S PATTERN.
 11651
                         052525 000610' 50$:
                                                                                     ; IS DATA GOOD IN LEGIT RECEIVE BUFFER?
 11652
        046762' 022737
                                                   CMP
                                                            #52525,PCBB+4
                                                           55$
        046770' 001404
 11653
                                                   BEO
                                                                                     : YES
        0467721
 11654
                                                   ERRHRD
                                                           254 RBRRUN MSG32
                                                                                     :NO.PRINT ERROR MESSAGE
        046772 104456 046774 000376
 11655
                                                                                                               TRAP
                                                                                                                        CSERHRD
                                                                                                               .WORD
 11656
                                                                                                                        254
        046776' 003743'
                                                                                                               .WORD
                                                                                                                       RBRRUN
 11657
        047000' 015510'
                                                                                                               . WORD
                                                                                                                       MSG32
 11658
        0470021
 11659
                                          55$:
        0470021
                                            ENDSEG
 11660
                                                                                                      100015:
        0470021
11661
                                                                                                                       CSESEG
        0470021 104405
                                                                                                               TRAP
 11662
 11663
                                           :WRITE '1' TO CLEAR 'DNI'
11664
11665
        047004 004737
                                                           PC,CLRDNI
60$
                         017374
                                                   JSR
                                                                                     :GO CLEAR DNI
11666
        047010' 103006
                                                   BCC
                                                                                     :OK
 11667
        0470121
                                                   ERRHRD
                                                           255, RBRRUN, RACMG7
                                                                                     ERROR DNI DID NOT CLEAR!
 11668
        047012' 104456
                                                                                                               TRAP
                                                                                                                        CSERHRD
 11669
 11670
        047014' 000377
                                                                                                                        255
                                                                                                               .WORD
        047016' 003743'
                                                                                                                       RBRRUN
                                                                                                               .WORD
 11671
        047020' 012726'
 11672
11673
                                                                                                               .WORD
                                                                                                                       RACMG7
        047022' 104410
                                                   ESCAPE TST
                                                                                                               TRAP
                                                                                                                        CSESCAPE
 11674
11675
        047024 000014
                                                                                                               .WORD
                                                                                                                       L10163-.
 11676
                                           GENERATE A NEW RUNT PACKET BYTE COUNT. WE WILL JUST SLIDE A BIT THROUGH
 11677
                                           THE COUNTER, UP TO THE LAST RUNT PACKET SIZE OF 63
 11678
 11679
        047026' 006301
047030' 005201
                                           605:
                                                                                     :MOVE OVER THE ALREADY SET BITS
 11680
                                                   ASL
                                                   INC
                                                            R1
                                                                                     SET LSB
 11681
        047032' 020127
                                                                                     STOP WITH A BYTE COUNT GREATER THAN
                                                   CMP
                                                            R1.#MINBYT
                         000100
 11682
                                                                                     :MINIMUM SIZE
 11683
 11684
        047036' 002651
                                                   BL T
                                                            30$
        047040
 11685
                                           ENDIST
                                                                                                      L10163:
        047040
 11686
                                                                                                               TRAP
                                                                                                                       (SETST
        047040' 104401
 11687
```

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 243 CZUAAA.P11 11-JAN-83 09:29 TEST 42: HALF-DUPLES
                                         TEST 42: HALF-DUPLEX TEST
11688
                                          .SBTTL TEST 42: HALF-DUPLEX TEST
 11689
 11690
                                          . **********************************
 11691
 11692
                                          THE LINK INCLUDES A 'HALF DUPLEX' MODE OF OPERATION. THIS MODE CAN BE ENABLED
 11693
                                          OR DISABLED THROUGH THE LINK MODE REGISTER. THE OPERATIONAL MICROCCHE NORMALLY
 11694
                                          :USES HALF-DUPLEX MODE.
 11695
 11696
                                          ; IN THE HALF-DUPLEX MODE, THE LINK WILL NOT RECEIVE MESSAGES ADDRESSED TO
                                          : ITSELF. INCOMING MESSAGES LOOPED BACK WILL BE IGNORED BY THE RECEIVE STATE : MACHINE. THE STATE MACHINE WILL NOT ISSUE A 'RECEIVER DONE' INTERRUPT AND THE
 11697
 11698
 11699
                                          BUFFER CAN BE RECOVERED FOR RECEIVING A LATER DATAGRAM.
 11700
 11701
                                          THIS TEST USES MICROMODULE 'F' MICROTEST #5.
 11702
                                          THIS TEST WILL VERIFY THE OPERATION OF HALF-DUPLEX MODE. A DATAGRAM WILL BE
 11703
                                          TRANSMITTED IN LOOPBACK MODE WITH THE HALF-DUPLEX BIT SET. THE MICROCUDE
 11704
                                          WILL VERIFY THAT THE RECEIVER INTERRUPT DOES NOT OCCUR. THE MICROCODE WILL
 11705
                                          THEN CLEAR THE HALF-DUPLEX BIT AND LOOP A DATAGRAM AND VERIFY THAT THE
 11706
                                          ORIGINAL BUFFER WAS RECOVERED.
 11707
 11708
                                          THIS TEST WILL USE THE PCBB TO PASS INFORMATION. PCBB+O WILL BE USED TO PASS
 11709
                                          THE CONTENTS OF THE BUFFER DONE FIFO AFTER THE SECOND DATAGRAM IS RECEIVED.
 11710
                                          PCBB+4 WILL BE USED TO PASS THE FIRST WORD OF DATA FROM THE RECEIVER BUFFER
 11711
                                          AFTER THE SELOND DATAGRAM IS TRANSMITTED.
11712
11714
                                          PCBB+0:
                                                           ! CONTENTS OF BUFFER DONE FIFO !
 11715
 11716
                                          PCBB+2:
                                                           ! FIRST DATA WORD OF BUFFER DONE!
 11717
11718
11719
                                          THE CONTENTS OF THE BUFFER DONE FIFO SHOULD BE O AND THE FIRST DATA WORD SHOULD BE AN ALTERNATING 1'S AND O'S PATTERN.
 11720
11721
11722
                                          :TEST SEQUENCE:
 11723
                                                  1-LOAD MICROMODULE 'F' IF NOT ALREADY DONE SO.
                                                  2-CLEAR PCBB+0 AND PCBB+2
 11724
 11725
                                                  3-WAIT FOR THE MICROMONITOR TO ENTER THE 'INMON' STATE
 11726
                                                  4-WAIT FOR 'DNI'
 11727
                                                  5-CHECK PCSR1 FOR AND ERROR CONDITION (THIS SIGNIFIES THAT THE DATAGRAM
 11728
                                                  SENT IN HALF-DUPLEX MODE CAUSED AN INTERRUPT)
 11729
                                                  6-VERIFY PCBB+0 IS LINK BUFFER O
 11730
                                                  7-VERIFY PCBB+2 HAS ALTERNATING 1'S AND O'S
 11731
 11732
                                         11733
11734
        047042
                                         BGNTST
11735
        047042
                                                                                                    142::
11736
11737
                                         LHECK TO SEE IF MODULE 'F' HAS BEEN LOADED. IF NOT LOAD IT INTO
                                         THE TOP HALF OF WCS, START IT AND WALT FOR THE MICROMONITOR TO SET 'UNI'.
11738
11739
                                          AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
11740
        0470421
11741
                                           BGNSIG
        047042 104404
11742
                                                                                                            IRAP
                                                                                                                    C$BSEG
        047044' 022737
11743
                        000106 000326
                                                  (MP
                                                          #"F,MICRO
                                                                                   :HAS MICROCODE MODULE "F" BEEN LOADED
```

| HARDWAR CZUAAA. | E TESTS P11 1 | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN | -83 10: TEST 42 | 13 PAGE : HALF-D | 244 UPLEX TEST | | | |
|--|---|--|---|-------------------|--------------------|---|--|--|---------------------------------|------------------------------------|
| 11744 11745 11746 11747 11748 11749 | 047052' 047054' 047062' 047064' 047072' 047076' 047100' | 001004 122777 001440 012737 004737 103002 | 000001 000106 020252* | 131256 000326' | 5\$: | BNE CMPB BEQ MOV JSR BCC ESCAPE | 5\$ #INMON,@PCSR1 20\$ #'F,MICRO PC,LODMIC 10\$ TST | ;NO ;YES, IS THE MICROMONITO ;YES SKIP LOADING THE MI ;GO LOAD MICRO MODULE 'F | R ACTIV CROMODU | E? |
| 11749 11750 11751 11752 11753 11754 11755 11756 11757 11758 11759 11760 | 047100' 047102' 047104' 047112' 047116' 047120' 047126' 047134' 047142' | 104410 000342 012737 004737 103022 012737 012737 012737 | 000176 017330' 000776' 001275' 001340' 001355' | 000314 | 10\$: | MOV JSR BCC MOV MOV MOV MOV | #2*SECOND, METER PC, CHKDNI 20\$ #\$DNI, BITNAM #\$NSET, BITSTA #\$AFTER, PWHEN #\$GTCMD, PCOMND | ;WAIT FOR THE MICROMONIA;OK | TRAP .WORD 'OR | C\$ESCAPE 110164 |
| 11761 11762 11763 11764 11765 11766 | 047152' 047154' | 104456 000400 004016' 012750' | | | | ESCAPE | 256, HAFDUP, MSG1 | | TRAP .WORD .WORD .WORD | CSERHPD 256 HAFDUP MSG1 |
| 11766 11767 11768 11769 11770 11771 11772 11773 | 047160' 047162' 047164' 047170' 047172' | 104410 000262 004737 103006 | 017374 | | 20\$: | JSR BCC ERRHRD | PC,CLRDNI 25\$ 257,HAFDUP,RACMG7 | CLEAR DNI BIT | TRAP .WORD | CSESCAPE L10164 |
| 11771 11772 11773 11774 11775 | 047172° 047174° 047176° 047200° 047202° | 104456 000491 004016' 012726' | | | | ESCAPE | T | THE PER HOT CEEAN. | TRAP .WORD .WORD .WORD | CSERHRD 257 HAFDUP RACMG7 |
| 11776 11777 11778 | 047202° 047204° 047206° 047206° 047206° | 104410 000240 | | | 25\$: ENDSE | | • | 10000\$: | TRAP .WORD | CSESCAPE L10164 |
| 11779 11780 11781 11782 11783 11784 11785 11786 11787 11788 11789 11790 | 047206* | 104405 | | | CLEAR INFORM | PCBB+0 A Ation ab | ND PCBB+2 THESE LOCATIO OUT THE TEST SUCCESS | NS ARE WHERE THE MICROCODE | TRAP | C\$ESEG PLACE |
| 11786 11787 11788 11789 | 047210' 047210' 047212' | 104404 005037 | 000604 | | BGNSE | G CLR | PCBB+0 | :HERE IS WHERE THE MICRO | IFO ADD | RESS |
| 11790 11791 11792 11793 11794 11795 | 047216' | 005037 | 000606 | | WAIT F | CLR OR THE M | PCBB+2 | ; HERE IS WHERE THE MICRO ; FIRST WORD OF DATA FROM INMON' STATE |) WILL P | PUT THE |
| 11796 | | | | | ;THEN E | XECUTE M OR 'DNI' | ICROTEST #5 BY LOADING | PCSRO WITH A 5 | | |
| 11797 11798 11799 | 047222° 047226° 047230° | 004737 103006 | 017776 | | • | JSR BCC ERRHRD | PC,CHKMON 35\$ 258,HAFDUP,MSG46 | :WAIT FOR MICROMONITOR :OK :PRINT ERROR | | |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 245
CZUAAA.P11 11-JAN-83 09:29 TEST 42: HALF-DUPLEX TEST
11800 047230° 104456
11801 047232° 000402
11802 047234° 004016°
11803 047236° 016700°
                                                                                                                       C$ERHRD
                                                                                                               TRAP
                                                                                                                       258
                                                                                                               . WORD
                                                                                                               . WORD
                                                                                                                       HAF DUP
                                                                                                               .WORD
                                                                                                                       MSG46
                                                                 ;LEAVE TEST
        0472401
 11804
                                                   ESCAPE TST
 11805
        047240' 104410
                                                                                                               TRAP
                                                                                                                        CSESCAPE
        047242' 000202
 11806
                                                                                     :TELL T11 TO EXECUTE MICROTEST #5
        047244' 012777
047252' 012737
 11807
                         000005 131064 35$:
000473 000332*
                                                   MOV
                                                            #5.apcsro
 11808
                                                   MOV
                                                            #5*SECOND_METER
                                                                                     :WAIT FOR DNI
        047260' 004737
                                                           PC CHKDNI
 11809
                         0173301
                                                   JŠR
       047264' 103021
047266' 004737
047272' 103006
 11810
                                                   BCC
                                                           PC CHKINT
 11811
                         0200501
                                                                                     SEE IF ANY ERROR INTERRUPTS OCCURRED
                                                   JSR
11812
11813
                                                   BCC
                                                                                     :NO. OK
        0472741
                                                           259 HAFDUP MSG44
                                                   ERRHRD
                                                                                     PRINT ERROR MESSAGE
        0472741 104456
 11814
                                                                                                               TRAP
                                                                                                                       CSERHRD
        047276' 000403
 11815
                                                                                                               .WORD
                                                                                                                       259
        047300' 004016'
 11816
                                                                                                               .WORD
                                                                                                                       HAFDUP
        047302' 016454'
 11817
                                                                                                               .WORD
                                                                                                                       MSG44
        0473041
 11818
                                                   ESCAPE TST
 11819
        047304' 104410
                                                                                                               TRAP
                                                                                                                       C$ESCAPE
 11820
        047306' 000136
                                                                                                               .WORD
                                                                                                                       L10164-.
        047310' 012702
 11821
                                                   MOV #5,R2
ERRHRD 260,HAFDUP,MSG12
                         000005
                                       36$:
                                                                                     :MICROTEST #5 IS HUNG
11822
11823
        0473141
                                                                                     PRINT ERROR MESSAGE
        047314' 104456
                                                                                                               TRAP
                                                                                                                       CSERHRD
        047316' 000404
 11824
                                                                                                               .WORD
                                                                                                                        260
        047320' 004016'
 11825
                                                                                                               .WORD
                                                                                                                        HAF DUP
11826
        047322' 013500'
                                                                                                               .WORD
                                                                                                                       MSG12
        0473241
 11827
                                                  ESCAPE TST
 11828 047324 104410
                                                                                                               TRAP
                                                                                                                       CSESCAPE
11829 047326' 000116
                                                                                                               .WORD
                                                                                                                       L10164-.
11830
11831
                                          AN ERPOR IN POSRI MEANS THAT THE FIRST DATAGRAM SENT, WHICH IS THE ONE SENT
11832
                                          :IN HALF-DUPLEX MODE, CAUSED A RECEIVER INTERRUPT.
11833
       047330' 122777
11834
                         000003 131002 40$:
                                                   CMPB
                                                           #INERR, apcsR1
                                                                                     :DID AN ERROR OCCUR?
       047336' 001005
11835
                                                                                     ; NO
                                                   BNE
                                                           45$
11836
                                                           261, HAFDUP, MSG39
                                                   ERRHRD
                                                                                     :YES. PRINT ERROR MESSAGE
 11837
        047340' 104456
                                                                                                               TRAP
                                                                                                                       CSERHRD
        0473421 000405
 11838
                                                                                                               .WORD
                                                                                                                       261
        047344' 004016'
11839
                                                                                                               .WORD
                                                                                                                       HAF DUP
        047346' 016070'
11840
                                                                                                               .WORD
                                                                                                                       MSG39
        047350' 000425
11841
                                                   BR
                                                            55$
11842
11843
                                          PCBB+O CONTAINS THE CONTENTS OF THE BUFFER DONE FIFO AFTER THE SECOND DATAGRAM
11844
                                           WAS RECEIVED IT SHOULD CONTAIN THE BUFFER ADDRESS OF THE FIRST BUFFER IN LINK
11845
                                          : MEMORY
11846
11847
        047352' 042737
                         103777 000604 45$:
                                                                                     STRIP UFF THE FLOATING BITS
                                                  BIC
                                                           #103777,PCBB
        047360' 005737
                         000604
                                                           PÇBB
 11848
                                                                                     ;DID DEUNA RECOVER RECEIVE BUFFER?
                                                   TST
        047364' 001407
                                                           50$
 11849
                                                  BEQ
                                                                                     ; YES
        047366' 052737
                                                           #100000,PCBB
 11850
                         100000 000604
                                                  BIS
                                                                                     MAKE IT A LINK MEMORY ADDRESS
        0473741
 11851
                                                  ERRHRD 262, HAFDUP, MSG40
                                                                                     :NO, PRINT ERROR MESSAGE
 11852
        047374' 104456
                                                                                                               TRAP
                                                                                                                       CSERHRD
        047376' 000406
 11853
                                                                                                               .WORD
                                                                                                                       262
        047400 004016
 11854
                                                                                                               .WORD
                                                                                                                       HAF DUP
        047402' 016112'
 11855
                                                                                                               .WORD
                                                                                                                       MSG40
```

| HARDWAR (ZUAAA.) | E TESTS P11 1 | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-J4N | -83 10: TEST 42 | 13 PAGE : HALF-D | 246 UPLEX TEST | | | | |
|---|---|--|-------------------|--------|--------------------|----------------------|--|--|-----------|---------------------------------|------------------------------------|
| 11856 11857 11858 | | | | | PCBB+2 | CONTAIN ULD BE A | S THE FIRST DATA WORD FR LTERNATING 1'S AND O'S I | OM THE FIRST BUF F THE DATA WAS P | FER IN LI | NK MEMO THIS BU | RY IFFER |
| 11860 | 047404° 047412° | 022737 001404 | 052525 | 000606 | 50\$: | CMP BEQ | #52525,PCBB+2 55\$ | :IS DATA GOOD I | N LEGIT R | ECEIVE | BUFFER? |
| 11862 11863 11864 11865 11866 | 047414' 047414' 047416' 047420' | 104456 | | | 55\$: | ERRHRD | 263, HAFDUP, MSG41 | NO PRINT ERROR | MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 263 HAFDUP MSG41 |
| 11868 11869 11870 11871 11872 | 047424° 047424° 047424° 047424° | 104405 | | | ENDSE: | | LEAK 'DNI' | | 10001\$: | TRAP | C\$ESEG |
| 11857 11858 11859 11860 11861 11863 11864 11865 11865 11867 11867 11871 11872 11873 11874 11875 11876 11879 11880 11881 11883 | 047426' 047432' 047434' 047436' 047440' 047442' 047444' | 004737 103004 104456 000410 004016' 012726' | 017374' | | 60\$: | JSR BCC ERRHRD | PC,CLRDNI 60\$ 264,HAFDUP,RACMG7 | :GO CLEAR DNI :OK :ERROR DNI DID | NOT CLEAR | TRAP .WORD .WORD .WORD | CSERHRD 264 HAFDUP RACMG7 |
| 11882 11883 11884 | 047444° 047444° 047444° | 104491 | | | ENDTST | | | • | L10164: | TRAP | C\$ETST |

HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 247 CZUAAA.P11 11-JAN-83 09:29 TEST 43: COLLISION TEST

11885 .SBTTL TEST 43: COLLISION TEST 11886

THE RECEIVE STATE MACHINE REACTS TO COLLISIONS ON THE WIRE BY ACTIVATING THE RETRY LOGIC. THE RETRY LOGIC WAITS AN INTERVAL OF TIME BEFORE ATTEMPTING TO RETRANSMIT THE DATAGRAM. THE INTERVALS ARE NOT UNIFORM BUT ARE OF GENERALLY INCREASING PSEUDO-RANDOM DURATION. THE RETRY LOGIC WILL ATTEMPT

:TO RETRANSMIT UP TO 15 ADDITIONAL TIMES BEFORE GIVING UP.

THIS TEST WILL VERIFY THAT THE RECEIVE STATE MACHINE RESPONDS TO A COLLISION AND THAT THE RETRY SEQUENCE IS REPORTED CORRECTLY IN THE TRANSMIT STATUS WORD.

THIS TEST WILL USE MICROMODULE 'G' MICROTEST #1.

THE LINK BOARD CONTATINS D'AGNOSTIC LOGIC THAT ALLOWS COLLSIONS TO BE SIMULATED.

WITH THE FORCE COLLISIONS LOGIC ACTIVATED, THE RETRY HARDWARE CAN BE STEPPED THROUGH THE RETRY SEQUENCE. THAT IS, EVERY DATAGRAM LOOPED BACK WILL STEP THE RETRY LOGIC THROUGH ONE STEP OF THE RETRY SEQUENCE. THE RETRY SEQUENCE CAN BE VERIFIED BY CHECKING THE TRANSMIT BUFFER STATUS WORDS AFTER EACH RETRY STEP.

THE PCBB WILL BE USED TO PASS PARAMETERS BETWEEN THE MICPOCODE AND THE HOST PROCESSOR. PCBB+O WILL BE USED TO PASS THE DATA TO BE LOADED INTO THE LINK MODE WORD. PLBB+2 WILL BE PASSED BACK BY THE MICROCODE, IT IS THE FIRST WORD OF THE TRANSMIT BUFFER (TRANSMIT STATUS WORD O). PCBB+4 WILL ALSO BE PASSED; BACK, IT IS TRANSMIT STATUS WORD 1.

THE TRANSMIT STATUS WORDS SHOULD SHOW THE FOLLOWING STATUS:

STATUS BITS

| | WORD 0 | WORD 1 | | |
|--------------------|--------------|--------------|-------------|---------------|
| LOOPBACK STEP # | ERRS (14) | MORE (12) | ONE (11) | RETRY (10) |
| 1 | 0 | 0 | 1 | 0 |
| 2-15 | 0 | 1 | 0 | 0 |
| 16 | 1 | 0 | 0 | 1 |

THE PCBB IS FORMATTED AS FOLOWS:

PCBB+0: LINK MODE WORD !
PCBB+2: ! TRANSMIT STATUS WORD 0!
PCBB+4: ! TRANSMIT STATUS WORD 1!

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 248
CZUAAA.P11
               11-JAN-83 09:29
                                             TEST 43: COLLISION TEST
 11941
 11942
                                             :TEST SEQUENCE:
                                                      1-LOAD MICROMODULE 'G' I- NOT ALREADY SONE SO
 11944
                                                      2-LOAD PCBB+O WITH PROMISCUOUS MODE, INTERNAL LOOPBACK AND FORCE
 11945
                                                      COLLISIONS.
 11946
                                                      3-WAIT FOR MICROMONITOR TO ENTER THE 'INMON' STATE
 11947
                                                      4-EXECUTE MICROTEST #1
 11948
                                                      5-WAIT FOR 'DNI'
 11949
                                                      6-CHECK FOR 'ONE' BIT IN PCBB+0 7-WRITE '1' TO CLEAR 'DNI'
 11950
 11951
                                                      8-LOAD PCBB+0 WITH PROMISCUOUS MODE, INTERNAL LOOPBACK AND FORCE
 11952
                                                      COLLISIONS.
 11953
                                                      9-WAIT FOR THE MICROMONITOR TO ENTER THE 'INMON' STATE
 11954
                                                      10-EXECUTE MICROTEST #1
 11955
                                                      11-WAIT FOR 'DNI'
 11956
                                                      12-CHECK PCBB+2 FOR 'MORE' BIT
13-WRITE '1' TO CLEAR 'DNI'
 11957
                                                      14-REPEAT STEPS 8-13 15 TIMES
 11958
 11959
                                                      15-LOAD PCBB+O WITH PROMISCUOUS MODE, INTERNAL LOOPBACK AND FORCE
 1.460
                                                      COLLSIONS
 1.361
                                                      16-WAIT FOR THE MICROMONITOR TO ENTER THE 'INMON' STATE
 11962
                                                      17-EXECUTE MICROTEST #1
 11963
                                                      18-WAIT FOR 'DNI'
 11964
                                                      19-CHECK PCBB+4 FOR ERROR SUMMARY BIT IN PCBB+2 AND RETRY BIT IN
 11965
                                                      PCBB+4
 11966
                                                      20-WRITE '1' TO CLEAR 'DNI'
 11967
11968
 11969
 1970
        047446'
                                            BGNTST
11971
        0474461
                                                                                                            143::
 11972
11973
                                             CHECK TO SEE IF MODULE 'G' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS, START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI'.
11974
11975
                                             AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
11976
11977
        0474461
                                               BGNSEG
11978
        047446' 104404
                                                                                                                     TRAP
                                                                                                                              C$BSEG
        047450' 022737
 11979
                          000107 000326
                                                               #'G,MICRO
                                                      CMP
                                                                                          :HAS MICROCODE MODULE 'G' BEEN LOADED
 11980
        047456' 001004
                                                      BNE
                                                               5$
                                                                                          :NO
        047460' 122777
11981
                                                               #INMON, aPCSR1
                          000001 130652
                                                      CMPB
                                                                                          :YES, IS THE MICROMONITOR ACTIVE?
 11982
        047466' 001440
                                                               20$
                                                      BEQ
                                                                                          YES SKIP LOADING THE MICROMODULE
        0474701
                 012737
 11983
                          000107
                                   000326' 5$:
                                                               M'G.MICRO
                                                      VQM
                                                                                          GO LOAD MICRO MODULE 'G'
                          020252
                 004737
        0474761
 11984
                                                               PC_LODMIC 10$
                                                      JSR
        0475021
11985
                 103002
                                                      BCC
                                                                                          : 0K
11986
        047504
                                                     ESCAPE
                                                              TST
        047504' 104410
11987
                                                                                                                     TRAP
                                                                                                                              CSESCAPE
 11988
        047506' 001026
                                                                                                                      .WORD
                                                                                                                              L10165-.
        047510' 012737
 11989
                          000176 000332' 10$:
                                                                                          :WAIT FOR THE MICROMONITOR
                                                      MOV
                                                               #2*SECOND, METER
        047516' 004737
047522' 103022
047524' 012737
 11990
                          0173301
                                                               PC CHKDNI
                                                      JSR
 11991
                                                      BCC
                                                                                          :OK
 11992
                          000776' 000310'
                                                      MOV
                                                               #SDN1,BITNAM
        047532 012737
047540 012737
                          001275' 000312' 001340' 000314'
 11993
                                                               #SNSET, BITSTA
                                                      MOV
11994
                                                      MOV
                                                               #SAFTER_PWHEN
                          001355' 000316'
 11995
        047546' 012737
                                                      MOV
                                                               #$GTCMD_PCOMND
        0475541
 11996
                                                     ERRHRD
                                                               265, COLTST, MSG1
```

| HARDWARE TESTS MACY11 30(1046) 11-JAN CZUAAA.P11 11-JAN-83 09:29 | 1-83 10:13 PAG TEST 43: COLLI | E 249 SION TEST | | | |
|--|---|---|---|---------------------------------|------------------------------------|
| 11997 047554' 104456 11998 047556' 000411 11999 047560' 004046' 12000 047562' 012750' 12001 047564' | ECCADO | 7.57 | | TRAP.WORD.WORD.WORD | CSERHRD 265 COLTST MSG1 |
| 12002 047564' 10-410 12003 047566' 000746 | ESCAPE | | | TRAP .WORD | C\$ESCAPE £10165 |
| 12003 047566' 000746 12004 047570' 004737 017374' 12005 047574' 103006 12006 047576' | 20\$: JSR BCC ERRHRD | PC,CLRDNI 25\$ 266,COLTST,RACMG7 | ;CLEAR DNI BIT ;DNI DID NOT CLEAR! | | |
| 12007 047576' 104456 12008 047600' 000412 12009 047602' 004046' 12010 047604' 012726' 12011 047606' | CHAMP | 200, COL 131, KACHO! | , DINT DID NOT CEERS. | TRAP .WORD .WORD .WORD | CSERHRD 266 COLTST RACMG7 |
| 12011 047606' 12012 047606' 104410 | ESCAPE | TST | | TRAP | C\$ESCAPE |
| 12013 047610' 000724 12014 047612' 12015 047612' | 25 \$: ENDSEG | | | .WORD | L10165 |
| 12015 047612' 12016 047612' 12017 047612' 104405 | ENDSCG | | 10000\$ | : TRAP | C \$ ESEG |
| 12000 047562' 012750' 12001 047564' 12002 047564' 104410 12003 047566' 000746 12004 047570' 004737 017374' 12005 047576' 103006 12006 047576' 12007 047576' 104456 12008 047600' 000412 12009 047602' 004046' 12010 047606' 104410 12013 047610' 000724 12014 047612' 12015 047612' 12016 047612' 12017 047612' 104405 12018 12019 12020 12021 12022 12023 047614' 012777 000604' 130520 | LOAD PCSR2 WI LOAD REGISTER MICROCODE | TH ADDRESS OF PORT CONTR 5 WITH BITS TO BE LOADE | OL BLOCK D INTO THE LINK MODE REG. | ISTER BY | |
| 12023 047614' 012777 000604' 130520 12024 047622' 005077 130516 | MOV CLR | #PCBB_aPCSR2 aPCSR3 | ;TELL DEUNA WHERE PCBB | IS | |
| 12024 047622 005077 130516 12025 047626 012705 100024 12026 12027 12028 12029 12030 | MÕV | #BĬŤ15!BIT4!BIT2,R5 | ;TELL MICROCODE TO LOAD ;INTO THE LINK MODE REC ;PROMISCUOUS MODE, INTO ;AND FORCE COLLISIONS | THE FOL SISTER: ERNAL LOC | LLOWING OPBAC*, |
| 12029 12030 12031 | BEGIN FIRST L | OOPBACK | | | |
| 12032 047632' | BGNSEG | | | TRAP | (\$ BSEG |
| 12033 047632' 104404 12034 047634' 012702 000001 12035 047640' 010537 000604' 12036 047644' 005037 000606' 12037 047650' 005037 000610' 12038 047654' 004737 017776' 12039 047660' 103006 12040 047662' 12041 047662' 104456 12042 047664' 000413 12043 047666' 004046' 12044 047670' 016700' 12045 047672' 12046 047672' 104410 12047 047674' 000640 12048 047676' 012777 000001 130432 | MOV MOV CLF CLR JSR BCC | #1,R2 R5,PCBB PCBB+2 PCBB+4 PC,CHKMON 30\$ | ;START LOOPBACK STEP #1;LOAD PCBB WITH LINK MC;MICROCODE WILL PUT XM;MICROCODE WILL PUT XM;WAIT FOR MICROMONITOR;OK | DE RE(15 T STAT W | STER DATA |
| 12040 047662' 12041 047662' 104456 12042 047664' 000413 12043 047666' 004046' 12044 047670' 016700' 12045 047672' | ERRHRD | 267,COLTST,MSG46 | ;PRINT ERROR | TRAP .WORD .WORD .WORD | CSERHRD 267 COLTST MSG46 |
| 12045 047672' 12046 047672' 104410 | ESCAPE | TST | ;LEAVE TEST | TRAP | CSESCAPE |
| 12049 047704' 012737 000176 000332' 12050 047712' 004737 017330' | MOV JSR | #1.apcsro #2*second,meter PC,CHKDNI | :EXECUTE MICROTEST W: :WAIT FOR DNI | .WORD | L10165 |
| 120% 047716' 103021 120% 047720' 004737 020050' | BCC JSR | 40\$ PC,CHKINT | ; SEE IF ANY ERROR INTER | RUPTS O | CURRED |

| HARDWARE TESTS MACY11 30(1046) CZUAAA.P11 11-JAN-83 09:29 | 11-JAN-83 10:13 PAGE 250 TEST 43: COLLISION | O I TEST | | |
|--|--|--|----------------------------------|---|
| 12053 047724' 103006 12054 047726' 12055 047726' 104456 12056 047730' 000414 12057 047732' 004046' 12058 047734' 016454' 12059 047736' 104410 12060 047736' 104410 12061 047740' 000574 12062 047742' 012702 000001 12063 047746' 12064 047746' 104456 | | 8,COLTST,MSG44 ;PRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 268 COLTST MSG44 |
| 12059 047736° 104410 12061 047740° 000574 12062 047742° 012702 000001 | ESCAPE TS 35\$: MOV #1 | .R2 :MICROTEST #1 IS HUNG | TRAPWORD | C\$ESCAPE L10165 |
| 12063 047746' 12064 047746' 104456 1206 047750' 000415 12066 047752' 004046' 12067 047754' 013500' 12068 047756' 12069 047756' 104410 12070 047760' 000554 12071 12072 12073 12074 12075 047762' 012703 004000 | | 9,COLTST,MSG12 | TRAP .WORD .WORD .WORD | CSERHRD 269 COLTST MSG12 |
| 12069 047756' 104410 12070 047760' 000554 | ESCAPE TST | | TRAP .WORD | CSESCAFE L10165 |
| 12071 12072 12073 | THE RESULT OF THE | FIRST LOOPBACK SHOULD BE TX WORD 0 'ONE' B | IT SET AND | NO |
| 12076 047766' 005004 12077 047770' 032737 040000 12078 047776' 001014 12079 050000' 032737 010000 12080 050006' 001010 12081 050010' 032737 004000 12082 050016' 001404 12083 050020' 032737 002000 12084 050026' 001404 12085 050030' 104456 12087 050032' 000416 12088 050034' 004046' 12089 050036' 014340' | 000606' BIT #B 000606' BIT #B 000606' BIT #B 000606' BIT #B 000610' BIT #B BEQ 45' BEQ 50' | IT14,PCBB+2 ; IS 'ERROR SUMMARY' S YES, ERROR IT12,PCBB+2 ; IS 'MORE' BIT SET IN YES, ERROR IT11,PCBB+2 ; IS 'ONE' BIT SET IN NO, ERROR IT10,PCBB+4 ; IS 'RETRY' BIT SET I | ET IN WORD WORD 0? WORD 0? | WORD 0 RD 1 0? C\$ERHID 270 COLIST MSG22 |
| 12091 12092 12093 | WRITE 'ONE' TO CL | | | |
| 12090 12091 12092 12093 12094 12095 12096 12096 12096 12097 12098 050046' 12098 050050' 000417 12099 050052' 004046' 12100 050056' 12102 050056' 12104 050056' 12105 12106 | 50\$: JSR PC BCC 559 ERRHRD 27 | CLRDNI ;GO CLEAR DNI :OK 1,COLTST,RACMG7 ;PRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 271 COLTST RACMG7 |
| 12101 050056' 12102 050056' 12103 050056' 12104 050056' 104405 | 55\$: ENDSEG | 10001 | | C\$ESEG |
| 12105 12106 12107 12108 050060' | BEGIN LOOPBACKS 2 | r - 15 | | |

| HARDWAR CZUAAA. | E TESTS P11 1 | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN | -83 10 TEST 4 | :13 PAGE 3: COLLIS | 251 SION TEST | | | |
|---|--|--|--|-------------------|------------------|---|--|--|-----------------------------|------------------------------------|
| 12109 12110 12111 | 050060° 050062° | | 000002 | | | MOV | #2,R2 | :START LOOPS 2-15 | TRAP | C\$BSEG |
| 12109 12111 121112 121113 121114 121116 121117 121118 121121 121212 121213 12133 12133 12133 12133 12134 12131 | 050066' 050072' 050076' 050102' 050106' 050110' | 005037 | 000604° 000606° 000610° 017776° | | 60\$: | MOV CLR CLR JSR BCC ERRHRD | R5,PCBB PCBB+2 PCBB+4 PC,CHKMON 70\$ 272,COLTST,MSG46 | :LOAD PCBB WITH LINK MO :MICROCODE WILL PUT XMI :MICROCODE WILL PUT XMI :WAIT FOR MICROMONITOR :OK :PRINT ERROR | DE REGI T STAT T STAT | STER DATA WORD 0 WORD 1 |
| 12118 12119 12120 12121 12122 | 050110' 050112' 050114' 050116' 050120' | 104456 000420 004046' 016700' | | | | ESCAPE | TST | ;LEAVE TEST | TRAP .WORD .WORD .WORD | CSERHAD 272 COLTST MSG46 |
| 12123 | 050120° 050122° | 104410 000412 | | | | ESCAPE | 131 | TEMAE LEZI | TRAP.WORD | CSESCAPE L10165 |
| 12125 12126 12127 12128 | 050120° 050122° 050124° 050132° 050140° 050144° | 012777 012737 004737 103017 | 000001 000176 017330 | 130204 000332' | 70\$: | MOV MOV JSR BCC | #1,aPCSRO #2*SECOND,METER PC,CHKDNI 80\$ | :EXECUTE MICROTEST #1 :WAIT FOR DNI | • # 0 11 2 | 2,0,0, |
| 12129 | 050146' 050152' | 004737 | 020050 | | | JSR BCC | PC, CHKINT 75\$ | :SEE IF ANY ERROR INTER | RUPTS 0 | CCURRED |
| 12131 12132 12133 12134 12135 | 050154' 050154' 050156' | | | | | ERRHRD | 273,COLTST,MSG44 | PRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 273 COLTST MSG44 |
| 12136 12137 | 050160' 050162' 050164' 050170' | 012702 | 000001 | | 75\$: | MOV Errhrd | #1,R2 274,COLTST,MSG12 | ;MICROTEST #1 IS HUNG | . #0110 | 113044 |
| 12138 12139 12140 12141 | 050170° 050172° 050174° 050176° | 104456 000422 004046' 013500' | | | | F.C. (A D.F. | | | TRAP .WORD .WORD | C\$ERHRD 274 COLTST MSG12 |
| 12142 12143 12144 | 050200° 050200° 050200° | 104410 000332 | | | | ESCAPE | 121 | | TRAPWORD | CSESCAPE L10165 |
| 12145 12146 12147 | | | | | THE R | ESULT OF | LOOPBACKS 2-15 SHOULD BE | THE "MORE" BIT IN TX 0 | AND NO | OTHERS |
| 121/9 | 0502041 0502101 | ハマクフマフ | 010000 040000 | 000606' | 80\$: | MOV BIT | #BIT12,R3 #BIT14,PCBB+2 | :'MORE' BIT SHOULD BE S :IS 'ERROR SUMMARY' SET | IN TX | x0 0? |
| 12149 12150 12151 12152 12153 12154 12155 12156 12157 12158 | 050216' 050220' 050226' 050230' 050236' | 032737 | 016000 | 000606 | | BNE BIT BEQ | 90\$ #BIT12,PCBB+2 90\$ | YES, ERROR IS MORE BIT SET IN T | x 0? | |
| 12153 12154 | 050230° 050236° | 032737 | 004000 | 000606. | | BIT | #BIT11,PCBB+2 90\$ | :NO, ERROR :IS 'ONE' BIT SET IN TX :YES, ERROR | 0? | |
| 12155 12156 | 050240' 050246' 050250' | 032737 | 002000 | 000610 | | BIT BEQ | #BIT10,PCBB+4 100\$ | YES, ERROR IS RETRY BIT SET IN NO | TX 1? | |
| 12157 12158 | 0502501 | 104456 | | | 90\$: | ERRHRD | 275,COLTST,MSG22 | ;PRINT ERROR MESSAGE | TRAP | CSERHRD |
| 12159 12160 12161 12162 | 050252* 050254* 050256* | 000423 004046' 014340' | | | | | | | .WORD .WORD .WORD | 275 COLTST MSG22 |
| 12163 | | | | | WRITE | 11° TO C | LEAR 'DNI' | | | |

| HARDWARE TESTS MACY11 CZUAAA.P11 11-JAN-8 | 30(1046) 11-JA 3 09:29 | N-83 10. TEST 43 | .13 PAGE 3: COLLIS | 252 SION TEST | | | |
|--|---|---------------------|---------------------------------|---|---|---------------------------------|---------------------------------------|
| 12165 12166 050260' 004737 12167 05^264' 103004 12168 056266' 104456 12170 050270' 000424 12171 050272' 004046 | | 100\$: | JSR BCC ERRHRD | PC_CLRDNI 105\$ 276,COLTST_RACMG7 | ;GO CLEAR DNI ;OK ;PRINT ERROR MESSAGE | TRAPWORD | C\$ERHRD 276 |
| 12171 050272' 004046 12172 050274' 012726 12173 050276' 005202 12174 050300' 022702 12175 050304' 001270 12176 050306' | 000020 | 105 \$: | INC CMP BNE EG | R2 #16R2 60\$ | ;LOOP COUNT ;HAVE WE DONE LOOP STEPS ;NO CONTINUE 10002\$: | .WORD .WORD 2-15? | COLTST RACMG7 |
| 12178 050306° 104405 12179 12180 | | BECIN | LOOPBACK | : #1 6 | | TRAP | (\$ESEG |
| 12166 050260' 004737 12167 05^264' 103004 12168 050266' 104456 12169 050266' 104456 12170 050270' 000424 12171 050272' 004046 12172 050274' 012726 12173 050276' 005202 12174 050300' 022702 12175 050304' 001270 12176 050306' 104405 12177 050306' 104405 12178 050310' 104405 12181 12182 050310' 104404 12183 050312' 010537 12185 050316' 005037 12186 050322' 005037 12187 050326' 004737 12188 050332' 103006 12189 050334' 104456 12191 050336' 000425 12192 050340' 004046 12193 050342' 016700 | 000610' 017776' | BGNSE | MOV CLR CLR JSR BCC | R5.PCBB PCBB+2 PCBB+4 PC.CHKMON 110\$ | ;LOAD PCBB WITH LINK MOD ;MICROCODE WILL PUT XMIT ;MICROCODE WILL PUT XMIT ;WAIT FOR MICROMONITOR ;OK | TRAP E REGIS STAT W | C\$BSEG TER DATA ORD 0 ORD 1 |
| 12189 050334 12190 050334 104456 12191 050336 000425 12192 050340 004046 12193 050342 016700 12194 050344 | • | | ERRHRD | 277,COLTST,MSG46 | ;PRINT ERROR | TRAP .WORD .WORD | CSERHRD 277 COLTST MSG46 |
| 12195 050344° 104410 12196 050346° 000166 12197 050350° 012777 12198 050356° 012737 12199 050364° 004737 | 000001 127760 000176 000332 017330' | 110\$: | MOV MOV JSR | #1.apcsro #2*second.meter PC.CHKDNI | ;LEAVE TEST ;EXECUTE MICROTEST #1 ;WAIT FOR DNI | TRAPWORD | C\$ESCAPE L10165 |
| 12200 050370° 103021 12201 050372° 004737 12202 050376° 103006 12203 050400° | 020050 | | BCC JSR BCC ERRHRD | 120\$ PC,CHKINT 115\$ 278,COLTST,MSG44 | ;SEE IF ANY ERROR INTERR ;NO, OK ;PRINT ERROR MESSAGE | UPTS OC | CURRED |
| 12200 050370° 103021 12201 050372° 004737 12202 050376° 103006 12203 050400° 12204 050400° 104456 12205 050402° 000426 12206 050404° 004046 12207 050406° 016454 12208 050410° 12209 050410° 104410 12210 050412° 000122 12211 050414° 012702 12212 050420° 12213 050420° 104456 12214 050422° 000427 12215 050420° 104456 12216 050426° 013500 12217 050430° 12218 050430° 104410 12219 050432° 000102 | | | | | , MINI ENNON HESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 278 COLTST MSG44 |
| 12208 050410' 12209 050410' 104410 12210 050412' 000122 12211 050414' 012702 12212 050420' | 000001 | 115\$: | MOV ERRHRD | #1,R2 279,COLTST,MSG12 | ;MICROTEST #1 IS HUNG | TRAP.WORD | C\$ESCAPE L10165 |
| 12210 050412 000122 12211 050414 012702 12212 050420 104456 12213 050420 104456 12214 050422 000427 12215 050424 004046 12216 050426 013500 12217 050430 | • | | | | | TRAP .WORD .WORD .WORD | CSERHRD 279 COLTSI MSG12 |
| 12217 050430° 12218 050430° 104410 12219 050432° 000102 12220 | | | ESCAPE | 121 | | TRAP.WORD | C\$ESCAPE L10165 |

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| | | | • • • • | | | | | | | |
|---|--|------------------|------------------|--------|------------------|--------------------|------------------------------------|---|---------------|----------------|
| 12223 12223 12223 12223 12223 12223 12223 12233 | | | | | PCBB+2 IT SHO | HAS TX ULD HAVE | WORD O, IT SHOULD HAVE RETRY SET | ERROR SUMMARY SET. PCBB+ | 4 HAS TX | WORD 1 |
| 12225 12226 12227 | 050434° 050440° | 012703 012704 | 040000 002000 | | 1205: | MOV MOV | #BIT14,R3 #BIT10,R4 | : "ERROR SUMMARY" SHOUL ; "RETRY" BIT SHOULD BE | D BE SET | IN TX 0 |
| 12228 | 050444 | 032737 | 040000 | 000606 | | BIT | #BIT14,PCBB+2 | ; IS 'ERROR SUMMARY' BI | T SET? | |
| 12229 | 050452° 050454° | 001414 | 010000 | 000606 | | BEQ | 130\$ #BIT12,PCBB+2 | :NO, ERROR :IS 'MORE' BIT SET? | | |
| 12231 | 0504621 | 001010 | | | | BIT | 130 \$ | YES, EPROR IS ONE SIT SET? YES, ERRON IS RETRY BIT SET? | | |
| 12233 | 050472 | 032737 001004 | 004000 | 000606 | | BIT BNE | #BIT11,PCBB+2 130\$ | :15 'UNE' 911 5E1? | | |
| 12234 | 050464' 050472' 050474' 050502' | 032737 001004 | 002000 | 000610 | | BIT BNE | #BİT10,PCBB+4 140 \$ | :IS RETRY: BIT SET? :YES | | |
| 12236 | 0505041 | | | | 130\$: | ERRHRD | 280, COLTST, MSG22 | PRINT ERROR MESSAGE | | |
| 12237 | 050504' 050506' | 104456 | | | | | | | TRAP .word | CSERHRD 280 |
| 12239 | 0505101 | 004046 | | | | | | | . WORD | COLIST |
| 12241 | 050512 | 014340 | | | ; | | | | .WORD | MSG22 |
| 12242 | | | | | WRITE | '1' TO C | LEAR 'DNI' | | | |
| 12244 | 050514 | 004737 | 017374 | | 140\$: | JSR | PC,CLRDNI | GO CLEAR DNI BIT | | |
| 12245 | 050520° 050522° 050522° | 103004 | | | | BCC ERRHRD | 150 \$ 281,COLTST,RACMG7 | :OK :PRINT ERROR MESSAGE | | |
| 12247 | 050522° 050524° | 104456 000431 | | | | | | | TRAP | CSFRHRD |
| 12249 | 0505261 | 0040461 | | | | | | | .WORD | 281 COLTST |
| 12250 12251 | 050526° 050530° 050532° | 012726' | | | 150\$: | | | | .WORD | RACMG7 |
| 12252 | ロンロンイノ・ | | | | ENDSE | G | | | | |
| 12254 | 050532° 050532° 050534° | 104405 | | | | | | 10003\$ | : TRAP | C\$ESEG |
| 12255 | 050534' | | | | ENDIST | | | . 101/5 | | |
| 12257 | 050534° 050534° | 104401 | | | | | | L10165 | : TRAP | CSETST |
| | | | | | | | | | | |

HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 254 CZUAAA.P11 11-JAN-83 09:29 TEST 44: TDR COUNTER TEST

.SBTTL TEST 44: TDR COUNTER TEST

THE DEUNA HAS A COUNTER DESIGNED TO HELP LOCATE FAULTS IN THE COAXIAL CABLE. THE COUNTER IS INITIALIZED WHEN A MESSAGE IS TRANSMITTED AND INCREMENTS AS THE DATAGRAM IS TRANSMITTED. COUNTING WILL STOP IF A COLLISION OCCURS OR THE CARRIER IS LOST. COUNTING ALSO STOPS IF THE 10 BIT COUNTER REACHES ITS MODULUS.

THIS TEST WILL DETERMINE TAHT THE TDR COUNTER VALUE WILL CHANGE AND THAT THE COUNTER IS NOT STUCK.

BECAUSE THE COUNTER COUNTS DURING TRANSMISSION OF A DATAGRAM AND WILL CONTINUE TO COUNT DURING THE TIME THAT THE TRANSMIT STATE MACHINE OPERATES, THE COUNT ACCUMULATED IN THE COUNTER DURING TRANSMISSION IS PROPORTIONAL TO THE LENGTH OF THE DATAGRAM. THIS TEST WILL USE THIS RELATION TO VERIFY THAT THE COUNTER IS NOT STUCK.

THIS TEST USES MICROMODULE 'G' MICROTEST #2.

THE TEST WILL SEND DATAGRAMS OVER THE LOOPBACK. THE LENGTH OF THE DATAGRAM WILL BE VARIED BY USING A INCREASING BYTE COUNT IN THE TRANSMIT BUFFER.

AFTER EACH DATAGRAM HAS BEEN LOOPED BACK, THE TRANSMIT BUFFER WORD 1 WILL BE PASSED BACK 10 THE HOST TO VERIFY THAT IT IS CORRECT. THE CRITERIA FOR CORRECTNESS WILL BE: INCREASING BYTE COUNTS SHOULD RESULT IN INCREASING TOR VALUES IN TRANSMIT STATUS WORD 1.

THE PCBB WILL BE FORMATED AS FOLLOWS:

PCBB+0: BYTE COUNT !
PCBB+2: ! TRANSMIT STATUS WORD 1!

TEST SEQUENCE:

1-LOAD MICROMODULE 'G' IF NOT ALREADY DONE SO
2-LOAD MINIMUM BYTE COUNT INTO PCBB+0
3-CLEAR PCBB+2
4-WAIT FOR THE MICROMONITOR TO ENTER THE 'INMO' 'STATE
5-SELECT MICROTEST #2
6-WAIT FOR 'DNI'
7-VERIFY PCBB+2 HAS NON-ZERO VALUE (TDR COUNTER NOT ZERO)
8-WRITE '1' TO CLEAR 'DNI'
9-INCREASE BYTE COUNT IN PCBB+0 BY 1
10-WAIT FOR MICROMONITOR TO ENTER 'INMON' STATE
11-SELECT MICROTEST #2
12-WAIT FOR 'DNI'
13-VERIFY VALUE IN PCBB+2 IS GREATER THAN PREVIOUS VALUE IN PCBB+2
(VERIFY THAT TDR VALUE IS GETTING LARGER WITH LARGER BYTE COUNTS)
14-WRITE '1' TO CLEAR 'DNI'
15-REPEAT STEPS 9-14 UNTIL BYTE REACHES MINIMUM SIZE +64

BGNTST

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 255
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 12314 050536"
                                                                                                              144::
12315
                                              CHECK TO SEE IF MODULE 'G' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS. START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI'. AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
 12317
 12318
 12319
 12320
        050536
                                                BGNSEG
 12321
        0505361 104404
                                                                                                                       TRAP
                                                                                                                                 C$BSFG
 12322
        050540' 022737
                                                                                            :HAS MICROCODE MODULE 'G' BEEN LOADED
                           000107 0003261
                                                                #'G,MICRO
                                                       CMP
        050546' 001004
                                                       BNE
                                                                5$
                                                                                           :NO
 12324
        0505501 122777
                                                                #INMON, aPCSR1
                                                                                            YES, IS THE MICROMONITOR ACTIVE?
                           000001 127562
                                                       CMPB
 12325
        050556' 001440
                                                       BEQ
                                                                20$
 12326 050560' 012737
                           000107 000326 55:
                                                                #'G, MICRO
                                                       MOV
                                                                                            :GO LOAD MICRO MODULE 'G'
 12327
        050566' 004737
                           0202521
                                                       JSR
                                                                PC,LODMIC
 12328
        0505721 103002
                                                       BCC
                                                                10$
 12329
        0505741
                                                       ESCAPE TST
 12330 050574' 104410
                                                                                                                        TRAP
                                                                                                                                 CSESCAPE
 12331
        0505761 000460
                                                                                                                        WORD
                                                                                                                                 L10166-.
 12332 050600 012737
                           000176 000332' 10$:
                                                                                            :WAIT FOR THE MICROMONITOR
                                                       MOV
                                                                #2*SECOND_METER
                           017330
 12333 050606' 004737
                                                       JSR
                                                                PC, CHKDNI
 12334
        0506121 103022
                                                                20$
                                                       BCC
                                                                                            :OK
        050614' 012737
 12335
                                                                #SDNI,BITNAM
                           000776' 000310'
                                                       MOV
                           001275' 000312' 001340' 000314'
        050622' 012737
 12336
                                                                #$NSET,BITSTA
                                                       MOV
 12337
        050630' 012737
                                                                #SAFTER, PWHEN
                                                       MOV
                           001355' 000316'
 12338
        050636' 012737
                                                       MOV
                                                                #$GTCMD_PCOMND
 12339
        0506441
                                                       ERRHRD 282 TDRCNT MSG1
        050644' 104456
 12340
                                                                                                                       TRAP
                                                                                                                                 CSERHRD
        050646' 000432
050650' 004074'
 12341
                                                                                                                        .WORD
                                                                                                                                 282
12341 050646' 000432

12342 050650' 004074'

12343 050652' 012750'

12344 050654'

12345 050654' 104410

12346 050656' 000400

12347 050660' 004737

12348 050664' 103006
                                                                                                                                 TDRCNT
                                                                                                                        .WORD
                                                                                                                        .WORD
                                                                                                                                 MSG1
                                                       ESCAPE IST
                                                                                                                       TRAP
                                                                                                                                 CSESCAPE
                                                                                                                        . WORD
                                                                                                                                 L10166-.
                           0173741
                                             20$:
                                                       JSR
                                                                PC, CLRDNI
                                                                                           :CLEAR DNI BIT
                                                                25$
                                                       BCC
 12349 050666'
                                                       ERRHRD 283, TDRCNT, RACMG7
                                                                                           :DNI DID NOT CLEAR!
 12350 057666' 104456
                                                                                                                       TRAP
                                                                                                                                 CSERHRD
        050670 000433
 12351
                                                                                                                        .WORD
                                                                                                                                 283
        050672' 004074'
050674' 012726'
 12352
12353
                                                                                                                        .WORD
                                                                                                                                 TDR(NT
                                                                                                                                 RACMG7
                                                                                                                        .WORD
 12354 0506761
                                                       ESCAPE TST
 12355 050676' 104410
                                                                                                                       TRAP
                                                                                                                                 CSESCAPE
        0507001 000356
                                                                                                                        .WORD
 12356
                                                                                                                                 L10166-.
 12357
        0507021
                                              25$:
 12358
        050702
                                                ENDSEG
 12359 0507021
                                                                                                              10000$:
                                                                                                                       TRAP
 12360
        0507021 104405
                                                                                                                                 CSE SEG
 12361
 12362
                                              LOAD MINIMUM BYTE COUNT INTO PCBB+O, CLEAR PCBB+2, WAIT FOR MICROMONITOR
                                              EXECUTE MICROTEST #2 BY LOADING PCSRO WITH A 2
 12363
 12364
                                              WAIT FOR 'DNI'
 12365
 12366
        0507041
                                                BGNSEG
 12367
         050704' 104404
                                                                                                                                 CSBSEG
                                                                                           BEGIN WITH MINIMUM BYTE COUNT
         050706 012737
                           000100 000604*
 12368
                                                       MOV
                                                                #MINBYT,P(BB
         050714 005037
                                                                                           THIS IS WHERE MICROCODE WILL PUT...
 12369
                           000606
                                                       (LR
                                                                P(BB+2
```

HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 256 CZUAAA.P11 11-JAN-83 09:29 TEST 44: TDR COUNTER TEST

| CZUAAA.I | P11 1 | I-JAN-65 | 09:29 | | 1651 44 | : DR CO | UNIER TEST | | | |
|--|--|---------------------------------------|----------------------------|-------------------|---------------|----------------------|---|---|---|--|
| 12371 12377 123773 123773 123377 123377 123377 123381 123381 123381 123381 123381 123381 123391 123391 123391 123391 123391 123391 123391 123391 123391 123391 123401 12401 12402 | 050724' 050726' 050726' | 104456 | 017776' | | | JSR BCC ERRHRD | PC,CHKMON 35\$ 284,TDRCNT,MSG46 | :THE TDR COUNTER VALUE ;WAIT FOR MICROMONITOR :OK ;PRINT ERROR | TRAP .WORD .WORD | CSERHRD 284 TDRCNT |
| 12377 12378 12379 | 050732' 050734' 050736' 050736' | 0167001 | | | | ESCAPE | TST | LEAVE TEST | .WORD | MSG46 CSESCAPE |
| 12380 12381 12382 12383 | 050740 050742 050750 050756 050762 050770 050770 | በበበ31ል | 000002 000176 017330 | 127366 000332' | 35\$: | MOV MOV JSR | #2,apcsro #2*second,meter PC,CHKDNI | :TELL T11 TO EXECUTE MI :WAIT FOR DNI | .WORD | L10166 |
| 12385 12386 | 050764 | 103021 004737 103006 | 020050 | | | BCC JSR BCC | 40\$ PC,CHKINT 36\$ | ; SEE IF ANY ERROR INTER ; NO. OK | RUPTS OL | CURRED |
| 12388 12389 12390 12391 | 050772 050774 050776 051000 051002 | 000435 | | | | ERRHRD | 285, TDRCNT, MSG44 | ;PRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 285 TDRCNT MSG44 |
| 12393 12393 12394 12395 | 051002° 051004° 051006° | 104410 000252 012702 | 000002 | | 36\$: | ESCAPE MOV | TST #2,R2 | :MICROTEST #2 IS HUNG | TRAP.WORD | CSESCAPE L10166 |
| 12396 12397 12398 12399 12400 | 051012' 051012' 051014' 051016' 051020' 051022' | 104456 | | | | ERRHRD | 286,TDRCNT,MSG12 | | TRAP .WORD .WORD .WORD | CSERHRD 286 IDRCNT MSG12 |
| 12401 12402 12403 12404 | 051022° 051022° 051024° | 104410 | | | | ESCAPE | 151 | | TRAP.WORD | C\$ESCAPE L10166 |
| 12405 12406 12407 | | | | | CHECK | THAT THE | TRANSMIT STATUS WORD | HAS A NON-ZERO TOR VALUE | IN IT | |
| 12408 12409 12410 | 2510341 | 001004 104456 000437 004074* | 000606 | | 40\$: | MOV BNE ERRHRD | PCBB+2,R1 45\$ 287,TDRCNT,MSG23 | ;GET MINIMUM TDR VALUE ;SHOULD BE A NON-ZERO V ;ERROR TDR COUNTER NOT | ALUE COUNTING TRAP .WORD .WORD .WORD | CSERHRD 287 TDRCNT MSG23 |
| 12415 12416 12417 | | | | | WRITE | '1' TO C | LEAR 'DNI' | | | |
| 12418 12419 12420 12421 12422 12423 12424 12425 | 051050° 051052° | 104456 000440 004074* | 017374' | | 45\$: | JSR BCC ERRHRD | PC_CLRDN1 46\$ 288,TDRCNT_RACMG7 | ;GO CLEAR DNI :OK ;ERROR OCCURRED PRINT E | RROR MES TRAP .WORD .WORD .WORD | SAGE CSERHRD 288 TDR(NT RA(MG7 |
| 12425 | 0510621 | | | | 46\$: | | | | | ·····• |

| HARDWARE CZUAAA.F | E TESTS P11 1 | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN | -83 10: TEST 44 | 13 PAGE : TDR COL | 257 UNTER TEST | | | |
|--|--|--------------------------------------|--|-------------------|--------------------|---------------------------------|--|--|---------------------------------|-----------------------------------|
| 12426 12427 12428 12429 | 051062° 051062° 051062° | 104405 | | | ENDSE | G | | 10001\$: | TRAP | C\$ESEG |
| 12427 12428 12429 12430 12431 12432 12433 12435 12436 12437 12438 12439 | 051064° 051070° | 005237 | 000604 | | INCREASE BGNSE | INC | PCBB | ; INCREASE BYTE COUNT BY | 1 | |
| 12434 12435 12436 | 051070 | 104404 | | | : | | ICPOMONITOD EXECUTE MI | ROTEST #2, AND WAIT FOR | TRAP | C\$BSEG |
| 12440 12441 12442 12443 | 051072' 051076' 051100' 051100' 051102' 051104' | 103006 104456 000441 004074 | 017776' | | , white | JSR BCC ERRHRD | PC, CHKMON 50\$ 289, TDRCNT, MSG46 | ;WAIT FOR MICROMONITOR ;OK ;PRINT ERROR | TRAP .WORD .WORD | LSERHRD 257 TDRINT |
| 12444 12445 12446 12447 12448 12449 12450 | 051110' 051112' | 104410 000144 | | | | ESCAPE | | :LEAVE TEST | .WORD TRAP .WORD | MSG46 C\$ESCAPE L10166 |
| 12451 12452 12453 | 051122' 051130' 051134' 051136' 051142' | 012737 004737 103021 004737 | 000002 000176 017330* 020050* | 127214 000332* | 50\$: | MOV JSR BCC JSR BCC | #2,@PCSRQ #2*SECOND,METER PC,CHKDNI 55\$ PC,CHKINT 51\$ | :TELL TIT TO EXECUTE MI :WAIT FOR DNI :SEE IF ANY ERROR INTER :NO. OK | | |
| 12454 12455 12456 12457 12458 12459 | | 000442 | | | | ESCAPE | 290, TDRCNT, MSG44 | PRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 290 TDRCNT MSG44 |
| 12460 12461 12462 12463 | 051156' 051160' 051164' 051164' | 000100 012702 | 000002 | | 51 \$: | MOV ERRHRD | #2,R2 291,TDRCNT,MSG12 | :MICROTEST #2 IS HUNG | TRAP .WORD | CSESCAPE L10166 |
| 12464 12465 12466 12467 12468 12469 | 051166' 051170' 051172' 051174' | 000443 004074' 013500' | | | | ESCAPE | اد آ | | .WORD .WORD .WORD | 291 TDRCNT MSG12 |
| 12469 12470 12471 12472 | 051174° 051176° | | | | | | | | TRAP .WORD | CSESCAPE L10166 |
| 12473 12474 12475 12476 | 051200° 051204° 051206° 051210° 051212° 051214° | 101006 104456 000444 | 000606 | | VERIFY:VALUE | MOV CMP BHI ERRHRD | PCBB+2,R2 R2,R1 60\$ 292,TDPCNT,MSC23 | :GET NEW TOR VALUE :IS TOR GETTING LARGER? :YES :NO ERROR | TRAP .WORD .WORD | CSERHRD 292 TURCNT |

| HARDWARE TESTS MACY11 30(1046) CZUAAA.P11 11-JAN-83 09:29 | 11-JAN-83 10:13 PAGE 258 TEST 44: TDR COUNTER TEST | |
|---|---|--|
| 12482 051216' 014454' 12483 051220' | ESCAPE TST | .WORD MSG23 |
| 12484 051220' 104410 12485 051222' 000034 12486 12487 12488 | ESCAPE 131 | TRAP (SESCAPE .WORD L10166 |
| 12487 12488 | WRITE '1' TO CLEAR 'DNI' | |
| 12489 051224' 004757 017374' | | GC CLEAR DNI |
| 12491 051232' 12492 051232' 104456 12493 051234' 000445 12494 051236' 004074' | | OK: ERROR OCCURRED PRINT ERROR MESSACE TRAP (SERHRD WORD 293 WORD TORCNT WORD RACMG7 |
| 12496 051242' 12497 051242' 12498 051242' 12499 051242' 104405 12500 12501 12502 12503 051244' 010201 | ENDSEG | 100025: TRAP CSESEG |
| 12501 12502 | CONTINUE THE LOOP UNTIL THE BYTE COUNT | IS TOO LARGE FOR THE COUNTER MODULUS |
| 12505 051254 103703 | MOV R2.R1 CMP PCBB+2,#116. BLO 47\$ ENDIST | ;HOLD NEW TOR VALUE FOR LATER COMPARE ;HAVE WE DONE ENOUGH PACKETS? ;NO KEEP GOING |
| 12506 051256' 12507 051256' 12508 051256' 104401 | EIAN 1 2 I | L10166: TRAP (SETST |

HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 259 CZUAAA.P11 11-JAN-83 09:29 TEST 45: RETRY LOGIC TEST

.SBITL TEST 45: RETRY LOGIC TEST

THE RETRY LOGIC IS ACTIVATED WHENEVER A COLLISION IS ENCOUNTERED DURING A TRANSMISSION ATTEMPT. THE LINK STOPS TRANSMISSION AND WAITS FOR A PERIOD OF TIME BEFORE ATTEMPTING TO RETRANSMIT.

THE WAIT TIME IS AN INTEGRAL NUMBER OF "SLOT TIMES". THE NUMBER COMES FROM A RANDOM NUMBER GENERATOR. THE NUMBER OF SLOT TIMES IS NOT EXACTLY RANDOM SINCE THE RETRY LOGIC WALTS A GENERALLY INCREASING NUMBER OF SLOT TIMES BEFORE TRYING TO RETRANSMIT. THIS TEST WILL VERIFY THAT THE RETRY LOGIC IS CAPABLE OF GENERATING VARIABILITY IN THE DURATION OF THE RETRY WIAT TIMES.

THIS TEST WILL USE MICROMODULE 'G' MICROTEST #3 THE LINK MODULE HAS A DIAGNOSTIC MAINTENANCE FACILITY MAKING IT POSSIBLE TO SINGLE STEP THE RETRY LOGIC THROUGH THE MAXIMUM SIXTEEN RETRY STEPS. THIS FFEATURE WILL ALSO MAKE IT POSSIBLE TO MEASURE THE RETRY WAIT INTERVAL.

THE MICROCODE WILL SET THE COLLISION BIT IN THE LINK MODE REGISTER AND AND TRANSMIT A DATAGRAM IN LOOPBACK MODE. THE T-11 WILL COUNT WHILE WAITING FOR THE TRANSMIT STATE MACHINE TO INTERRUPT. THE ACCUMULATED COUNT SHOULD PROVIDE A MEASURE OF TIME TAKEN FOR THE TRANSMISSION ATTEMPT TO OCCUR. SINCE THE COLLISION BIT IS SET, THIS INTERVAL WILL INCLUDE THE RETRY WAIT INTERVAL. THE ACCUMULATER COUNT WILL BE WRITTEN BY THE MICROCODE TO THE PCBB.

THE MICROTEST WILL BE EXECUTED 16 TIMES. AFTER EACH EXECUTION, THE COUNT WILL BE READ FROM THE POBB AND STORED IN A TABLE. THE TABLE WILL BE SCANNED TO EVERIFY THAT THEY ARE NOT ALL THE SAME.

THE PCBB IS FORMATTED AS FOLLOWS:

BYTE COUNT :PCBB+0: TRANSMIT WAIT COUNT :PCBB+2:

:TEST SEQUENCE:

1-LOAD MICROMODULE 'G' IF NOT ALREADY DONE SO 2-PLACE A MINIMUM BYTE COUNT IN PCBB+0 3-CLEAR PCBB+2 4-WAIT FOR MICROMONITOR TO ENTER THE 'INMON' STATE 5-SELECT MICROTEST #3
6-WAIT FOR 'DNI'
7-WRITE '1' TO CLEAR 'DNI' 8-READ PCBB+2 AND PUT COUNT IN TABLE 9-REPEAT STEPS 2-8 15 TIMES 10-VERIFY NO 10 CONSECUTIVE ENTRIES IN THE TABLE ARE THE SAME.

BGNTST

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CHECK TO SEE IF MODULE 'G' HAS BEEN LOADED. IF NOT LOAD IT INTO THE TOP HALF OF WCS, START IT AND WAIT FOR THE MICROMONITOR TO SET 'DNI'.

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 260 CZUAAA.P11 11-JAN-83 09:29 TEST 45: RETRY LOGIC TEST
                                             :AFTER 'DNI' SETS WRITE '1' TO CLEAR IT.
 12565
 12566
        0512601
 12567
                                               BGNSEG
 12568 Ú51260' 104404
12569 051262' 022737
                                                                                          HAS MICROCODE MODULE 'G' BEEN LOADED
                                                                                                                     TRAP
                           000107 0003261
                                                               #'G,MICRO
                                                      CMP
        051270' 001004
 12570
                                                      BNE
                                                               5$
                                                                                          NO
 12571
12572
12573
        051272' 122777
051300' 001440
                           000001 127040
                                                                                          YES, IS THE MICROMONITOR ACTIVE? YES SKIP LOADING THE MICROMODULE
                                                      CMPB
                                                               WINMON, aPCSR1
                                                      BEQ
                                                               20$
        0513021
                 012737
                           000107 000326' 5$:
020252'
                                                                                          GO LOAD MICRO MODULE 'G'
                                                      MOV
                                                               #'G,MICRO
        051310
 12574
                                                      JSR
                                                               PC,LODMIC
 12575
12576
12577
        0513141
                  103002
                                                      BCC
                                                               10$
                                                                                          :OK
                                                      ESCAPE TST
         0513161
         051316' 104410
                                                                                                                     TRAP
                                                                                                                              C$ESCAPE
                                                               #2*SECOND.METER ; WAIT FOR THE MICROMONITOR
        051320' 000352
051322' 0127'7
 12578
                                                                                                                      WORD
                                                                                                                              L10167-.
                           000176 000332' 10$:
017330'
 12579
                                                      MOV
                                                               PC, CHKDNI
20$
 12580
        0513301
                 004737
                                                      JSR
        051334' 103022
051336' 012737
 12581
                                                      BCC
                                                                                          : 0k
                          000776' 000310'
001275' 000312'
001340' 000314'
001355' 000316'
                                                               #SDNI,BITNAM
#SNSET,BITSTA
 12582
12583
                                                      MOV
        051344' 012737
                                                      MOV
        051352' 012737
 12584
                                                      MOV
                                                               WSAFTER, PWHEN
 12585
        051760
                 012737
                                                      MOV
                                                               #SGTCMD_PCOMND
 12586
        0513661
                                                      ERRHRD 294, RETLOG, MSG1
 12587
        0513661 104456
                                                                                                                     TRAP
                                                                                                                               CSERHRD
        051370' 000446
                                                                                                                     .WORD
                                                                                                                               294
 12588
        051372 004124
                                                                                                                              RETLOG
 12589
                                                                                                                     .WORD
       0513741
 12590
                  0127501
                                                                                                                     .WORD
                                                                                                                              MSG1
 12591
        0513761
                                                      ESCAPE TST
 12592 051376' 104410
                                                                                                                     TRAP
                                                                                                                               CSESCAPE
 12593 051400 000272
                                                                                                                     .WORD
                                                                                                                              L10167-.
 12594
        051402' 004737 017374' 20$:
                                                               PC, CLRDNI ; CLEAR DNI BIT
                                                      JSR
        051406' 103006
                                                               25$
 12595
                                                      BCC
 12596
                                                      ERRHRD 295 RETLOG RACMG7
        0514101
                                                                                        :DNI DID NOT CLEAR!
 12597
        051410' 104456
                                                                                                                     TRAP
                                                                                                                               CSERHRD
                                                                                                                     .WORD
                                                                                                                               295
 12598
        051412' 000447
        051414' 004124'
 12599
                                                                                                                      .WORD
                                                                                                                              RETLOG
         051416' 012726'
                                                                                                                      _WORD
                                                                                                                              RACMG7
 12600
 12601
12602
12603
        0514201
                                                   ESCAPE TST
        051420 104410
                                                                                                                     TRAP
                                                                                                                               C$ESCAPE
        051422' 000250
                                                                                                                     -WORD
                                                                                                                              L10167-.
        0514241
 12604
        0514241
 12605
                                            ENDSEG
        0514241
                                                                                                            10000$:
 12606
                                                                                                                     TRAP
                                                                                                                              CSESEG
         051424' 104405
 12607
 12608
                                             WRITE A BYTE COUT TO PCBB+O, CLEAR PCEB+2, GET POINTER TO TOP OF TABLE
 12609
                                             :INITALIZE A COUNTER TO 16
 12610
 12611
        051426' 012737 000100 000604'
                                                                                          CCCIN WITH MINIMUM BYTE COUNT; THIS IS WHERE MICROCODE WILL PUT...
 12612
12613
                                                      MOV
                                                               #MINBYT, PCBB
         )51434 005037
                           000606
                                                      CLR
                                                               PCBB+2
                                                                                         THE RETRY WAIT INTERVAL
GET POINTER TO WAIT INTERVAL STORAGE AREA
 12614
                                                               #CNTTAB,R2
#16.,R1
 12615
         051440' 012702 000624'
         051444 012701 000020
                                                                                          NUMBER OF VALUES TO STORE
                                                      MOV
 12616
 12617
                                             :WAIT FOR THE MICROCODE TO ENTER THE MICROMONITOR. EXECUTE MICROTEST #3 BY
 12618
                                             LOADING THE COMMAND FIELD OF PCSRO WITH A 3. WAIT FOR 'DNI'
 12619
 12620
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| CZUAAA.P11 11-JAN-83 09:29 TEST 45: RETRY LOGIC TEST |
|--|
|--|

| CZUMMA. | F 11 115 | -JAN-03 | 09:29 | | 1851 45 | : KEIKY | LUGIC 1531 | | | |
|--|---|--|----------------------------|---------|----------------|--------------------------|--|---|---------------------------------|------------------------------------|
| 12621 12622 12623 12624 12625 | 051452' (| 104404 004737 103006 | 017776' | | BGNSE | JSR BCC | PC_CHKMON 35\$ | ;WAIT FOR MICROMONITOR ;OK | TRAP | C\$BSEG |
| 12626 12627 12628 12629 | 051460' 1 051462' (051464' (051466' (| 104456 000450 004124' 016700' | | | | ERRHRD | 296, RETLOG, MSG46 | PRINT ERROR | TRAP .WORD .WORD | CSERHRD 296 RETLOG MSG46 |
| 12631 12632 12633 | 051470' 051470' 051472' 051474' 051502' 051510' 051514' | 104410 000200 012777 | 000003 | 126634 | 35\$: | MOV. | #3,aPCSRO | ; LEAVE TEST ; TELL TIL TO EXECUTE MI | TRAP .WORD CROTEST | C\$ESCAPE L10167 |
| 12635 12636 12637 12638 | יסוכוכט (| 004737 103021 004737 103006 | 000770 017330 020050 | 000332* | | MO√ JSR BCC JSR | #10*SECOND, METER PC, CHKDNI 40\$ PC, CHKINT 36\$ | ; WAIT FOR DNI :SEE IF ANY ERROR INTER | RUPTS O | CURRED |
| 12623 12623 12623 12623 12624 12626 12626 12633 12633 12633 12644 12644 12644 12644 1265 1265 1265 1265 1265 1265 1265 1265 | 051524 | 104456 000451 004124' | | | | BCC ERRHRD | 297, RETLOG, MSG44 | ;NO, OK ;PRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 297 RETLOG MSG44 |
| 12644 12645 12646 12647 | 051534' 051534' 1 051536' (| 104410 000134 | 000003 | | 36\$: | MOV ERRHRD | #3,R2 | ;MICROTEST #3 IS HUNG | TRAP .WORD | CSESCAPE L10167 |
| 12649 12650 12651 12652 | 051544° (051550° (051552° (| 104456 000452 004124° | | | | | 298,RETLOG,MSG12 | | TRAP .WORD .WORD .WORD | CSERHRD 298 PETLOG MSG12 |
| 12653 12654 12655 12656 | 051554° 1 051556° (| 104410 000114 | | | : | ESCAPE | TST | | TRAP.WORD | CSESCAPE L10167 |
| 12657 | | | | | WRITE | '1' TO C | LEAR 'DNI' | | | |
| 12658 12659 12660 12661 | 051560' (051564' 1 051566' | 103006 | 017374' | | 408: | JSR BCC ERRHRD | PC,CLRDNI 45\$ 299,RETLOG,RACMG7 | :GO CLEAR DNI :OK :ERROR | | |
| 12659 12660 12661 12662 12663 12664 12665 | 051570' (051572' (051574' (| 104456 000453 004124' 012726' | | | | | | | TRAP .WORD .WORD .WORD | CSERHRD 299 RETLOG RALMG7 |
| 12666 12667 12668 12669 | 051576' 051576' 1 051600' (| | | | : | ESCAPE | TST | ;LFAVE | TRAP.WORD | CSESCAPE L10167 |
| 12670 12671 | | | | | STORE : REPEAT | THE VALU | E FORM PCBB+2 IN THE TAB T UNTIL ALL 16 ENTRIES A | LE AND BUMP THE POINTER TRE OBTAINED | TO NEXT | ENTRY |
| 12667 12668 12669 12670 12671 12672 12673 12674 12675 | 051602° (051606° (051610° (| 013722 005301 00133 | 000606* | | 45 \$: | MOV DE C BNE | PCBB+2,(R2)+ R1 35\$ | :STORE COUNTER VALUE IN :HAVE WE STORED 16 VALUE :NOT YET | THE TAE | IL E |

| HARDWAR CZUAAA. | E TESTS P11 1 | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN-83 10: TEST 45 | 13 PAGE : RETRY | 262 LOGIC TEST | |
|--|---|--|-------------------|--------------------------|----------------------------------|--|--|
| 12677 12678 12679 | | | | :TREAT :GROUP | THE TABL | E AS 7 GROUPS OF 10 E | NTRIES. VERIFY THAT ALL 10 ENTRIES OF EACH |
| 12680 12681 12682 | 051612' 051616' | 012701 010102 | 000624* | 50 \$: | MOV MOV | #CNTTAB,R1 R1,R2 | POINT TO TOP OF TABLE GET POINTER TO FIRST ELEMENT IN THIS |
| 12683 | 0516201 | 019204 | | | MOV | R2,R4 | GFOUP GFT POINTER TO SECOND ELEMENT IN THIS |
| 12685 12686 12687 12688 12689 | 051622' 051626' 051632' 051634' 051636' | 062704 012703 022224 001010 005303 | 000002 000007 | 55 \$: | ADD MOV (MP BNE DE C | #2,R4 #7.,R3 (R2)+,(R4)+ 60\$ R3 | ;GROUP ;NJMBER OF GROUPS OF 10 TO COMPARE ;IS THIS PAIR THE SAME? ;NO, START A NEW GROUP TO CHECK ;HAVE WE CHECKED ALL 10 VALUESIN THIS |
| 12678 12679 12680 12681 12683 12683 12686 12686 12687 12688 12689 12691 12693 12696 12696 12696 12701 12703 12704 12705 | 051640' 051642' 051642' 051644' 051650' | 104456 | | | BNE ERRHRD | 55\$ 300,RETLOG,MSG24 | ;GROUP? ;NOT YET ;YES, PRINT ERROR MESSAGE AND DUMP TABLE TRAP C\$ERHRD .WORD 300 .WORD RETLOG .WORD MSG24 |
| 2697 2698 | 051652" | 104410 | | | ESCAPE | TST | TRAP CSESCAPE |
| 12700 12701 12702 12703 | 051654° 051656° 051662° 051666° | 000016 062701 020127 001353 | 0000(2 | 60 \$: | ADD CMP BNE | #2,R1 R1,#CNTTAB+16 50\$ | .WORD L10167 ;POINT TO NEXT GROUP OF 10 ELEMENTS ;CHECKED ALL GROUPS OF 10? ;NOT YET |
| 12706 | 051670' 051670' 051672' | | | ENDSE: | U | | 10001\$: TRAP CSESEG |
| 12707 1270 8 | 051672° 051672° | 104401 | | 2 12 1 2 | | | L10167: TRAP CSETST |

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CZUAAA.P11 11-JAN-83 09:29
                                                TEST 45: RETRY LOGIC TEST
 12709
12710
                                                .SBTTL TEST 46: PRINT DEVICE PARAMETERS TEST
 12711
 12712
 12713
 12714
                                                          THIS TEST PRINTS THE DEFAULT PHYSICAL ADDRESS, THE MICROCODE
 12715
                                                          REVISION AND THE SWITCH PACK SETTINGS.
 12716
 12717
                                                          TEST SEQUENCE:
 12718
                                                                    1. READ DEFAULT PHYSICAL ADDRESS
 12719
                                                                    2. READ MICROCODE REVISION
3. READ SWITCH PACK SETTINGS
 12720
 12721
                                                                    4. PRINT
 12722
                                                :NOTE:
 12723
                                                          THIS TEST IS ONLY EXECUTED ONCE FOR EACH UNIT REGARDLESS OF THE PASS #
 12724
 12725
 12726
 12727
         0516741
                                                BGNTST
 12728
12729
         0516741
                                                                                                                    T46::
         051674' 005737 000672'
                                                          TST
                                                                    FRSTIM
                                                                                                ; RUN THIS TEST ?
         051700' 001002
 12730
                                                          BNE
                                                                    5$
                                                                                                 : YES
         051702'
051702' 104432
 12731
                                                                    TST
                                                          EXIT
                                                                                                 : NO, EXIT
 12732
12733
12734
12735
12736
12737
                                                                                                                              TRAP
                                                                                                                                        C$EXIT
         051704' 001042
                                                                                                                              .WORD
                                                                                                                                       L10170-.
         051706' 004737
051712' 103002
051714'
                            020104 55:
                                                          JSR
                                                                                                :GO RESET UNA
                                                                    PC, REUNA
                                                          BCC
                                                                    20$
                                                                                                 : 0K
                                                          ESCAPE TST
                                                                                                : ABORT TEST
 12738
12739
12740
         051714' 104410
051716' 001030
                                                                                                                              TRAP
                                                                                                                                        C$ESCAPE
                                                                                                                              .WORD
                                                                                                                                       L10170-.
         051720' 012777
051726' 005077
051732' 012777
 12741
                                                                   #PCBB, aPCSR2
aPCSR3
                             000604 126414 205:
                                                                                                :LOAD PCSR2 WITH PORT CONTROL BLOCK ADR :LOAD PCSR3 WITH 0
                                                          MOV
 12742
12743
                             126412
                                                          CLR
                            000001 126376
000077 000332*
017330*
                                                                                                ISSUE GET PCBB PORT COMMAND PUT SOME TIME ON THE METER
                                                          MOV
                                                                    #GETPCB, aPCSRO
         051740' 012737
051746' 004737
051752' 103022
 12744
12745
                                                                    #1 * SECOND, METER
                                                          MOV
                                                                    PC, CHKDNI
                                                                                                : DNI?
                                                          JSR
 12746
12747
12748
                                                                                                  YES
                                                          BCC
                                                                                                 ERROR UNI FAILED TO SET!
                                                                                                 FORMAT ERROR MESSAGE
         051754' 012737
051762' 012737
051770' 012737
051776' 012737
                            000776' 000310' 001275' 000312' 001340' 000314'
 12749
                                                         VCM
                                                                    #$DNI,BITNAM
 12750
                                                         MOV
                                                                    #$NSET, BITSTA
 12751
                                                          MOV
                                                                    #SAFTER, PWHEN
 12752
12753
                             001346' 000316'
                                                                    #$GTPCB_PCOMND
                                                          MOV
         0520041
                                                          ERRHRD 301, PRTPAR, MSG1
         052004' 104456
 12754
                                                                                                                              TRAP
                                                                                                                                       C$ERHRD
         052006' 000455
 12755
                                                                                                                              .WORD
                                                                                                                                        301
         052010' 004154'
 12756
                                                                                                                              .WORD
                                                                                                                                       PRTPAR
         052012' 012750'
 12757
                                                                                                                              .WORD
                                                                                                                                       MSG1
 12758
         0520141
                                                          ESCAPE TST
                                                                                                ; AND ABORT TEST
         052014' 104410
 12759
                                                                                                                              TRAP
                                                                                                                                        CSESCAPE
         052016 000730
 12760
                                                                                                                              .WORD
                                                                                                                                       L10170-.
 12761
         052020 004737 017374 40$:
 12762
                                                          JSR
                                                                                                : WRITE ONE TO CLEAR DN!
                                                                    PC_CLRDNI
 12763
                                                                                                : ERROR ?
 12764 052024 103006
                                                                    50$
                                                          B((
```

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 264
CZUAAA.P11 11-JAN-83 09:29 TEST 46: PRINT DEVICE PARAMETERS TEST
 12765
                                                                                   :ERROR DNI FAILED TO CLEAR!
 12766
        052026
                                                  ERRHRD 302, PRTPAR, RACMG7
 12767
        052026' 104456
                                                                                                            TPAP
                                                                                                                     C$ERHRD
 12768 052030 000456
                                                                                                                     302
                                                                                                             .WORD
 12769 052032' 004154'
                                                                                                            .WORD
                                                                                                                     PRTPAR
 12770 052034'
                012726
                                                                                                                     RACMG7
                                                                                                            -WORD
 12771
        0520361
                                                  ESCAPE TST
                                                                                  : AND ABORT TEST
12772
12773
12774
12775
        0520361 104410
                                                                                                            TRAP
                                                                                                                     C$ESCAPE
        052040' 000706
                                                                                                            .WORD
                                                                                                                    L10170-.
                                          READ DEFAULT PHYSICAL ADDRESS
 12776
        052042' 012737
052050' 012737
 12777
                         000002
                                000604' 50$:
                                                          #RDPA_PCBB
                                                                                   :LOAD PCBB WITH READ DEFAULT PHY ADR
 12778
                         000176 0003321
                                                          #2 * SECOND . METER
                                                                                   PUT SOME TIME ON THE METER
                                                  MOV
 12779
        0520561 012777
                         000002 126252
                                                          MGETCMD, apcsro
                                                  MOV
                                                                                   : ISSUE GET_CMD PORT COMMAND
 12780
        052064 004737
                         0173301
                                                          PC, CHKDNI
                                                  JSR
                                                                                    : DNI ?
 12781
        052070' 103022
                                                  BCC
                                                                                     YES
 12782
                                                                                    :ERROR DNI FAILED TO SET!
 12783
        052072' 012737
                         000776' 000310'
                                                  MOV
                                                          #$DNI,BITNAM
                         001275' 000312'
 12784
        052100' 012737
                                                  MOV
                                                          #$NSET,BITSTA
        052106' 012737
                         001340' 000314'
 12785
                                                          #SAFTER, PWHEN
                                                  MOV
        052114' 012737
                         001355' 000316'
 12786
                                                  VOM
                                                          #$GTCMD_PCOMND
 12787
        0521221
                                                  ERRHRD 303, PRTPAR, MSG1; PRINT ERROR MESSAGE
        052122' 104456
052124' 000457
 12788
                                                                                                            TRAP
                                                                                                                     CSERHRD
 12789
                                                                                                             .WORD
                                                                                                                     303
 12790
        052126' 004154'
                                                                                                                     PRTPAR
                                                                                                            .WORD
 12791
        052130' 012750'
                                                                                                             .WORD
                                                                                                                     MSG1
 12792
        0521321
                                                  ESCAPE TST
                                                                                   : AND ABORT TEST
 12793
        0521321 104410
                                                                                                            TRAP
                                                                                                                     C$ESCAPE
 12794
        052134' 000612
                                                                                                            .WORD
                                                                                                                    L10170-.
 12795
 12796
        052136' 004737 017374'
                                         60$:
                                                  JSR
                                                          PC, CLRDNI
                                                                                   : WRITE ONE TO CLEAR DNI
 12797
                                                                                   : ERROR ?
 12798
        052142' 103006
                                                          70$
                                                                                    : NO
                                                  BCC
 12799
                                                                                   ERROR DNI FAILED TO CLEAR!
 12800
        052144"
                                                  ERRHRD 304, PRTPAR, RACMG7
                                                                                   :PRINT ERROR MESSAGE
        052144' 104456
 12801
                                                                                                             TRAP
                                                                                                                     CSERHRD.
 12802 052146' 000460
                                                                                                             .WORD
                                                                                                                     304
 12803
        052150' 004154'
                                                                                                            .WORD
                                                                                                                     PRIPAR
        0521521
 12804
                012726
                                                                                                            .WORD
                                                                                                                     RACMG7
        0521541
 12805
                                                 ESCAPE TST
                                                                                   : AND ABORT TEST
 12806 0521541 104410
                                                                                                            TRAP
                                                                                                                     C$ESCAPE
        052156' 000570
 12807
                                                                                                            .WORD
                                                                                                                    L10170-.
 12808
 12809
                                          :MOVE DEFAULT PHYSICAL ADDRESS FROM P(BB -> DPA
 12810
        052160' 013737 000606' 05.750' 70$: 052166' 013737 000610' 052752'
 12811
                                                          PCBB+2,DPA
 12812
                                                  MOV
                                                          PCBB+4,DPA+2
        052174 0:3737
                         000612' 052754'
 12813
                                                  MOV
                                                          PCBB+6.DPA+4
 12814
 12815
                                          :LOAD ASCII MESSAGE (DEFADR)
 12816
        052202' 004737 017130'
 12817
                                                          PC, HEXDPA
                                                                             : CONVERT TO ASCII HEX
                                                  JSR
 12818
 12819
                                          READ MICROCODE REVISION
 12820
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| HARDWAR! | E TESTS P11 1 | MACY11 1-JAN-83 | 30(1046) 09:29 | 11-JAN- | | :13 PAGE 6: PRINT I | 265 DEVICE PARAMETERS TEST | | | |
|---|---|------------------------------|---|--|--------|---------------------------------|---|--|-------------------------|------------------------------------|
| 12821 12822 12823 12824 12825 | 052206' 052214' 052222' 052230' 052234' | 012777 004737 | 000016 000176 000002 017330 | 000604° 000332° 126106 | 100\$: | MOV MOV JSR BCC | #RPS,PCBB #2*SECOND,METER #GETCMD,@PCSRO PC,CHKDNI 110\$ | :LOAD PCBB WITH READ POR :PUT SOME TIME ON THE ME : ISSUE GET_CMD PORT COR : DNI ? : YES | TER MMAND | S FUNCTION |
| 12823 12822 12822 12822 12822 12822 12823 12833 12833 12833 1283 128 | 052236' 052244' 052252' 052260' 052266' | 012737 | 000776° 001275° 001340° 001355° | 000310' 000312' 000316' | | MOV MOV MOV ERRHRD | #\$DNI,BITNAM #\$NSET,BITSTA #\$AFTER,PWHEN #\$GTCMD,PCOMND 305,PRTPAR,MSG1;PRINT | ERROR DNI FAILED TO SE | TRAP | C \$ ERHRD |
| 12833 12834 12835 12836 | 052266' 052270' 052272' 052274' 052276' | 000461 004154' 012750' | | | | ESCAPE | TST | ; AND ABORT TEST | .WORD .WORD .WORD | 305 PRTPAR MSG1 |
| 12837 12838 12839 | 052276' 052300' | 104410 | | | • | | | | TRAP.WORD | CSESCAPE L10170 |
| 12840 12841 | 052302' | | 017374' | | 110\$: | JSR | PC,CLRDNI | : WRITE ONE TO CLEAR DN : ERROR ? | I | |
| 12842 12843 | 052306' | 103006 | | | | BCC | 120\$ | : NO :ERROR DNI FAILED TO SE | T | |
| 12845 12846 12847 12848 | 052310' 052310' 052312' 052314' 052316' 052320' | 000462 | | | | ERRHRU | 306, PRIPAR, RACMG7 | PRINT ERROR MESSAGE | TRAP .WORD .WORD .WORD | CSERHRD 306 PRTPAR RACMG7 |
| 12849 12850 12851 | 052320° 052322° | 104410 | | | | ESCAPE | 151 | ; AND ABORT TEST | TRAP.WORD | C\$ESCAPE L10170 |
| 12852 12853 | | | | | MOVE | MICROCODE | REVISION FROM PCBB -> 1 | RREV | | |
| 12855 12856 | 052324' 052332' | | 000606 ' 177700 | 052756' 052756' | 120\$: | MOV B1C | PCBB+2,RREV #177700,RREV | ; MASK RREV | | |
| 12857 12858 12859 | | | | | READ | SWITCH PA | CK | | | |
| 12860 | 052340' 052346' | 012737 | 000020 000614' 000610' | 000604° 000606° | 130\$: | MOV MOV CLR | #DIM,PCBB #UDBB,PCBB+2 PCBB+4 | ;LOAD DUMP INTERNAL MEM; ;GIVE THE UNIBUS DATA B | | |
| 12861 12862 12863 12864 12865 12866 | 052360' 052366' | 012737 | 000002 052760' | 000614' 000616' | | MOV MOV | #2,UDBB #SWPACK,UDBB+2 | :SETUP TO LOAD 2 BYTES : LOAD ADDRESS | | |
| 12865 12866 12867 12868 12869 12870 12871 12872 | 052346' 052354' 052360' 052366' 052374' 052400' 052414' 052422' 052426' | 004737 | 000620° 000334° 000176 000002 017330° | 000622' 000332' 125714 | | CLR MOV MOV JSR BCC | UDBB+4 SWADDR,UDBB+6 #2*SECOND,METER #GETCMD,@PCSRO PC,CHKDNI 140\$ | : LOAD INTERNAL ADDRESS :PUT SOME TIME ON THE MI : ISSUE GET COMMAND POR : DNI ? : YES | T COMMAN | ND |
| 12871 12872 12873 12874 12875 12876 | 052430' 052436' 052444' 052452' 052460' | 012737 012737 | 001275° 001340° | 000310' 000312' 000314' 000316' | | MOV MOV MOV ERRHRD | #\$DNI,BITNAM #\$NSET,BITSTA #\$AFTER,PWHEN #\$GTCMD,PCOMND 307,PRTPAR,MSG1 | ; ERROR DNI FAILED TO SE | • | |

| HARDWAR CZUAAA. | E TESTS MACY11 P11 11-JAN-8 | 30(1046) 11-JA 3 09:29 | N-83 10: TEST 46 | 13 PAGE : PRINT | 266 DEVICE PARAMETERS TEST | | | | 30 |
|---|---|---|---------------------|--|--|----------|--|---------------------------------|--|
| 12877 12878 12879 12880 | 052460' 104456 052462' 000463 052464' 004154' 052466' 012750' 052470' | • | | ESCADE | 101 | | AND ADOD! ISS! | TRAP .WORD .WORD .WORD | CSERHRD 307 PRTPAR MSG1 |
| 12882 12883 | 052470° 104410 052472° 000254 | | _ | ESCAPE | 131 | ; | AND ABORT TEST | TRAP.WORD | C\$ESCAPE L10170 |
| 12885 12886 | 052474' 004737 | 017374' | 140\$: | JSR | PC,CLRDNI | ÷ | WRITE ONE TO CLEAR DN ERROR ? | I | |
| 12887 12888 | 052500° 103006 052502° | | | BCC ERRHRD | 150\$ 308,PRTPAR,RACMG7 | : | NO . | | |
| 12878 12889 12881 12881 12883 12884 12885 12886 12886 12887 12888 12890 12891 12891 12893 12893 12898 12898 12898 12899 12900 | 052502' 104456 052504' 000464 052506' 004154' 052510' 012726' 052512' 104416 | | | | | | | TRAP .WORD .WORD .WORD | C\$ERHRD 308 PRTPAR RACMG7 |
| 12893 12894 12895 | 052512* 052512* 104410 052514* 000232 | | | ESCAPE | 151 | ; | AND ABORT TEST | TRAP.WORD | CSESCAPE L10170 |
| 12897 | | | GET SW | ITCH PAC | K INFO READY TO PRINT | | | | |
| 12901 12902 12903 | 052516' 013704 052522' 042704 052526' 012700 052532' 006204 052534' 005300 | 052760° 167777 000013 | 150 \$: | MOV BIC MOV ASR DEC | SWPACK,R4 #167777,R4 #11.,R0 R4 R0 | : | SWITCH PACK -> R4 MASK BIT 12 SHIFT BIT FOR INDEX | | |
| 12904 12905 12906 12907 12908 12909 12910 12911 | 052536' 001375 052540' 062704 052544' 011437 052550' 013704 052554' 042704 052560' 012700 | 053100° 052762' 052760° 171777 000011 | 170\$: | BNE ADD MOV MOV BIC MOV | 160\$ #LPTBL,R4 (R4),LPMSG SWPACK,R4 #171777,R4 #9.,R0 | : | INDEX INTO LOOP TABLE LOAD INTO LOOP MESSAG SWITCH PACK -> R4 MASK BITS 10 AND 11 SHIFT BITS FOR INDEX | E | |
| 12912 12913 12914 12915 | 052564* 006204 052566* 005300 052570* 001375 052572* 062704 052576* 011437 | 053104° 052764° | 180\$: | ASR DE C BNE ADD MOV | R4 R0 180\$ #BITBL.R4 (R4),BTMSG | ; | INDEX INTO BOOT TABLE LOAD INTO BOOT MESSAG | E | |
| 12916 12917 | 252/22 | | PRINT | | | | | | _ |
| 12918 12919 12920 12921 12922 12923 12924 12925 12926 12927 12928 12929 1230 | 052602' 052602' 012746 052606' 012746 052612' 012746 052616' 010600 052620' 104414 052622' 062706 052626' 013746 052632' 012746 | ለሰፈ ጀጀሳ ፣ | | PRINTB | #FORM28,#DEFHDR | : | PRINT DEFAULT PHYSICA | MOV MOV MOV TRAP | WDEFHDR,-(SP) WFORM28,-(SP) W2,-(SP) SP,RO C\$PNTB |
| 12924 12925 | 052622° 062706 052626° | 000006 | | PRINTB | #FORM64,RREV | ; | PRINT MICROCODE REV | ADD | #6,SP |
| 12926 12927 12928 12929 | 052626' 013746 052632' 012746 052636' 012746 052642' 010600 052644' 104414 | 052756' 011066' 000002 | | | | | | MOV MOV MOV TRAP | RREV,-(SP) #FORM64,-(SP) #2,-(SP) SP,RO (\$PNTB |
| 12931 12932 | 052646 062706 052652 | 000006 | | PRINTB | #FORM28,#SWHDR | : | PRINT SWITCH PACK HEA | ADD | #6.SP |

| HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 267 CZUAAA.P11 11-JAN-83 09:29 TEST 46: PRINT DEVICE PARAMETERS TEST | |
|---|--------------|
| 12933 052652' 012746 053114' 12934 052656' 012746 006331' 12935 052662' 012746 000002 12936 052666' 010600 12937 052670' 104414 12938 052672' 062706 000006 | SP) ·(SP) |
| 12939 052676' PRINTB #FORM28,LPMSG ; PRINT LOOPBACK MESSAGE | • |
| 12941 052702' 012746 006331' MOV #FORM28. | (SP) |
| 12942 052706' 012746 000002 MOV #2(SP) 12943 052712' 010600 MOV SP.RO | |
| 12944 052714' 104414 TRAP (\$PNTB | |
| 12945 052716' 062706 000006 12946 052722' PRINTB #FORM28.BTMSG ; PRINT BOOT MESSAGE | |
| 12947 052722' 013746 052764' MOV BTMSG,-(S | P) |
| 12948 U52726 U12746 U06351 MOV #FORM28 | (SP) |
| 12950 052736° 010600 Mny SP.RO | |
| 12951 052740° 104414 TRAP (SPNIR | |
| 12952 052742 062706 000006 12953 : | |
| 12954 052746° | |
| 12955 052746' ENDTST | |
| 12956 052746' 12957 052746' 104401 TRAP (SETST | |

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HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 268
(ZUAAA.P11 11-JAN-83 09:29
                                          TEST 46: PRINT DEVICE PARAMETERS TEST
 12958
12959
                                           :LOCAL STORAGE FOR TEST 41
12959 052750' 000000
12960 052752' 000000
12961 052754' 000000
                                                            .WORD
                                           DPA::
                                                                                     : DEFAULT PHYSICAL ADDRESS (15:CO)
                                                                                     DEFAULT PHYSICAL ADDRESS (31:16)
                                                            . WORD
                                                                                      : DEFAULT PHYSICAL ADDRESS (47:32)
                                                            .WORD
 12962
        052756' 000000
                                           ŘREV::
 12963
                                                            .WORD
                                                                                     : MICROCODE REVISION
 12964
        052760' 000000
052762' 000000
                                                                                     : SWITCH PACK CONTENTS
 12965
                                           SWPACK::
                                                            .WORD
                                          LPMSG::
                                                                                     : LOOPBACK MESSAGE ADDRESS
 12966
                                                                    Ŏ
                                                            .WORD
 12967
        052764' 000000
                                           BTMSG::
                                                            .WORD
                                                                                      : BOOT MESSAGE ADDRESS
 12968
        052766'
052767'
                                                                                     ; HFX DATA FOR CONVERSION
 12969
                                           HEXDAT::
                                                            .BYTE
 12970
                    000
                                           HEXVAL::
                                                            BYTE
                                                                                     : ASCII HEX VALUE
 12971
        052770' 005015
052776' 047122
 12972
                         052105 042510
                                          DEFHDR::
                                                            .ASCII <15><17>/ETHERNET DEFAULT ADDRESS (HEX): /
 12973
                         052105 042040
        053004° 043105
053012° 040440
 12974
                         052501
                                  052114
 12975
                         042104
                                  042522
        053020' 051523
 12976
                         024040
                                  042510
        053026' 024530
 12977
                         020072
                                     040
        0530331
 12978
                                           DEFADR::
                                                            .ASCII / /
                    040
                             040
 12979
        0530351
                    055
                                                            .ASCII /-/
 12980
                 020040
        053036
                                                            .ASCII / /
 12981
        0530401
                    055
                                                            .ASCII /-/
 12982
        0530411
                             040
                                                            .ASCII / /
 12983
        0530431
                    055
                                                            .ASCII /-/
        0530441 020040
 12984
                                                            .ASCII / /
 12985
                                                            .ASCII /-/
        0530461
                    055
 12986
12987
        0530471
                             040
                    040
                                                            .ASCII / /
        0530511
                                                            .ASCII /-/
                    055
        0530521 020040
 12988
                                                            .ASCII / /
        053054' 005015
                                                            .ASCIZ <15><12>
 12989
                             000
 12990
 12991
        0530571
                                           HEXTBL ::
                                                            .ASCII /0/
 12992
        053060'
                    061
                                                            .ASCII /1/
 12993
        053061'
                                                            .ASCII /2/
                    062
                                                            .ASCII /3/
 12494
        0530621
                    063
 12995
        0530631
                                                            .ASCII /4/
                    064
        0530641
                                                            .ASCII /5/
 12996
                    065
 12997
        0550651
                    066
                                                            .ASCII /6/
        0530661
 12998
                    067
                                                            .ASCII
                    070
 12999
        0530671
                                                            .ASCII /8/
 13000
        0530701
                                                                    191
                    071
                                                            .ASCII
 13001
        0530711
                    101
                                                            .ASCII
                                                                    /A/
 13002
        0530721
                    102
                                                            .ASCII
                                                                    /B/
        0530731
                    103
                                                            .ASCII
                                                                    /(/
 13004
        0530741
                    104
                                                            .ASCII
                                                                    /D/
 13005
        053075
                    105
                                                            .ASCII
                                                                    /E/
                                                                    181
 13006
        053076
                    106
                                                            .ASCII
                                                            .EVEN
 13007
                 053100
 13008
 13009
                                           LOOP MESSAGE TABLE
 13010
                                                            .WORD
        053100' 053146'
                                                                    LPMSG0
 13011
                                           LPTBL ::
        053102 053205
 13012
                                                             . WORD
                                                                    LPMSG1
                                           :BOOT MESSAGE TABLE
```

13013

```
HARDWARE TESTS MACY11 30(1046) 11-JAN-83 10:13 PAGE 269
CZUAAA.P11 11-JAN-83 09:29 TEST 46: PRINT DEVICE PARAMETERS TEST
 13014 053104' 053243' 13015 053106' 053301' 13016 053110' 053334'
                                                                               . WORD
                                                                                          BIMSGO
                                                        BTTBL::
       . WORD
                                                                                          BTMSG1
 13017
 13019
 13020
13021
13022
13023
13024
13025
         USSEUE U42105

053205' 040 020040 020040 LPMSG1:: ASCII / SELF TEST LOOP ENABLED/

053212' 042523 043114 052040

053220' 051505 020124 047514

053226' 050117 042440 040516

053234' 046102 042105

053243' 005015 000
 13029 053162°
13027 053170°
13028 053176°
13029 053202
13030 053205°
 13031
13032
13033
13034
13035
          13036
 13037
 13038
 13039
                                020040 020040 BTMSG1:: .ASCII / REMOTE BOOT ENABLED/
047515 042524
047517 020124
 13040
           0532761
 13041
                      005015
          053301' 040
053306' 042522
053314' 041040
 13042
13043
 13044
 13045
           0533221
                      047105
                                 041101
                                             042514
                                UUUU12
020040 051040 BTMSG2:: .ASCIZ <15><12>
052117 020105
052117 042440
046102 042105
052111 020110
 13046
           053330
                          104
 13047
           0533311
                          015
 13048
           053334°
053342°
                      020040
          053334' 020040
053342' 046505
053350' 047502
053356' 040516
053364' 053440
053372' 047522
053375' 015
053400' 020040
053406' 046505
053414' 047502
053422' 42116
 13048
13049
13050
13051
13052
13053
13054
13055
13056
                                            O51040 BTM3G3:: .ASCIZ <15><12>
020105
040440
053517
                                     115
                                  000012
                                 020040
052117
052117
                                                                                                   REMOTE BOOT AND POWER UP BOOT BOTH ENABLED/
           053422
 13058
                                  050040
                                 052440 020120
052117 041040
020110 047105
042514 104
 13059
                      051105
           0534361
 13060
                      047502
          053444 052117
053452 041101
053457 015
 13061
 13062
                                                                .ASCIZ <15><12>
.EVEN
 13063
                                  000012
 13064
```

```
PARAMETER CODING
                          MACY11 30(1046) 11-JAN-83 10:13 PAGE 270
             11-JAN-85 09:29
CZUAAA.P11
                                           TEST 46: PRINT DEVICE PARAMETERS TEST
 13065
                                           .TITLE PARAMETER CODING
 13066
 13067
                                           .SBTTL HARDWARE FARAMETER CODING SECTION
 13068
 13069
 13070
                                            THE HARDWARE PARAMETER CODING SECTION CONTAI'S MACROS
 13071
                                             THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES. THE MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
 13072
 13073
                                             INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES. THE
 13074
                                             MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
 13075
                                           : WITH THE OPERATOR.
 13076
 13077
 13078
 13079
 13080
        0534621
                                                    BGNHRD
 13081
        053462 000010
                                                                                                                 .WCRD L10171-LSHARD/2
 13082
        0534641
                                                                                                        L$HARD::
 13083
        0534641
                                                    GPRMA
                                                            ASKCSR.0.0.150000.177776.NO
                                                                                                :FIRST P-TABLE QUESTION
 13084
        0534641
                 000021
                                                                                                                 .WORD
                                                                                                                         T$CODE
 13085
        0534661
                 0535041
                                                                                                                 .WORD
                                                                                                                         ASKCSR
        0534701
 13086
                 160000
                                                                                                                 .WORD
                                                                                                                          T$LOLIM
 13087
        0534721
                 177776
                                                                                                                 -WORD
                                                                                                                         TSHIL IM
 13088
        0534741
                                                    GPRMA
                                                            ASKVEC.2.0.0.776.NO
                                                                                               :SECOND P-TABLE QUESTION
 13089
        0534741
                 001021
                                                                                                                 .WORD
                                                                                                                         T$CODE
 13090
        053476' 053537'
                                                                                                                 .WORD
                                                                                                                         ASKVEC
 13091
        053500 000000
                                                                                                                 - WORD
                                                                                                                         T$LOLIM
 13092
        0535021 000775
                                                                                                                 .WORD
                                                                                                                         TSHIL IM
 13093
        0535041
                                                   ENDHRD
13094
                                                                                                                 .EVEN
 13095
        0535041
                                                                                                        L10171:
 13096
 13097
13098
        053504' 044127
                         052101
                                  044440 ASKCSR: .ASCIZ /WHAT IS THE PCSRO ADDRESS?/
        053512' 020123
 13099
                                  020105
                         044124
        053520° 041520
13100
                         051123
                                  020060
        053526' 042101
13101
                          051104
                                  051505
       053534 037523
053537 127
13102
                             000
13103
                          040510
                                  020124
                                           ASKVEC: .ASCIZ /WHAT IS THE VECTOR ADDRESS?/
        053544' 051511
                                  042510
047524
 13104
                          052040
       053552' 053040
053560' 020122
13105
                         041505
13106
                          042101
                                  051104
13107
        053566' 051505
                         037523
                                     000
13108
                 0535741
                                           .EVEN
```

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PARAMETER CODING MACY11 30(1046) 11-JAN-83 10:13 PAGE 271 HARDWARE PARAMETER CODING SECTION
13109 U53574' 000100
13110
13111
13112 000000'
13113 000000'
13114 000000'
13115 000000'
                                                                             SPATCH::.BLKW 100
                               000000
                                                                                           .CSECT MICRA
.CSECT MICRD
.CSECT MICRD
.CSECT MICRD
.CSECT MICRE
.CSECT MICRF
.CSECT MICRG
.CSECT NOMORE
ENDMOD
                              000000.
                               000000
 13116
13117
17118
                              000000
                              000000
                              000000
 13179
13120
13121
              000000
                              000001
                                                                             .END
```

| PARAMETER CODING (ZUAAA.P11 11-JA | 4N-83 | MACY11 09:29 | 30(1046) | 11-JAN CROSS R | -83 10: EFERENCE | 13 PAGE | 273 - USER S | YMBOLS | | | | | | 250 |
|---|--|--|---|--|--|---|--|--|--|--|--|--|--|--|
| | 005 | 1632# 1667# 13085 13090 1389 | 6852 13098# 13103# | 7468 | | | | | | | | | | |
| | 002 | 1786# 4353 6376* 7238* 8878* 10637* 12872* | 2966 4463* 6419* 7384* 3890* 10804* | 3000 4470 6480* 7549* 8899* 10976* | 3097 5300* 6606* 7708* 8908* 11144* | 3265 5329* 6653* 7858* 9001* 11333* | 3669 5352* 6701* 7996* 9170* 11541* | 4309* 5407* 6780* 8134* 9343* 11756* | 4316* 5432* 6927* 8282* 9508* 11992* | 4323* 5451* 7057* 8444* 9697* 12335* | 4330* 5652* 7133* 8597* 9860* 12582* | 4337* 5723* 7134* 8774* 10099* 12749* | 4344 • 6179 • 7172 • 8856 • 10322 • 12783 • | 4351* 6245* 7173* 8869* 10477* 12827* |
| | 002 002 | 1785# 1787# 5450* 7058* 9002* 11334* 1605# | 2904 2903 5653* 7099* 9171* 11542* 5344 | 4973* 2965 5724* 7239* 9344* 11757* 5496 | 4990* 2999 6180* 7385* 9509* 11993* 7628 | 5076* 4464* 6246* 7550* 9698* 12336* | 5093* 4469 6377* 7709* 9861* 12583* | 5110* 4972* 6420* 7859* 10100* 12750* | 5127* 5075* 6481* 7997* 10323* 12784* | 5144* 5301* 6607* 8135* 10478* 12828* | 7101* 5330* 6654* 8283* 10638* 12873* | 7131 5345* 6702* 8445* 10805* | 7183* 5398* 6781* 8598* 10977* | 5431 • 6928 • 8775 • 11145 • |
| BIT00 = 000001 G BIT01 = 000002 G BIT02 = 000004 G BIT03 = 000010 G BIT04 = 000020 G | | 1594# 1593# 1592# 1591# 1590# | 1605 1604 1603 1602 1601 | 1699 1700 1701 1712 | 1702 1701 1723 | 1723 1702 1728 | 1725 1723 1729 | 1727 1726 1730 | 172 8 1727 | 1730 1729 | 5533 1730 | | | |
| BI105 = 000040 G BI106 = 000100 G BI107 = 000200 G BI108 = 000400 G BI109 = 001000 G BI11 = 000002 G | | 1589# 1588# 1587# 1586# 1585# 1604# | 1600 1599 1598 1597 1596 | 1688 1687 1686 1685 1735 | 1710 1736 | | | | | | | | | |
| BIT10 = 002000 G BIT11 = 004000 G BIT12 = 010000 G BIT13 = 020000 G | | 1584# 1583# 1582# 1581# | 1683 1682 1681 1680 | 1715 1716 1696 1695 | 1719 1719 1717 1718 | 7100 11227 1719 1719 | 11452 12075 12079 8867 | 12083 12081 12148 8888 | 12155 12153 12151 | 12226 12232 12230 | 12234 | | | |
| BIT14 = 040000 G BIT15 = 100000 G BIT2 = 000004 G BIT3 = 000010 G | | 1580# 1579# 1603# 1602# | 1679 1678 7783 5400 | 1694 1693 12025 | 1706 1705 | 1734 1733 | 5128 5145 | 8897 7783 | 11235 8876 | 12077 8906 | 12149 12025 | 12225 | 12228 | |
| BIT4 = 000020 G BIT5 = 000040 G BIT6 = 000100 G BIT7 = 000200 G | | 1601# 1600# 1599# 1598# | 4974 5094 1660 | 5077 5111 | 12025 11374 | | | | | | | | | |
| BIT8 = 000400 G BIT9 = 001000 G BNAMTO 000356RG BNAMT1 000416RG | 005 005 005 | 1597# 1596# 1810# 1827# 1845# 1636# | 1713 1714 5343 5396 8851 | 1719 1719 7133 | 4991 7172 | | | | | | | | | |
| BTMSG 052764RG BTMSGO 053243RG BTMSG1 053301RG BYMSG2 053334RG BTMSG3 053400RG | 200 200 200 200 200 200 200 200 | 12914 • 13014 13015 13016 13017 12913 | 12947 13036# 13042# 13048# 13055# 13014# | 12967# | | | | | | | | | | |
| | 002 | 4240# 6603 | 4460 6650 | 4580 6698 | 4608 6778 | 4789 6829 | 5297 6924 | 564 8 7054 | 5720 7236 | 6176 7284 | 6242 7382 | 6373 7438 | 6416 7547 | 6478 7602 |

| PARAMETER CODING MA CZUAAA.P11 11-JAN-83 09 | ACY11 30(1046) 9:29 | 11-JAN- CROSS RE | 83 10: FERENCE | 13 PAGE | 274 - USER S | YMBOLS | | | | | | SEQ 2 |
|---|--|--|--|--|--|---|---|--|--|---|---|---|
| 8 11 12 CHKINT 020050RG 002 4 9 11 | 7706 7755 3652 8772 9858 9914 1031 11142 2333 12383 4424# 6831 9226 9391 1600 11811 | 11201 12450 7440 9567 | 7902 8999 10165 11331 12580 7604 9753 12129 | 7994 9055 10320 11399 12635 7757 9916 12201 | 8041 9168 10375 11539 12745 7904 10167 | 8132 9224 10475 11598 12780 8050 10386 12452 | 8179 9341 10522 11754 12824 8188 10525 12637 | 8280 9389 10635 11809 12869 8336 10690 | 8334 9506 10688 11990 8497 10857 | 8442 9565 10802 12050 8654 11033 | 8495 9695 10855 12127 8825 11203 | 8595 9751 10974 12199 9057 11401 |
| CHKMON 017776RG 002 4 8 11 | 386# 6810 3807 9043 1184 11387 | 7105 9212 | 7272 9376 11797 | 7419 9553 12038 | 7589 9739 12115 | 7743 9902 12187 | 7890 10153 12371 | 8029 10363 12438 | 8167 10509 12623 | 8317 10675 | 8478 10835 | 8640 11014 |
| CLEAR = 000000 G 1 CLKBR 000276RG 002 1 CLKCSR 000274RG 002 1 CLKFRE 000302RG 002 1 CLKSRV 021674RG 002 4 | 1647# 1780# 4723* 1779# 4202* 1782# 4725* 1728 4897# | 4727 4212* | 4720* | | | , 2, 0, | | 12430 | 12023 | | | |
| CLKVEC 000300RG 002 1 CLNERR 021556R 002 4 | 781# 4724* 792 4803# 275# 4479 | 4729 4593 | 4621 | 4797 | 5670 | 5758 | 6200 | 6266 | 4307 | 4//0 | 4/09 | 4437 |
| 6 7 9 10 11 12 | 674 6790 7868 8008 9013 9103 9223 10334 1345 11434 2594 12659 304# 4566 | 6865 8072 9182 10405 11553 | 6988 8146 9273 10489 11666 12796 | 7069 8210 9355 10558 11768 12840 | 7250 8294 9423 10649 11874 12885 | 7312 8373 9520 10728 12004 | 7396 8456 9610 10816 12094 | 7491 8534 9709 10890 12166 | 6397 7561 8609 9791 10988 12244 | 6440 7643 8691 9872 11065 12347 | 6498 7720 8786 9953 11156 12418 | 6627 7799 8917 10111 11246 12489 |
| CNTTAB 000624RG 002 1 COLTST 004046RG 002 2 | 903# 3421 | 12615 12009 | 12680 12043 12239 | 12701 12057 12249 | 12066 | 12088 | 12099 | 12120 | 12134 | 12140 | 12160 | 12171 |
| CPUPRI 000674RG 002 1 CRCDAT 003621RG 002 2 CRCERR 003656RG 002 2 CRCPAT 003704RG 002 2 CRCSIZ= 000004 C | 909# 4873* 238# 10983 243# 11151 247# 11340 670# | 6972 10993 11161 | 11019 | 11038 11208 11406 | 11047 11217 11415 | 11060 11233 11429 | 11070 11241 11439 | 11251 | | | | |
| CRC32 016722RG 002 3 CSRNUM 000304RG 002 1 | 054 <i>n</i> 6283 982 <i>n</i> 784 <i>n</i> 2890 | 2905 | 2918 | 3001 | 4466* | 4471 | 4938* | 5041* | 5187* | 5237* | 5286* | 5378* |
| C\$AU = 000052 1 C\$AUTO= 000061 1 | 488* 5532* 389# 4835 389# 4774 | 7098* | | | | | | | | | | |
| C\$BSEG= 900004 1 5 6 7 8 | 389# 4244 389# 4968 424 5443 436 6462 104 7160 8028 8120 9156 9207 358 10463 370 11380 | 4391 4986 5493 6497 7224 166 9329 10508 | 5071 5535 6583 7271 8368 9375 10623 | 5089 5551 6623 7370 8316 9494 10674 11742 | 5106 5666 6643 7418 8430 9549 10727 11787 | 5123 6171 6670 7535 8477 9683 10790 11978 | 5140 6196 6693 7588 8583 9734 10834 12033 | 5235 6230 6769 7694 8635 9846 10962 12109 | 5322 6262 6809 7742 8760 9901 11010 12183 | 5348 6348 6912 7847 8806 10085 11130 12321 | 5374 6393 6944 7888 8987 10147 11183 12367 | 5403 6410 7042 7982 9038 10308 11319 12434 |
| (\$BSUB= 000002 1 | 358 10463 370 11380 2568 12622 389# 4933 | 4963 | 5036 | 5066 | 5291 | 5317 | 5597 | 5620 | 5642 | 6166 | 6217 | 6343 |
| (\$(L(K= 000062 1 | 389 <i>n</i> 389 <i>n</i> 4709 389 <i>n</i> 4814 | | | | | | | | | | | |

| PARAMETER CCDING CZUAAA.P11 1-JAN-83 | MACY11 09:29 | 30(1046) | 11-JAI | N-83 10: REFERENCE | 13 PAGE | 275 - USER | SYMBOLS | | | | | | S |
|--|--|---|--|--|---|---|---|--|--|--|--|---|--|
| C\$CLOS= 000035 C\$CLP1= 000306 C\$CVEC= 000036 C\$DCLN= 900044 C\$DODU- 000051 C\$DRP1= 000024 | 1389# 1389# 1389# 1389# 1389# 1389# | 4948 4951 4758 4954 | 5051 5007 4956 5057 | 5197 5054 5059 5203 | 5247 5161 5205 5253 | \$200 \$255 | 5208 | 5250 | 5262 | 6986 | | | |
| C\$DU = 000053 C\$EDIT= 000003 C\$ERDF= 000055 C\$ERHR= 000056 | 1389# 13899 1389 138 | 4824 1447 4947 54977 56257 66971 7698 8481 8784 8784 8789 937056 | 5046 4994 5501 6250 6678 6991 7389 7633 7916 8191 8500 9379 9712 10104 | 5192 5080 5581 6270 67062 7394 77633 8509 88529 9394 9742 10114 | 5242 5097 5557 6290 6716 7072 7422 7713 80013 8527 8837 9403 9756 | 5114 5610 6381 6785 7108 7443 7723 8011 8287 8538 9106 9765 | 5131 5632 6401 6793 7136 7452 7746 8032 8297 8602 8871 9175 9426 9780 | 5148 5657 6424 6813 7148 74760 8046 8320 8612 88880 9183 9194 | 5303 5674 6434 7172 77653 8334 88925 98653 | 5332 5711 6485 6841 7243 7498 8062 8348 8657 8901 9229 9556 | 5354 5728 6502 6861 7253 7554 7802 8075 8366 8910 9238 9570 | 5385 5750 6519 6868 7275 7564 7863 8139 8376 8684 89262 9579 | 5409 5763 6611 6932 7287 7592 7871 8149 8449 8694 9006 9599 9928 |
| C\$ERRO= 000060 C\$ERSF= 000054 | 10389 10693 11017 11338 11644 12007 12213 12479 12832 1389# 1389# | 10397 10702 11036 11348 11655 12041 12237 12492 12845 | 10408 10715 11045 11390 11669 12055 12247 12587 12877 | 10482 10731 11058 11404 11761 12064 12340 12597 12889 | 10156 10492 10809 11068 11413 11771 12086 12350 12626 | 10170 10512 10819 11149 11427 11800 12097 12374 12640 | 10179 10528 10838 11159 11437 11814 12118 12388 12649 | 10196 10537 10860 11187 11546 11823 12132 12397 12662 | 10212 10551 10869 11206 11556 11837 12138 12411 12693 | 10226 10561 10883 11215 11589 11852 12158 12421 12754 | 10327 10642 10893 11231 11603 11863 12169 12441 12767 | 10337 10652 10981 11239 11612 11877 12190 12455 12788 | 10366 10678 10991 11249 11629 11997 12204 12464 12801 |
| C\$ERSO= 000057 C\$ESCA= 000010 | 1389# 1389# 1389# 6663 7379 8056 8353 8765 9799 10184 10986 11376 11279 12850 | 5308 6683 7318 8683 7718 808 8784 9180 9518 9857 10657 10995 11808 12608 | 5662 6818 7404 7728 8129 8454 9190 9528 910683 110683 11069 11819 12330 12331 | 57.6 69.27 77.51 81.44 88150 95.61 98822 10698 11041 11418 118245 12645 | 5733 7051 7448 7765 8154 8483 9234 9575 9910 10371 10707 11937 11937 12355 | 5755 7067 7457 7774 8175 8505 8842 9243 9584 10394 10736 11139 11551 12002 12379 12667 | 6189 7077 7544 7807 8196 8514 8996 9281 9618 9933 10472 10799 111561 12012 12393 12698 | 6255 7113 7559 7898 8205 8592 9011 9338 9692 10487 10164 11594 11164 112046 12402 12738 | 6386 7233 7569 7912 8277 8607 9021 9353 9707 10094 10497 10824 111608 12060 12446 12759 | 6429 7248 7597 7991 8292 8617 9051 9363 9717 10109 10517 10843 11211 11617 12069 12460 12772 | 6490 7258 7612 8006 8302 8648 9065 9384 9747 10119 10533 10865 11220 11674 12123 12469 12793 | 6616 7280 7621 8016 8325 8662 9074 9399 9761 10161 10542 10874 11751 12143 12484 12806 | 6636 7292 7651 8037 8344 8671 9111 9408 9770 10175 10632 10971 11343 11766 12195 12577 12837 |
| C\$ESEG= 000005 | 1389# 5441 | 12882 4984 5460 | 12894 5001 5508 | 5087 5548 | 5104 5564 | 5121 5681 | 5138 6194 | 5155 6211 | 5259 6260 | 5339 6277 | 5361 6391 | 5392 6408 | 5416 6434 |

| PARAMETER CODING CZUAAA.P11 11-JAN-83 | MACY11 09:29 | 30(1046) | 11-JAI CROSS R | -83 10: | 13 PAGE TABLE - | 276 - USER S | YMBOLS | | | | | | 36 |
|---|--|--|--|---|---|---|---|---|--|--|--|--|--|
| | 6451 7155 8082 9195 10415 11444 12607 1389# | 6495 7182 8159 9269 10502 11457 12705 | 6509 7263 8220 9368 10568 11566 | 6621 7322 8307 9433 10662 11662 | 6641 7409 8383 9533 10722 11781 | 6668 7501 8469 9606 10741 11870 | 6688 7574 8544 9722 10829 12017 | 6723 7639 8622 9787 10900 12104 | 6801 7733 8701 9885 11001 12178 | 6875 7795 8799 9949 11076 12254 | 6939 7879 8927 10124 11169 12360 | 6983 7945 9026 10233 11256 12428 | 7088 8021 9099 10347 11358 12499 |
| CSESUB= 000003 | 1389# 6528 | 4960 | 5004 | 5063 | 5158 | 5313 | 5463 | 5617 | | | | | |
| C\$ETST= 000001 | 6528 1389# 6878 8930 11265 | 5010 6998 9122 11467 | 5164 7189 9292 11687 | 5212 7325 9436 11884 | 5265 7504 9631 12257 | 5466 7657 9814 12508 | 5515 7816 9975 12708 | 5567 7948 10236 12957 | 5687 8085 10425 | 5770 8223 10571 | 6300 8386 10750 | 6539 8547 10903 | 6732 8706 11084 |
| C\$EX1T- 000032 C\$GETB= 000026 C\$GETW= 000027 C\$GMAN= 000043 C\$GPHR= 000042 | 11265 1389# 1389# 1389# 1389# 1389# | 4800 4741 | 12732 | | | | | | | | | | |
| C\$GPLO= 000030 C\$GPRI= 000040 C\$INIT= 000011 C\$INLP= 000020 | 1389# 1389# 1389# 1389# | 4762 | | | | | | | | | | | |
| C\$MAN1 = 000050 C\$MEM = 000031 C\$MSG = 000023 | 1389# 1389# 1389# 3092 3357 | 4703 2898 3105 3392 | 2913 3117 3404 3736 | 2934 3142 3442 3748 | 2946 3155 3490 3760 | 2958 3175 3509 3772 | 2974 3189 3529 3799 | 2993 3204 3549 3819 | 3009 3232 3577 3861 | 3021 3260 3596 3873 | 30 ·2 32 /4 36 37 3912 | 3068 3303 3664 3936 | 3080 3330 3677 3948 |
| (\$OPEN= 000034 (\$PNTB= 000014 | 3697 1389# 1389# 3038 3171 3311 3435 3559 3673 3807 3926 | 3724 2894 3050 3185 3318 3452 3566 3686 3815 3932 | 2909 3057 3200 3326 3459 3573 3693 3828 3944 | 2922 3064 3213 3338 3465 3585 3706 3835 12923 | 2930 3076 3220 3345 3472 3592 3712 3842 12930 | 2942 3088 3228 3353 3479 3604 3720 3849 12937 4573 | 2954 3101 3241 3367 3486 3611 3732 3857 12944 | 2970 3113 3248 3377 3498 3618 3744 3869 12951 | 2982 3125 3256 3387 3505 3625 3756 3883 | 2989 3131 3270 3400 3517 3633 3768 3891 | 3005 3138 3283 3412 3525 3645 3780 3899 | 3017 3151 3291 3418 3537 3653 3787 3907 | 3029 3164 3299 3428 3545 3660 3795 3920 |
| C\$PNTF = 000017 C\$PNTS = 000016 C\$PNTX = 000015 C\$010 = 030377 C\$RDBU = 000007 C\$REFG = 000047 | 1389N 1389N 1389N 1389N 1389N 1389N | 4357 4683 | 4688 | 4693 | 4698 | 4573 | 4588 | 4601 | 4616 | 4629 | 4717 | 4(7) | |
| (\$RESE = 000033 (\$REVI = 000003 (\$RFLA = 000021 (\$RPT = 000025 (\$SEFG = 000046 (\$SPRI = 000041 | 1389# 1389# 1389# 1389# 1389# 1389# | 4650 | 4215 | 6951 | 7124 | | | 7004 | | | | | : |
| (\$SVEC= 000037 | 13894 | 4731 | 4929 | 5032 | 5184 | 5232 | 6918 | 7084 | | | | | |
| CSTPRI= 000013 DATALD 002067RG 002 | 13894 20844 | t 6383 | 6403 | 6426 | 6446 | 6487 | 6504 | 6521 | | | | | |
| DATERR= 000000 G DBFRAM 002624RG 002 DEFADR 053053RG 002 | 1666A 2150A | 6848 | 7464 8299 | 8322 | 8341 | 8350 | 8368 | 8378 | | | | | |

| PARAMETER CODING CZUAAA.P11 11-JAN-83 | MACY11 30(1046) 09:29 | | -83 10: EFERENCE | 13 PAGE TABLE - | 277 - USER S | YMBOLS | | | |
|--|--|--|---|--|------------------------------|------------------------------|----------------------|------|------|
| DEFHDR 052770RG 002 DFPTBL 000262RG 002 D1AGMC= 0C0000 | 12919 12972# 1557# 1389 | | | | | | | | |
| DIM = 0C 0020 G DMABLK 00 2501RG 002 DMAFRM 00.431RG 002 DMATO 002 363RG 002 DNI = 004000 G DPA 052750RG 002 | 1757# 6222 2134# 7865 2127# 7715 2120# 7556 1682# 4241 4109 12811* | 6475 7873 7725 7566 4275 12812* | 12860 7895 7748 7594 4276 12813* | 7909 7762 7609 4332 12959# | 7918 7771 7618 4334 | 7935 7790 7635 4335 | 7804 7648 5368 | 5624 | 5629 |
| DPPAT 002720RG 002 DWFRAM 002662RG 002 EF.CON= 000036 G EF.NEW= 000035 G EF.PWR= 000034 G EF.RES= 000037 G | 2160# 8604 2155# 8451 1612# 4682 1613# 4692 1614# 4687 | 8614 8461 | 8645 | 8659 8502 | 8668 8511 | 8684 8525 | 8696 8539 | | |
| EF.STA= 000040 G ENP = 000400 G ERRINT 000666RG 002 ERRS = 040000 G EVL = 000004 G E\$END = 002100 | 1610# 4697 1736# 1906# 3877 1734# 1630# 1389# | 3885 | 3893 | 3901 | 4424* | 4425 | | | |
| E\$LOAD= 000035 FATI = 000400 G FIFTST 003166RG 002 FORM1 004234RG 002 | 1389# 1470 1685# 4346 2188# 9515 2285# 2891 | 4348 9525 | 4349 9558 | 9572 | 9581 | 9601 | 9615 | | |
| FORM10 005010RG 002 FORM11 005974RG 002 FORM12 005123RG 002 FORM13 005216RG 002 FORM15 005267RG 002 FORM16 005343RG 002 FORM17 005421RG 002 FORM18 005504RG 002 FORM19 005562RG 002 FORM2 004271RG 002 FORM2 005637RG 002 FORM21 005677RG 002 FORM22 005751RG 002 FORM23 006031RG 002 FORM24 006101RG 002 FORM25 006133RG 002 FORM25 006133RG 002 FORM26 036206RG 002 | 2350N 3014 2359N 3026 2363N 3035 2373N 2986 2388N 3054 2388N 3061 2396N 3073 2405N 3085 2413N 3098 2290N 2906 2421N 3110 2427N 3122 2435N 3128 2444N 3135 2456N 3161 2464N 3168 | 3047 3197 | 3308 | 3335 | | | | | |
| FORM27 006261RG 002 FORM28 006331RG 002 FORM29 006336RG 002 FORM3 004327RG 002 FORM30 006361RG 002 FORM31 006411RG 002 | 2472N 3182 2479N 3210 2480N 3217 2296N 2919 2484N 3238 | 3225 3690 3342 | 3253 12920 | 3323 12934 | 3350 12941 | 3650 12948 | 3812 | 3854 | |
| FORM32 006437RG 002 FORM32 006534RG 002 FORM34 006572RG 002 | 2489W 3245 2493W 3267 2504W 3280 2509W 3288 | 3839 | | | | | | | |
| FORM35 006655RG 002 FORM36 006755RG 002 FORM37 007C13RG 002 | 2518N 3296 2529N 3315 2535N 3364 2549N 3374 | 3846 | | | | | | | |
| FORM38 007124RG 002 FORM39 007215RG 002 | 2549# 3374 2559# 3397 | 3384 | | | | | | | |

| PARAMETER LODING MACY1 CZUAAA.P11 11-JAN-83 09:29 | 30(1046) | 11-JAN CROSS R | I-83 10: Reference | 13 PAGE | E 278 USER : | SYMBOLS | | | | | | SEQ 27 |
|--|--|--------------------------------|-----------------------|----------------|-----------------|---------|------|------|------|------|------|--------|
| FORM4 004376RG 002 23038 FORM40 007256RG 002 25658 FORM41 007341RG 002 25748 FORM42 007407RG 002 25818 FORM43 007416RG 002 25838 FORM44 007424RG 002 25848 FORM45 007503RG 002 25928 FORM46 007531RG 002 25968 FORM47 007560RG 002 26008 FORM48 007607RG 002 26048 FORM49 007704RG 002 26158 FORM5 004445RG 002 23108 | 3415 3425 3432 3462 3469 3476 3483 | | | | | | | | | | | |
| FORM49 007704RG 002 2615/FORM5 004445RG 002 2310/FORM50 007760RJ 002 2623/FORM51 010047RG 002 2633/FORM52 010101RG 002 2638/FORM53 010137RG 002 2644/FORM54 010211RG 002 2656/FORM55 010237RG 002 2656/FORM56 010310RG 002 2663/FORM57 010363RG 002 2678/FORM58 010433RG 002 2678/FORM59 010511RG 002 2686/FORM59 010511RG 002 26 | 3522 3514 3534 3563 3570 | 3542 | 3556 | | | | | | | | | |
| FORM56 010310RG 002 2663/ FORM57 010363RG 002 2671/ | 7 3601 7 3589 | 3777 3608 | 3657 | | | | | | | | | |
| FORM58 010433RG 002 2678/ FORM59 010511RG 002 2686/ | 3622 | 3703 | 3784 | | | | | | | | | |
| FORM60 010604RG 002 2516/ FORM61 010671RG 002 2705/ FORM62 010754RG 002 2714/ FORM63 011027RG 002 2722/ | 3630 3642 3670 3683 12927 | 3709 3804 4354 | 3792 | | | | | | | | | |
| FORM64 011066RG 002 2728/ FORM65 011137RG 002 2735/ FORM66 011165RG 002 2739/ FORM67 011252RG 002 2748/ FORM68 011336RG 002 2757/ FORM69 011433RG 002 2768/ FORM7 004566RG 002 2324/ FORM70 011551RG 002 2782/ | 3729 3741 3753 3765 2979 | | | | | | | | | | | |
| FORM71 011613RG 002 2788/ FORM72 011655RG 002 2794/ FORM73 011727RG 002 2802/ FORM74 011772RG 002 2808/ FORM75 012047RG 002 2816/ FORM76 012115RG 002 2823/ | 3832 3866 3880 3888 3896 | 3904 | | | | | | | | | | |
| FORM77 012151RG 002 2828/ FORM78 012225RG 002 2836/ FORM79 012265RG 002 2842/ FORM8 004650RG 002 2333/ FORM80 012334RG 002 2849/ FORM81 012413RG 002 2857/ | 3456 3717 3917 2951 3923 3929 | 4482 | | | | | | | | | | |
| FORM82 012456RG 002 2863/ FORM9 004732RG 002 2342/ FREMEM 000324RG 002 1793/ | 3002 4705* | 4472 4706* | 6231 | 6238 | 6281 | 6353 | 6361 | 6467 | 6473 | 6513 | 7889 | 10129 |
| FRESIZ 000322RG 002 1792/ FRSTIM 000672RG 002 1908/ FSAU = 000015 1389/ | 4701 + 4829 | 10193 4705 4734* 4834 | 10194 4756• | 10204 12729 | | | | | | | | |
| F\$AUTO= 000020 1389/ F\$BGN = 000040 1389/ | 4771 1 1393 | 4773 2888 | 2901 | 2916 | 2937 | 2949 | 2961 | 2977 | 2996 | 3012 | 3024 | 3045 |

| PARAMETER CODING CZUAAA.P11 11-JAN-83 | MACY11 3 09:29 | 30(1046) | 11-JA | N-83 10: REFERENCE | 13 PAGE | 279 USER : | SYMBOLS | | | | | | SE |
|--|---|--|--|--|--|---|--|---|--|--|---|---|--|
| F\$CLEA= 000007 | 33659155726036847 71679155726036847 73363765556666913977166112813128 77777888861128 888993573248853369381277 11111123789 | 333047103639627427850731987317840348332633344871036677778888888999993111111112888888888888888888 | 50008398236634448157295295298972908332173 033749035562464212132233443899979350793708332173 033749035562464212132233443899979350793708332173 111111111111111111111111111111111 | 33762160333537108 133762160333537108 133762160333537108 10377556246667776888869997777540715450 103775540715450 103775540715450 103775540715450 | 3777979365775607886677778868889997823624578966677778868889997823362457896688899979796452888899979796452888899979979797979797979797979797979797 | 337776221622358777888877717054451124669 14451120216223588777778888777170988181674 1146877777888877717098818169 1005747189674 111111111111111111111111111111111111 | 33374636032134832656048948526986 724963213488889988998628526986 777778888899898989898 100578695 11111224695 1299 110788628526986 | 3577066344599711083575997110835759971108357599711083575999069916224447088857599968499162244471122348711399968499162244471139996849916224447113999999999999999999999999999999999 | 35328 35328 35328 35326 35326 35326 35326 35326 35326 35326 35326 35326 35326 35326 35326 35326 35326 36 | 3552229 3552229 3552229 36663289 56665777779 56665777779 56666777779 56666777779 56666777779 56666777779 56666777779 56666777779 56666777779 56666777779 56666777779 566667777779 5666677779 56666777779 5666677779 5666677779 5666677779 5666677779 5666677779 5666677779 5666677779 5666677779 5666677779 5666677779 5666677779 566667779 566667779 566667779 56666779 5666779 566 | 3586296639588894359224466413720556658889435924412666588894359248994688110824126665888994888994881111111111111111111111111 | 35976 | 3277 3645 3645 5646 5646 5646 5646 5646 5646 |
| F\$DU = 000016 F\$END = 030041 | 12602 12793 1389# 1389# 13889# 13831 33378 36495 55178 55140 55641 6669 6669 | 4818 13093 33058 36946 4925 5216 53665 53665 6493 6683 | 12837 4813 4829 3193 337651 4935 4936 5213 5568 56189 6689 | 2914 3118 3405 3737 4763 4959 5065 5226 5417 55683 61342 6724 | 2935 3143 3743 3745 4961 5088 5260 5442 55685 6212 6386 6731 | 2947 3156 3491 3761 4800 4962 5105 5264 55686 6212 65338 6733 | 2959 3176 3510 3773 4815 5126 5126 55462 5688 6215 6540 6762 | 2975 3190 38300 4820 5002 5139 5285 5707 6216 6578 6802 | 2994 3205 3825 3825 5156 5156 5255 5616 5716 6436 6818 | 3010 3233 3578 3862 4831 5005 5157 5308 5733 6261 6452 6876 | 3022 3261 3597 3874 4836 5009 5159 5312 5619 5758 6453 6637 | 3043 3275 3638 3913 4857 5011 5163 5314 55638 5769 6455 6455 66479 | 3069 3304 3665 3937 4877 5026 5165 5316 5771 6298 6456 6906 |

| c | c | n | • | 7 | ζ |
|---|---|---|---|---|---|
| • | • | ч | _ | • | 7 |

| PARAMETER COD.NG CZUAAA.P11 11-JAN-83 | MACY11 09:29 | 30(1046) | 11-JA CROSS | N-83 10: Reference | 13 PAGE | 280 - USER | SYMBOLS | | | | | | 36 |
|---|--|---|--|--|---|---|---|--|--|--|--|--|--|
| | 671879 7756347 7756347 7756347 7756347 886929 97882 97882 97882 97882 97882 97882 97882 97882 97882 97882 97882 97882 97882 97882 9782 97 | 6965 7190 7394 7575 77575 77579 8120 8120 8120 8120 9120 9120 9120 9120 9120 9120 9120 9 | 6987 7497 77974 83002 83002 83003 89143 89173 99173 10618 1118 1118 1123 1123 1123 1123 1123 11 | 6977 7230 72412 77612 77791 8132 8132 8133 8133 8133 8133 8133 813 | 6998 7421 76796 77706 81345 77706 81345 8798 97936 10464 11121 11486 11929 1124 1124 1124 1124 1124 1124 112 | 70358 70258 77258 77258 7780165 8135463 8135463 9136750 9136750 9136750 1008220 114688 11260 114688 11280 11280 11280 11280 11280 | 7051 7264 72651 72651 7457 768152 88198 88198 88198 99198 99198 99198 99198 10063 11 | 7060 70777882 777882 777883 883782 997979 10484 1150 1100 1100 1100 1100 1100 1100 110 | 70727772777777777777777777777777777777 | 7089 7325 76887 78867 886223 886223 886223 886223 9815 10337 10707 10878 11576 12706 12706 1289 | 7113 7328 77328 77898 8023 8023 8023 8023 8023 8023 9023 9034 9034 9034 1035 1035 1035 1035 1035 1035 1035 1035 | 7156 7324 77324 7718 8081 8254 84523 9108 94376 9855 9855 101348 10736 11343 11367 11365 12369 12369 12379 1238 | 7183 7363 7559 77946 8086 8277 84648 88462 9111 9487 9692 9870 101371 10371 10371 10371 11353 11354 11353 112728 12728 |
| f\$INIT= 000006 f\$JMP = 000050 f\$MOD = 000000 f\$MSG = 000011 | 1389# 1389# 1389# 1389# 1389# 1389# 2377 3091 3192 3356 3696 3802# | 13081 1555 4677 4646 1393 2888 2995 3200 3360 3548 3700 3818 4661 | 13094 1563 4761 4800 13121 2897 2996 3104 3207 3391 3552 3723 3822 4668 | 4820 2901 3008 3108 3231 3395 3576 3727 3860 | 4831 2912 3012 3116 3235 3403 3735 3864 | 12732 2916 3020 3120 3259 3407 3595 3739 3872 | 2933 3024 3141 3263 3441 3599 3747 3876 | 2937 3041 3145 3273 3445 3636 3751 3911 | 2945 3045 3154 3277 3489 3640 3759 3915 | 2949 3067 3158 3302 3493 3663 3763 3935 | 2957 3071 3174 3306 3508 3667 3771 3939 | 2961 3079 3178 3329 3512 3676 3775 3947 | 2973 3083 3188 3333 3528 3680 3798 |
| f\$PROT = 000021 f\$PWR = 000017 f\$RPT = 000012 f\$SEG = 000003 | 1389# 1389# 1389# 5140 5440 6196 6450 6693 7154 7588 8081 8583 | 4644 4968 5154 5443 6210 6462 6722 7160 7638 8120 8621 | 4649 4983 5235 5459 6230 6494 6769 7181 7694 8158 8635 | 4986 5258 5493 6259 6497 6800 7224 7732 8166 8700 | 5000 5322 5507 6262 6508 6809 7262 7742 8760 | 5071 5338 5535 6275 6583 6874 7271 7794 8268 8798 | 5086 5348 5547 6348 6620 6912 7321 7847 8306 8806 | 5089 5360 5551 6390 6623 6938 7370 7878 8316 8926 | 5103 5374 5563 6393 6640 6944 7408 7888 8382 8987 | 5106 5391 5666 6407 6643 6982 7418 7944 8430 9025 | 5120 540 5680 6410 6667 7042 7500 7982 8468 9038 | 5123 5415 6171 6433 6670 7087 7535 8020 8477 9098 | 5137 5424 6193 6436 6687 7104 7573 8028 8543 9156 |

| PARAMETER CODING CZUAAA.P11 11-JAN-83 | MACY11 09:29 | 30(1046) | 11-JAN CROSS R | 1-83 10: Reference | 13 PAGE | 281 - USER | SYMBOLS | | | | | | SEQ 2 |
|--|---|---|---|--|--|--|--|--|--|--|--|--|--|
| F\$SOFT= 000005 | 9194 9734 10414 10834 11380 12033 12606 1389# | 9207 9786 10463 10899 11443 12103 12622 | 9268 9846 10501 10962 11456 12109 12704 | 9329 9884 10508 11000 11527 12177 | 9367 9901 10567 11010 11565 12183 | 9375 9948 10623 11075 11576 12253 | 9432 10085 10661 11130 11661 12321 | 9494 10123 10674 11168 11742 12359 | 9532 10147 10721 11183 11780 12367 | 9549 10232 10727 11255 11787 12427 | 9605 10308 10740 11319 11869 12434 | 9683 10346 10790 11357 11978 12498 | 9721 10358 10828 11370 12016 12568 |
| F\$SRV = 000010 F\$SUB = 000002 | 1389# 1389# 5597 6527 | 4852 4933 5616 | 4855 4959 5620 | 4871 4963 5638 | 4875 5003 5642 | 4897 5036 5683 | 4903 5062 6166 | 5066 6213 | 5157 6217 | 5291 6296 | 5312 6343 | 5317 6453 | 5462 6457 |
| | 1389# 1389# 5532 6877 7841 8929 10079 | 4924 5566 6907 7947 8981 10235 11313 | 5009 5595 6997 7976 9121 10302 11466 | 5027 5686 7036 8084 9150 10424 11521 | 5163 5708 7188 8114 9291 10457 11686 | 5179 5769 7218 8222 9323 10570 11736 | 5211 6164 7324 8262 9435 10617 11883 | 5227 6299 7364 8385 9488 10749 11972 | 5264 6340 7503 8424 9630 10784 12256 | 5286 6538 7529 8546 9677 10902 12315 | 5465 6579 7656 8577 9813 10956 12507 | 5488 6731 7688 8705 9840 11083 12562 | 5512 6763 7815 8754 9974 11124 12707 |
| GETCMD= 000002 G GETCRC 016764R 002 GETPCB= 000001 G G\$CNTO= 000200 G\$DELM= 000372 | 12729 1700# 3990 1699# 1389# 1389# | 12956 4606 4013# 4578 | 4636 6174 | 6241 6371 | 6414 6601 | 6476 12743 | 6648 | 6696 | 12779 | 12823 | 12868 | | |
| G\$DISP= 000003 G\$EXCP= 000400 G\$HILI= 000002 G\$LOLI= 000001 G\$NO = 000000 G\$OFFS= 000400 G\$OFSI= 000376 G\$PRMA= 000001 G\$PRMD= 000002 G\$PRML= 000000 G\$RADA= 000140 G\$RADB= 000000 | 1389# 1389# 1389# 1389# 1389# 1389# 1389# 1389# 1389# | 13084 13084 13084 13084 | 13089 13089 13089 13089 | | | | | | | | | | |
| G\$RADD= 000040 G\$RADL= 000120 G\$RADO= 000020 G\$XFER= 030004 | 1389# 1389# 1389# 1389# | 13084 | 13089 | | | | | | | | | | |
| | 1389# 2261# 1387# 13066# | 11763 1389 13079 | 11773 1400 13097 | 11802 1488 | 11816 1545 | 11825 1559 | 11839 1565# | 11854 1568 | 11865 4641# | 11879 4669 | 4679 | 4765 | 4908# |
| HEXDAT 052766RG 002 HEXDPA 017130RG 002 HEXH 017212RG 002 HEXL 017250RG 002 HEXTBL 053057RG 002 HEXVAL 052767RG 002 HOE = 100000 G | 4111+ 4102# 4112 4114 4154 4113 1643# | 4146 12817 4143# 4179# 4185 4115 | 4182 12991# 4155* | 12969# 4186• | 12970# | | | | | | | | |
| IBE = 010000 G I(AB = 040000 G IDU = 000040 G | 1640# 1706# 1633# | 5428 | | | | | | | | | | | |

| PARAMETER CODING CZUAAA.P11 11-JAN-83 (| MACY11 09:29 | 30(1046) | 11-JAN CPOSS R | +83 10: EFERENCE | 13 PAGE | 282 - USER S | YMBOLS | | | | | | SE |
|--|---|--|--|--|--|--|--|--|--|---|--|--|---|
| IE = 000100 G IER = 020000 G | 1660# | 4202 | 6921 | 6922 | 7118 | 7120 | | | | | | | |
| INERR = 000003 | 1641# 1673# 10880 1661# | 3446 11055 3987 | 6846 11626 | 7462 11834 | 8359 | 8520 | 8677 | 9413 | 9777 | 9939 | 10190 | 10548 | 10712 |
| INITL = 177777 G INMON = 000001 | 1662# 1671# 8586 10965 2105# 1687# | 3988 4388 8763 11133 7064 | 6772 8990 11322 7074 5607 | 7045 9159 11530 7110 | 7227 9332 11745 7138 | 7373 9497 11981 7150 | 7538 9686 12324 7177 | 7697 9849 12571 | 7850 10088 | 7985 10311 | 8123 10466 | 8271 10626 | 8433 10793 |
| INTR = 000200 G INTST = 000002 INTVEC 002214RG 002 IOADR = 020000 G IOSIZ = 020000 G ISR = 000100 G | 1686# 1672# 2100# 1657# 1653# 1634# | 5603 5326 6712 6934 1658 1658 | 6962 | 6978 | 6993 | | | | | | | | |
| IXE = 004000 G I\$AU = 000041 I\$AUTO= 000041 I\$CLN = 000041 I\$DU = 000041 I\$HRD - 000041 | 1639# 1389# 1389# 1389# 1389# 13081# | 4829* 4771# 4783# 4818# 13096# | 4836# 4775# 4800 4825# | 4815# | | | | | | | | | |
| I\$INIT = 000041 I\$MOD = 000041 I\$MSG = 000041 | 1389# 1389# 1389# 2977# 3093# 3192# 3532# 3698# | 4677N 1393N 2888N 2994N 3095N 3205N 3360N 3550N | 4763# 13121# 2899# 2996# 3106# 3207# 3393# 3552# 3723# | 2901 M 3010 M 3108 M 3233 M 3395 M 3578 M 3727 M | 2914# 3012# 3118# 3235# 3405# 3580# 3737# | 2916# 3022# 3120# 3261# 3407# 3597# 3739# | 2935# 3024# 3143# 3263# 3443# 3599# 3749# | 2937M 3043M 3145M 3275M 3445M 3638M 3751M | 2947N 3045N 3156N 3277N 3491N 3640N 3761N | 2949# 3069# 3158# 3304# 3493# 3665# 3763# | 2959N 3071N 3176N 3306N 3510N 3667N 3773N | 2961# 3081# 3178# 3331# 3512# 3678# 3775# | 2975# 3083# 3190# 3333# 3530# 3680# 3800# |
| ISPROT = 000040 ISPTAB = 000041 ISPWR = 000041 ISRPT = 000041 ISSEG = 000041 | 389# 1389# 1389# 1389# 1389# 5089# 5290 5461# 56278# 6496# 7089# 7418# | 3820 M 4661 M 4644 M 4923 5105 M 5316 5487 5682 M 6339 6497 M 6762 7104 M 7502 M | 3822N 4651N 4932 5106N 5322N 5493N 5707 6342 6510N 6769N 7156N 7528 | 3862 M 4962 5122 M 5340 M 5509 M 6163 6348 M 6578 6802 M 7160 M 7535 M | 3864# 4968# 5123# 5348# 5531 6165 6392# 6583# 7183# 7575# | 3874# 4985# 5139# 5362# 5535# 6171# 6393# 6622# 6876# 7217 7588# | 3876# 4986# 5140# 5374# 5549# 6195# 6409# 6623# 6906 7224# 7640# | 3913N 5002N 5156N 5393N 5551N 6196N 6410N 6642N 6912N 7264N 7687 | 3915# 5026 5178 5403# 5565# 6212# 6435# 6643# 7271# 7694# | 3937# 5035 5226 5417# 5594 6216 6436# 6669# 6944# 7323# 7734# | 3939# 5065 5235# 5424# 5596 6230# 6452# 6670# 6984# 7763 7742# | 3949# 5071# 5260# 5442# 5619 6261# 6456 6689# 7035 7370# 7796# | 5088# 5285 5443# 5641 6262# 6462# 6693# 7042# 7410# 7840 |
| | 7847# 8221# 8623# 9149 9549# 10085# 10569# 10955 11370# | 7880# 8261 8635# 9156# 9607# 10125# 10616 10962# 11380# | 7888# 8268# 8702# 9196# 9676 10147# 10623# 11458# | 7946# 8308# 8753 9207# 9683# 10234# 10663# 11520 | 7975 8316# 8760# 9270# 9723# 10301 10674# 11527# | 7982# 8384# 8800# 9322 9734# 10308# 10723# 11123 11567# | 8022N 8423 8806N 9329N 9788N 10348N 10727N 11130N 11576N | 8028# 8430# 8928# 9369# 9839 10358# 10742# 111663# | 8083# 8470# 8980 9375# 9846# 10416# 10783 11183# 11735 | 8113 8477# 8987# 9434# 9880# 10456 10790# 11257# 11742# | 8120# 8545# 9027# 9487 9901# 10463# 10830# 11312 11782# | 8160# 8576 9038# 9494# 9950# 10503# 10834# 11787# | 8166# 8583# 9100# 9534# 10078 10508# 10901# 11359# 11871# |

| PARAMETE CZUAAA.F | R CODING | AN-83 | MACY11 09:29 | 30(1046) | 11-JAN-83 10:13 PAGE 284 CROSS REFERENCE TABLE USER SYMBOLS |
|--------------------------|----------------------------------|--------------------------|-------------------------|------------------|--|
| LPMSG1 LPTBL LSACP | 053205RG 053100RG 000110RG | 005 005 005 005 | 13012 12905 1477# | 13030# 13011# | |
| LSAPT LSAU | 000036RG 021640RG | 002 | 1435# | 4829# | |
| LSAUTO | 000070RG 021470RG | 002 | 1461# 1478 | 4771# | |
| LSCCEA | 000106RG 021472RG | 005 005 | 1475# | 4783# | |
| L\$CO L\$DEPO | 000032RG 000011RG | 005 005 | 1431# | 407/# | |
| LSDESC LSDESP | 000704RG 000076RG | 200 | 1468 1457# | 1936# | |
| L\$DEVP L\$DISP | 000060RG 000124RG | 005 | 1453# 1438 | 1497# | |
| LSDLY LSDTP | 000116RG 000040RG | 002 | 1483# 1437# | | |
| LSDTYP LSDU | 000034RG 021632RG | 005 005 | 1433# 1464 | 4818# | |
| LSDUT LSDVTY | 000072RG 000676RG | 005 005 | 1463# 1454 | 1928# | |
| LSEF LSENVI | 000052RG 000044RG | 005 005 | 1448# | | |
| LSETP LSEXP1 | 000102RG 000046RG | 005 005 | 1471# | | |
| LSEXP4 LSEXP5 | 000064RG 000066RG | 005 005 | 1457# 1459# | | |
| LSHARD LSHIME | 053464RG 000120RG | 005 005 | 1420 1485# | 13081 | 13082# |
| LSHPCP LSHPTP | 000016RG 000022RG | 002 | 1419# | | |
| LSHW LSICP | 000262RG 000104RG | 005 005 005 | 1424 1473# | 1555 | 1556# |
| LSINIT LSLADP | 021124RG 000026RG | 002 002 | 1474 | 4677# | |
| L\$LAST= L\$LOAD | ***** GX 000100RG | 002 | 1428 1469# | | |
| LSLUN LSMREV | 000074RG 000050RG | 002 002 | 1465# | | |
| LSNAME LSPRIO | 000000RG 000042RG | 005 | 1402# | | |
| LSPROT LSPRT | 021116RG 000112RG | 005 | 1480 1479# | 4661# | |
| LSREPP LSREV | 000062RG 000010RG | 005 | 1455# | | |
| L\$RPT | 021110RG 000056RG | 005 | 1456 | 4644# | |
| LSSPC LSSPLP | 000020RG | 002 | 1421# | | |
| LSSPYP LSSTA | 000024RG 000030RG | 002 | 1429# | | |
| LSTEST LSTIML | 000114RG 000014RG | 002 | 1417# | | |
| L\$UHIT L10000 | 000012RG 000266R | 002 | 1415# 1555 | 1563# | |
| L10001 L10002 | 012572R 012630R | 005 005 | 2897# 2912# | | |

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| PARAMET CZUAAA. | ER CODING P11 11- | JAN-83 | | 30(1046) | 11-JAN CROSS R | -83 10: EFERENCE | 13 PAGE TABLE - | | YMBOLS | |
|--|---|---|---|---|---|---|---|---|---|-------------------------|
| L10074 L10075 L10076 L10077 L10100 L10101 L10102 | 021672R 021706R 022120R 022012R 022110R 022452R 022226R | 200 200 200 200 200 200 200 | 4875# 4903# 5009# 4959# 5003# 5163# 5062# | | | | | | | |
| L10103 L10104 L10105 L10106 L10107 L10110 | 022442R 022564R 022702R 023364R 022772R 023362R 023446R | 005 005 005 005 005 005 005 | 5157n 5211n 5264n 5309 5312n 5462n 5512n | 5465# | | | | | | |
| L10112 L10113 L10114 L10115 L10116 | 023544R 023766R 023610R 023650R 023764R | 002 002 002 002 | 5566# 5663 5616# 5638# 5683# | 5686# | | | | | | |
| L10117 L10120 L10121 | 024200R 027744R 027462R | 002 002 | 5717 6190 6213# | 5734 6256 | 5756 6299# | 5769# | | | | |
| L10122 L10123 L10124 L10125 | 027742R 030532R 030302R 030512R | 002 002 002 002 | 6296# 6387 6453# 6527# | 6430 | 6491 | 6538# | | | | |
| L10126 L10127 L10130 | 031212R 031630R 032120R 032626R | 002 002 002 002 | 6617 6819 6966 7052 | 6637 6877# 6997# 7068 | 7078 | 6684 7114 | 6731# 7188# | | | |
| L10130 L10131 L10132 L10133 L10134 L10135 | 033144R 033612R 034170R 034550R 035076R | 002 002 002 002 | 7052 7234 7380 7545 7704 7899 | 7249 7395 7560 7719 7913 | 7259 7405 7570 7729 7947# | 7281 7428 7598 7752 | 7293 7449 7613 7766 | 7324# 7458 7622 7775 | 7503# 7652 7808 | 7656# 7815# |
| L10137 L10140 L10141 L10142 L10143 | 035406R 035716R 036276R 036656R 037252R | 002 002 003 005 | 7992 8130 8278 8440 8593 | 8007 8145 8293 8455 8608 | 8017 8155 8303 8465 8618 | 8038 8176 8326 8487 8649 | 8059 8197 8345 8506 8663 | 8068 8206 8354 8515 8672 | 8084# 8222# 8385# 8546# 8705# | |
| L 10144 L 10145 L 10146 L 10147 | 040014R 040412R 041014R 041334R | 002 002 002 | 8770 8997 9166 9339 | 8785 9012 9181 9354 | 8795 9022 9191 9364 | 8816 9052 9221 9385 | 8834 9066 9235 9400 | 8843 9075 9244 9409 | 8929# 9112 9282 9435# | 9121# 9291# |
| L10150 L10151 L10152 L10153 L10154 | 041724R 042310R 042674R 043334R 043664R | 002 005 005 005 005 | 9504 9693 9856 10095 10318 | 9519 9708 9871 10110 10333 | 9529 9718 9881 10120 10343 | 9562 9748 9911 10162 10372 | 9576 9762 9925 10176 10395 | 9585 9771 9934 10185 10424# | 9619 9800 9962 10235# | 9630# 9813# 9974# |
| L 10155 L 10156 L 10157 L 10160 | 044204R 044554R 045074R 045434R | 005 005 005 005 | 10473 10633 10800 10972 | 10488 10648 10815 10987 11155 | 10498 10658 10825 10997 11165 | 10518 10684 10844 11023 11193 | 10534 10699 10866 11042 11212 | 10543 10708 10875 11051 11221 | 10570# 10737 10902# 11083# 11264# | 10749# |
| L 10161 L 10162 L 10163 | 046024R 046406R 047040R | 005 005 005 | 11140 11329 11537 | 11344 11552 | 11354 | 11396 11595 | 11410 | 11419 | 11466# | 11686# |

| PARAMET CZUAAA. | ER CODING P11 11- | JAN-83 | MACY11 09:29 | 30(1046) | | N-83 10: Reference | 13 PAGE | 287 USER S | SYMBOLS | | | | | | SEC | |
|--|--|---|--|--|---|---|--|---|---|---|--|---|---|--|--|--|
| L10164 L10165 L10166 L10167 L10170 L10171 | 047444R 050534R 051256R 051672R 052746R 053504R | 200 200 200 200 200 200 | 11752 11988 12331 12578 12733 13081 | 11767 12003 12346 12593 12739 13095# | 11777 12013 12356 12603 12760 | 11806 12047 12380 12632 12773 | 11820 12061 12394 12646 12794 | 11829 12070 12403 12655 12807 | 11883# 12124 12447 12668 12838 | 12144 12461 12699 12851 | 12196 12470 12707# 12883 | 12210 12485 12895 | 12219 12507# 12956# | 12256# | | |
| MAXBYT= MAXCNT METER | 002756 G 003122RG 000332RG | 002 005 | 1668# 2182# 1797# 6175* 7127 7993* 9054* 10319* 11398* | 9118 9350 4245 6240* 7235* 8040* 9167* 10374* 11538* | 9288 9360 4386* 6372* 7282* 8131* 9223* 10474* 11597* | 9727 9381 4392 6415* 7298 8178* 9340* 10519* 11753* | 9890 9396 4459* 6477* 7301 8279* 9388* 10634* 11808* | 9405 4579* 6602* 7381* 8333* 9505* 10687* | 9418 4607* 6649* 7437* 8441* 9564* 10801* 12049* | 9428 4788* 6697* 7546* 8494* 9694* 10854* 12126* | 4898 6777* 7601* 8594* 9750* 10973* 12198* | 4900* 6828* 7705* 8651* 9857* 11030* 12332* | 5296* 6923* 7754* 8771* 9913* 11141* 12382* | 5647* 7053* 7855* 8822* 10096* 11200* 12449* | 5718* 7117* 7901* 8998* 10164* 11330* 12579* | |
| MICBSZ= MICCSZ= MICDSZ= MICESZ= MICFSZ= | ***** GX ***** GX ***** GX ***** GX ***** GX ***** GX 000320RG | 002 | 12634* 4514 4521 4528 4535 4542 4549 4553 1790# | 12744* 6589 4499* | 12778* | 12822* | 12867* | 4503 | | | | | , 2302 | , , , | | |
| MICRO MICROA= | 000326RG | 002 | 1795# 7229* 8269 9334* 10624 11747* 4515 | 4499 7371 8273* 9495 10628* 11979 6590 | 4503 4511 7375* 8431 9499* 10791 11983* | 4569 4518 7536 8435* 9684 10795* 12322 | 4584 4525 7540* 8584 9688* 10963 12326* | 4597 4532 7695 8588* 9847 10967* 12569 | 4612 4539 7699* 8761 9851* 11131 12573* | 4625 4546 7848 8765* 10086 11135* | 6770 7852* 8988 10090* 11320 | 6774* 7983 8992* 10309 11324* | 7043 7987* 9157 10313* 11528 | 7047 • 8121 9161 • 10464 11532 • | 7225 8125* 9330 10468* 11743 | |
| MICROC= MICROD= MICROE= MICROF= MICROG= | ***** GX ***** GX ***** GX ***** GX ***** GX 000100 G 012750RG | 002 | 4522 4529 4536 4543 4550 4554 1669# 2961# | 9030 5660 | 9199 5731 | 11682 | 12368 | 12612 | 4427 | 4400 | | | | | | |
| MSG10 | 013372RG | 002 | 7065 9178 11549 3108# | 7246 9351 11764 7290 | 7392 9516 12000 | 6187 7557 9705 12343 | 6253 7716 9868 12590 | 6384 7866 10107 12757 | 6427 8004 10330 12791 | 6488 8142 10485 12835 | 6614 8290 10645 12880 | 6661 8452 10812 | 6709 8605 10984 | 6788 8782 11152 | 6935 9009 11341 | |
| MSG11 MSG12 | 013414RG 013500RG | 002 | 3120# 3145# 9241 11826 | 7311 6844 9406 12067 | 7455 9582 12141 | 7619 9768 12216 | 7772 9931 12400 | 7919 10182 12467 | 8065 10540 12652 | 8203 10705 | 8351 10872 | 8512 11048 | 8669 11218 | 8840 11416 | 9072 11615 | |
| MSG13 MSG14 MSG15 MSG16 MSG17 MSG18 MSG19 MSG2 MSG20 | 013524RG 013572RG 013620RG 013650RG 013742RG 014034RG 014064RG 013012RG 014160RG | 002 002 002 002 002 002 002 | 3158m 3178m 3192m 3207m 3235m 3263m 3277m 2977m 3306m | 7636 7791 7936 6864 8369 8861 9095 6293 | 7478 8530 8874 9265 | 8687 8883 | 8895 | 8904 | 8913 | | | | | | | |

| PARAMET CZUAAA. | TER CODING P11 11- | JAN-83 | MACY11 09:29 | 30(1046) | 11-JAN CROSS F | N-83 10: REFERENCE | 13 PAGE TABLE - | 288 - USER | SYMBOLS | | | | | | SE |
|--|--|--|---|---|------------------------------|------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|---------------|---------------|---------------|---------------|
| MSG21 MSG22 MSG23 MSG24 MSG25 MSG26 MSG27 | 014250RG 014340RG 014454RG 014476RG 014626RG 015014RG 015060RG | 002 002 002 003 003 003 | 3333N 3360N 3395N 3407N 3445N 3512N | 10215 12089 12414 12696 10400 10718 11234 | 12161 12482 | 12240 | | | | | | | | | |
| MSG28 MSG29 MSG30 MSG31 MSG33 MSG33 MSG35 MSG36 MSG37 MSG38 MSG40 MSG41 | 015126RG 015174RG 015174RG 015276RG 015276RG 015344RG 015510RG 015606RG 015604RG 016024RG 016024RG 016070RG 016112RG 016112RG 016210RG | 00000000000000000000000000000000000000 | 3532N 3552N 2996N 3580N 3580N 3667N 3680N 3727N 37751N 37753N 3775N | 11242 11430 5306 11632 11647 11658 7178 5753 9602 8187 9419 11840 5388 11855 | 5335 | 5357 | 5412 | 5437 | 5456 | | | | | | |
| MSG42 MSG43 MSG44 | 016262RG 016432RG 016454RG | 002 002 002 | 3802# 3822# 3864# 3876# | 11866 9783 7485 | 9945 | 7410 | 7747 | 7010 | 0054 | 0404 | 07.0 | | | | |
| MSG45 | 016616RG | 002 | 9232 11606 3915# | 6837 9397 11817 | 7446 9573 12058 | 7610 9759 12135 | 7763 9922 12207 | 7910 10173 12391 | 8056 10392 12458 | 8194 10531 12643 | 834 <i>2</i> 10696 | 8503 10863 | 8660 11039 | 8831 11209 | 9063 11407 |
| MSG46 | 016700RG | 005 | 3939# 8813 11190 | 6816 9049 11393 | 7111 9218 11592 | 7278 9382 11803 | 7425 9559 12044 | 7595 9745 12121 | 7749 9908 | 7896 10159 | 8035 10369 | 8173 10515 | 8323 10681 | 8484 10841 | 8646 11020 |
| MSG5 MSG6 MSG7 MSG8 MSG9 | 013142RG 013212RG 013300RG 013322RG 013344RG | 002 002 002 002 | 3024 <i>n</i> 3045 <i>n</i> 3071 <i>n</i> 3083 <i>n</i> | 6522 6719 6963 6979 7139 | 11772 | 11003 | 12044 | 12121 | 12193 | 12377 | 12444 | 12629 | | | |
| MUCAST NEXMEM NIALT = | 003563RG 000664RG | 002 002 | 3095# 2232# 1905# 1729# | 10811 4784 | 10821 4853* | 10840 4937* | 10862 4940 | 10871 5040* | 10885 5043 | 10895 5186* | 5189 | 5236* | 5239 | | |
| NIUNI = NCCLK NO 'ERR NP RERR= NXM'ERR= ODDBY I | 000007 G 001566RG 002001RG 100000 G 040000 G 003060RG | 002 002 002 | 1730# 2048# 2074# 1693# 1694# 2176# | 4714 5612 3877 3885 9177 | 5634 4425 4425 9187 | 5659 4427 4427 9217 | 5676 923 <u>1</u> | 9240 | 9264 | 9278 | | | | | |
| ONEFIL= OWN = OSAPTS= OSAU = | 100000 G 000000 | | 1# 1733# 1389# | 1387# 1429 | 1390 | 1565# | 1567 | 4641# | 4651 | 4907 | 4908# | 13066# | 13068 | | |
| 0\$BGNS= 0\$BGNS= 0\$DU = | 000001 000000 | | 1389# 1389# 1389# 1389# | 1400# 1400# 1421 1400# | 1461 1455 1463 | | | | | | | | | | |
| OSERRT= OSGNSW= OSPOIN= | 000000 000000 | | 1389# 1389# 1389# | 1471 1425 1400# | 1487 | | | | | | | | | | |

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| PARAMETER CODI CZUAAA.P11 | NG 11-JAN-83 | MACY11 09:29 | 30(1046) | 11-JAN CROSS R | I-83 10: REFERENCE | 13 PAGE | 290 - USER : | SYMBOLS | | | | | | SE |
|--|--------------------------------------|--|---|---|--|--|--|--|--|--|---|---|---|---|
| POLYH = 166670 POLYL = 101440 POLY16= 120001 PRI = 002000 PRILD = 000001 PRIO0 = 000000 PRIO1 = 000040 PRIO2 = 000100 PRIO3 = 000140 PRIO4 = 000200 | 9999999999 | 1663# 1664# 1665# 1638# 1625# 1625# 1623# 1622# | 4019 4020 4062 7123 | | | | | | | | | | | |
| PRIO5 = 000240 PRIO6 = 000300 | · C | 1621# 1620# | 4200 | 4747 | 5000 | 5400 | 5000 | | | | | | | |
| PRIO7 = 000340 PRTPAR 004154 PSTATE= 000007 | RG 002 | 1619# 2277# 1723# | 4214 12756 5380 | 4925 12769 6711 | 5028 12790 | 5180 12803 | 5228 12834 | 12847 | 12879 | 12891 | | | | |
| PWHEN 000314 | RĞ 002 | 1788# 6462* 8136* 10479* 12829* | 2964 6608* 8284* 10639* 12874* | 2998 6655* 8446* 10806* | 4465* 6703* 8599* 10978* | 4468 6782* 8776* 11146* | 5287* 6929* 9003* 11335* | 5399* 7059* 9172* 11543* | 5654* 7240* 9345* 11758* | 5725* 7386* 9510* 11994* | 6181* 7551* 9699* 12337* | 6247* 7710* 9862* 12584* | 6378* 7860* 10101* 12751* | 6421* 7998* 10324* 12785* |
| RACC = 000013 RACERR 001663 RACMG1 012546 RACMG2 012574 RACMG3 012632 RACMG4 012704 | RG 002 RG 002 RG 002 RG 002 | 1752# 2059# 2888# 2901# 2916# 2937# | 4945 4946 4980 5504 5613 | 4979 5049 4997 5544 | 4996 5195 5083 5560 | 5048 5245 5100 | 5082 5117 | 5099 5134 | 5116 5151 | 5133 7151 | 5150 | 5194 | 5244 | |
| RACMG7 01272 | RĞ ÖÖZ | 2949# 6994 8152 9279 10495 11672 12804 | 5635 7075 8216 9361 10564 11774 12848 | 5677 7256 8300 9429 10655 11880 12892 | 5766 7318 8379 9526 10734 12010 | 6207 7402 8462 9616 10822 12100 | 6273 7497 8540 9715 10896 12172 | 6404 7567 8615 9797 10994 12250 | 6447 7649 8697 9878 11071 12353 | 6505 7726 8792 9959 11162 12424 | 6634 7805 8923 10117 11252 12495 | 6681 7874 9019 10229 11351 12600 | 6796 8014 9109 10340 11440 12665 | 6871 8078 9188 10411 11559 12770 |
| RACPS = 000017 RBRRUN 003743 | RG 002 | 1756# 2253# | 11548 | 11558 | 11591 | 11605 | 11614 | 11631 | 11646 | 11657 | 11671 | | | |
| RC = 000012 RCEI = 002000 RCVDON 002572 RDFA = 000002 READY = 000002 | G RG 002 | 1751# 1683# 2145# 1743# 1726# | 4339 8141 12777 5381 | 4341 8151 | 4342 8172 | 8186 | 8193 | 8202 | 8215 | | | | | |
| READ? = 000002 RESET = 000000 RETLOG 034124 REUNA 020104 RLNKAD 003207 RLSA = 000024 | RG 002 RG 002 G | 1724# 2273# 4458# 2191# 1761# | 12589 4500 9704 | 12599 6728 9714 | 12628 6872 9744 | 12642 7942 9758 | 12651 12735 9767 | 12664 9782 | 12695 9796 | | | | | |
| RMAL = 000006 RMTC = 000010 ROMADR= 040000 ROMDMP 002042 ROMSIZ= 040000 RPA = 000004 | G RG 002 | 1747# 1712# 1658# 2080# 1654# 1745# | 1659 6186 1659 | 6225 6206 6237 | 6252 6284 | 6272 | 6292 | | | | | | | |
| RPS = 000016 RREV 052756 | G RG 002 | 1755# 12855* | 12821 12856* | 12926 | 12963# | | | | | | | | | |
| RRF = 000010 RRWER 001741 RSET = 000040 | RG 002 | 1749# 2068# 1688# | 5503 4458 | 5543 4786 | 5559 5295 | | | | | | | | | |

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| PARAMETER CODING CZUAAA.P11 11-JAN | MACY11 1-83 09:29 | 30(1046) | | N-83 10: REFERENCE | 13 PAGE | 291 USER : | SYMBOLS | | | | | | SEQ |
|---|---|--|---|--|---|--|--|--|--|--|--|--|--|
| RSETER 001717RG 0 RSIDP = 000022 G RTM = 000014 G RUN = 000003 G | 2064 <i>n</i> 1759 <i>n</i> 1753 <i>n</i> 1727 <i>n</i> | 5305 | 5334 | 5356 | 5387 | 5411 | 5436 | 5455 | | | | | |
| RXI = 020000 G SECOND= 000077 G | 1680# 1645# 6477 7601 8594 9750 10973 12198 | 4318 4386 6602 7705 8651 9857 11030 | 4320 4459 6649 7754 8771 9913 11141 | 4321 4579 6697 7855 8822 10096 11200 | 4607 6777 7901 8998 10164 113570 | 4788 6828 7993 9054 10319 11398 | 5296 6923 8040 9167 10374 11538 | 5647 7053 8131 9223 10474 11597 | 5718 7117 8178 9340 10519 11753 | 6175 7235 8279 9388 10634 11808 | 6240 7381 8333 9505 10687 11989 | 6372 7437 8441 9564 10801 12049 | 6415 7546 8494 9694 10854 12126 |
| SERI = 100000 G SET = 000001 G SFT = 037400 G SFTB0 = 000400 G SFTB1 = 001000 G SFTB2 = 002000 G SFTB3 = 004000 G SFTB4 = 010000 G SFTB5 = 020000 G | 1678# 1646# 1719# 1713# 1714# 1715# 1716# 1717# | 12332 4304 5737 6712 6712 6712 | 12382 4306 5740 | 12449 4307 6711 | 12579 | 12634 | 12744 | 12778 | 12822 | 12867 | | | |
| SIZ1K = 004000 G SIZ2K = 010000 G | 1718# 1648# 10141 1649# | 1649 | 6232 | 6282 | 9539 | 9624 | 9626 | 9730 | 9807 | 9809 | 9893 | 9968 | 9970 |
| S124K = 020000 G S128K = 040000 G SLFT = 000003 G | 1650# 1651# 1702# | 1650 1651 1654 5719 | 1652 1655 | 1653 | | | | | | | | | |
| SLFTST 002021RG 0 SMSG00 024404RG 0 SMSG01 024432RG 0 SMSG02 024457RG 0 SMSG03 024470RG 0 SMSG04 024525RG 0 SMSG05 024552RG 0 SMSG06 024613RG 0 SMSG07 024644RG 0 SMSG10 024710KG 0 SMSG11 024710KG 0 SMSG12 024721RG 0 SMSG13 024734RG 0 SMSG14 024746RG 0 SMSG15 024760RG 0 SMSG15 024760RG 0 SMSG16 024772RG 0 SMSG17 025004RG 0 SMSG17 025004RG 0 SMSG17 025004RG 0 SMSG20 025016RG 0 SMSG21 025037RG 0 SMSG22 025075RG 0 SMSG23 025063RG 0 SMSG24 025075RG 0 SMSG25 025121RG 0 SMSG26 025121RG 0 SMSG27 025133RG 0 SMSG27 025133RG 0 SMSG30 025145RG 0 SMSG30 025145RG 0 SMSG31 025220RG 0 SMSG32 025270RG 0 | 102 2077# 102 5778 102 5781 102 5783 102 5784 102 5788 102 5788 102 5788 102 5791 102 5791 102 5793 102 5795 102 5797 102 5798 102 5798 102 5798 102 5798 102 5798 102 5798 102 5798 102 5798 102 5798 102 5803 102 5803 102 5803 102 5805 102 | 5713 5713 5847 5847 5853 5863 5863 5885 58863 58 | 5730 | 5752 | 5765 | | | | | | | | |

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| PARAME CZUAAA | TER CODING | JAN-83 | MACY11 09:29 | 30(1046) | 11-JAN CROSS R | -83 10: EFERENCE | 13 PAGE TABLE - | 292 - USER | SYMBOLS | | | | | | SEC |
|---|---|--|---|---|--|--|--|--|--|--|--|--|--|--|--|
| SMSG33670 SMSG346767736776777367777367777777777777777 | 025774RG 025774RG 025774RG 026060RG 026135RG 026273RG 026317RG 026317RG 026464RG 026541RG 026753RG 026753RG 026753RG 026770RG 026770RG 027121RG 027121RG 0271237RG 0271237RG 0271237RG 0271237RG 0271251RG | 00000000000000000000000000000000000000 | 678901123456789012345678901123456789011234567890112345678901123456789011234567890112345678901123456789011234567890112345678901123456789011234567890112345678901123456789011234567890112345678900011234567890001123456789000112345678900011234567890001123456789000000000000000000000000000000000000 | 55555555555555555555555555555555555555 | 8791 | 8812 | 8830 | . 8839 | 8860 | 8873 | 8882 | 8894 | . 8903 | 8912 | 8922 |
| STAPOS STAREJ STMSG STP | 003512RG | 002 002 002 002 | 2212N 2225N 2218N 3689 1735N | 10329 10644 10484 5748* | 10339 10654 10494 5774# | 8812 10368 10680 10514 | 10391 10695 10530 | 8839 10399 10704 10539 | 10410 10717 10553 | 10733 10563 | 0002 | 0074 | 0,03 | 0712 | 0722 |
| STTBL | 024204RG | 002 | 5747 1389# 1433 1461 1497 3012 3235 | 5778# 1402 1435 1463 1556 3024 3263 | 1411 1437 1465 1557 3045 3277 | 1413 1439 1467 1928 3071 3306 | 1415 1441 1469 1936 3083 3333 | 1417 1443 1471 2888 3095 3360 | 1419 1445 1473 2901 3108 3395 | 1421 1448 1475 2916 3120 3407 | 1423 1451 1477 2937 3145 3445 | 1425 1453 1479 2949 3158 3493 | 1427 1455 1481 2961 3178 3512 | 1429 1457 1483 2977 3192 3532 | 1431 1459 1485 2996 3207 3552 |

| PARAMETER CODING CZUAAA.P11 11-JAN-83 | MACY11 09:29 | 30(1046) | 11-JAN CROSS R | I-83 10: EFERENCE | 13 PAGE TABLE - | 293 - USER S | YMBOLS | | | | | | SEQ |
|--|---|--|--------------------------------------|--|---|--|--|--------------------------------------|--|---|--|--|--|
| | 3580 3864 4897 | 3599 3876 1308 <u>2</u> | 3640 3915 | 3667 3939 | 3680 4644 | 3700 4661 | 3727 4677 | 3739 4771 | 3751 4783 | 3763 4818 | 3775 4829 | 3802 4852 | 3822 4871 |
| SVCINS= 000001 | 3580 3864 4897 1389# 1420 1446 1470 | 1403 1422 1447 1472 | 1404 1424 1449 1474 1503 | 1405 1426 1450 1476 1504 | 1406 1428 1452 1478 1505 | 1407 1430 1454 1480 | 1408 1432 1456 1482 | 1409 1434 1458 1484 1508 | 1410 1436 1460 1486 | 1412 1438 1462 1496 | 1414 1440 1464 1498 | 1416 1442 1466 1499 | 1418 1444 1468 1500 |
| | 1514 1527 1540 2894 | 1502 1515 1528 1541 2895 | 1516 1529 1542 2898 2921 | 1517 | 1518 1531 1555 | 1519 1532 1929 | 1520 1533 1930 | 1521 1534 1937 | 1486 1509 1522 1535 1941 | 1496 1510 1523 1536 2890 | 1511 1524 1537 2891 | 1499 1512 1525 1538 2892 2913 | 1468 1500 1513 1526 1539 2893 |
| | 2919 2939 2964 2983 | 2920 2940 2965 2985 | 2921 2941 2966 2986 | 1530 1543 2903 2922 2967 2987 3006 3032 3051 | 2923 2943 2968 | 1506 1519 1532 1929 2905 2925 2946 2969 3014 3034 | 2926 2951 2970 | 2907 2927 2952 2971 2003 | 2928 2953 2974 | 2929 2954 2979 2900 | 2930 2955 2980 | 2951 2958 | 2916 2934 2963 2982 |
| | 15170 | 3004 3029 3049 3064 | 3005 3030 3050 3065 | ደ እበፖ | 2904 2923 2943 2968 2988 3009 3033 3053 | 3014 3034 3054 3074 | 1487030661005555505223333333333333333333333333333 | 2993 3016 3036 3056 3076 | 1941 2908 2923 2974 2997 2998 3057 3057 3108 31148 31227 3247 | 289999 289999 2899 28999 2899 2899 2899 2899 28999 28999 28999 28999 28999 28999 289 | 1537 128910 158910 158910 1598 | 2981 3001 3026 3042 3061 3086 3111 3151 3171 3196 | 2893 2918 2934 2963 2982 30027 3042 3062 31132 31132 31132 31137 31237 3237 3271 |
| 1 1 | 3088 3113 3134 3155 | 3089 3114 | 3092 3117 3136 | 3097 3122 3137 3162 3182 3201 3221 | 3098 3123 3138 3163 | 3099 3124 3139 3164 | 3100 3125 3142 3165 | 3101 3126 3147 | 3102 3128 3148 3168 | 3105 3129 3149 3169 | 3110 3130 3150 3170 | 3111 3131 3151 3171 | 3112 3132 3152 3172 |
| · · · · · · · · · · · · · · · · · · · | 3175 3198 3218 3238 | 3135 3160 3180 3199 3219 3239 | 3161 3181 3200 3220 3240 | 3182 3201 3221 3241 | 3098 3128 3163 3163 3204 32257 3227 3297 3317 | 3099 31139 31164 3184 32244 322688 3327 3335 3353 | 3185 3210 3225 3245 | 3167 3186 3211 3226 3246 | 3189 3212 3227 3247 | 3194 3213 3228 3248 | 3195 3214 3229 3249 | 3196 3216 3232 3251 | 3197 3217 3237 3252 |
| | 3253 3274 3292 3312 | 3219 3239 3254 3279 3294 3314 | 3255 3280 3295 3315 3335 | 3241 3256 3281 3296 3316 | 3257 3282 3297 3317 | 3260 3283 3298 3318 | 3265 3284 3299 3319 | 3266 3286 3300 | 3267 3287 3303 3322 3342 3363 | 3268 3288 3308 3323 | 3269 3289 3309 3324 | 3216 3232 3251 3270 3290 3310 3325 | 3271 3291 3311 3326 3346 3367 |
| • | | 3330. 3349 3371 | 3350 3372 | 3336 3351 3373 | 3337 3352 3374 3392 | 3375 | 3376 | 3321 3341 3357 3377 3399 | 3342 3363 3378 3400 | 3343 3364 3381 3401 | 3344 3365 3382 3404 | 3383 | 3346 3367 3384 3410 |
| 1 | 3411 3429 3456 3471 | 3386 3412 3431 3457 3472 | 3387 3413 3432 3458 3473 | 3388 3415 3459 3475 3515 3555 3570 3590 | 3416 3434 3460 3476 | 3397 3417 3435 3462 3477 | 3418 3436 3463 3478 | 3399 3419 3442 3464 3479 | 3424 3449 3465 3480 | 3425 3450 | 3426 3451 3468 3483 | 3409 3427 3452 3469 3484 3504 3524 | 3428 3453 3470 3485 |
| | 3486 3506 3526 3546 | 3487 3509 3529 3549 3567 3588 3608 | 3490 3514 3534 3554 3569 | 3495 3515 3535 3555 | 3496 3516 3536 3556 | 3497 3517 3537 3557 3572 3592 3612 | 3498 3518 3538 3558 | 3499 3520 3540 3559 3574 | 3424 3449 3465 3501 3521 3541 3577 | 3502 3522 3542 3562 | 3503 3523 3543 3563 | 3504 3524 3544 3564 3584 | 3428 3453 3485 3505 3525 3565 3585 3605 |
| • | 3566 3586 3607 3622 | 3567 3588 3608 3623 | 3589 3609 3624 | 3610 | 3591 3611 3626 | 2020 | 3573 3593 3614 3629 | 3596 3615 3630 | 3601 3616 | 3582 3602 3617 3632 | 3583 3603 3618 3633 | 3604 3619 | 3585 3605 3621 3637 |
| | 3642 3657 3682 3702 | 3623 3643 3658 3683 3703 3718 | 3644 3659 3684 3704 | 3625 3645 3660 3685 3705 3720 3745 | 3646 3661 3686 3706 | 3648 | 3318 3318 3318 3318 3318 3318 3318 3318 | 3650 3670 3690 3710 3730 | 3631 3651 3671 3691 3711 | 3466 3482 35522 35562 3562 3567 36672 36672 3757 | 3451 34468 34468 3552 35568 3567 3567 3673 3760 | 3634 3654 3674 3694 3715 3736 3765 | 3621 3637 3656 3677 3697 3716 |
| | 3341 34451 34451 34451 35526 35587 35587 3662 3771 37767 37787 | 3718 3743 3768 3788 | 3719 3744 3769 3790 | 3720 3745 3772 3791 | 3721 3748 3777 3792 | 3664 3687 3707 3724 3753 3778 3793 | 3729 3754 3779 - 3794 | 3730 3755 3780 3795 | 3731 3756 3781 3796 | 3732 3757 3783 3799 | 3733 3760 3784 3804 | 3736 3765 3785 3805 | 3741 3766 3786 3806 |

| | | | | | | 7 4 | • | | | | | | |
|--|---|--|--|---|---|--|--|---|--|---|--|--|--|
| PARAMETER CODING CZUAAA.P11 11-JAN-83 | MACY11 09:29 | 30(1046) | 11-JAN CROSS R | I-83 10: REFERENCE | 13 PAGE | 294 - USER S | SYMBOLS | | | | | | SE |
| | 77274670935424054061908254393337244111244448495272338943 8888899245566777795835038040393337178244448495272338943 888888992455667777777777777777777777777777777777 | 88388791046538165142340375489457770442357569856383449031 88838899245566777799936048040539585817825015881616970547 7777777777777777777777777777777777 | 333333344444444444555555555555555566666666 | 3333333444444444444555555555555555566666666 | 22771724379582148676050280862033700796033784936183067 83888913470828214867605155555555555555666666666666677777777 83888913444444444455555555555555555556666666666 | 3388283344444444444555555555555555556666666666 | 33333333444444444445555555555555555555 | 333333334444444444455555555555555555566666666 | 33333333444444444445555555555555555566666666 | 98309337321078424803911931266283595466666666666777777783333333333334444444444 | 33333333444444444445555555555555555555 | 33333333344444444444455555555555555555 | 33333333444444444444455555555555555566666666 |

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| 9906 9930 9961 10115 10170 10308 10342 103463 10467 105617 10681 10767 10884 10982 11017 11046 11076 | 9907 9931 9942 10116 10171 10198 10397 10394 10498 10536 10648 10708 10708 10885 10988 11047 11084 | 9908 9975 10117 10199 10318 10347 10347 10534 105652 10684 10715 10886 10984 11019 11048 11130 | 9910 9934 10085 101173 10217 10327 10358 10358 10488 10537 105653 106986 10790 10863 10986 11089 11089 11089 11089 11089 11089 | 9911 9942 10094 10125 10125 10328 10328 103366 10398 10538 10558 10694 10717 108987 1108987 1108987 110981 11140 | 9919 9943 10095 10124 10176 10214 10329 10367 10369 10513 105539 10695 10718 10891 10891 11058 11149 | 9920 9944 101047 10179 10215 10338 10485 10485 105423 106527 106527 10699 10889 10889 10889 10889 10889 11150 | 9945 10156 10156 10180 10232 10369 10487 105438 10658 10658 10658 106997 10870 10870 10870 10870 10993 11060 11151 | 9922 9949 10106 10157 10181 10227 10333 10371 10409 10488 10517 10632 10669 10731 10831 10831 10831 10831 10994 11038 11052 | 9956 10107 10158 10182 1028 10337 10372 104918 10551 10672 10672 10732 10872 108872 10996 11039 11054 | 9925 9957 10109 10159 10184 10229 10338 10389 10498 1056478 10673 10673 10814 10997 11069 111055 | 9928 9958 10110 10161 10185 10233 10339 10349 10494 10523 10644 10679 10649 10734 10815 10845 10845 10845 11042 11042 11070 11159 | 9929 9959 10114 10162 10196 10236 10340 10391 10425 10530 10534 10645 10645 10645 10705 10883 10981 11010 11045 11071 |
|--|--|--|---|---|---|---|--|--|--|---|--|--|
| 11233 11328 11354 11437 11547 11549 11591 11657 11657 11823 11858 12069 12177 12245 122466 12377 12347 12466 12663 | 11238 11239 11358 11438 11438 11551 11658 11658 11658 11658 11658 11867 11867 11867 12109 122446 12246 12246 12246 12246 12246 12246 12246 122664 | 11239 11239 11239 11338 11370 114439 11552 11663 11663 11864 11864 11805 11806 | 11240 11240 11339 11330 11440 11599 11664 11806 | 11211 11240 11240 11340 111340 111341 11503 111670 111800 111800 112068 112191 1122559 1124479 112668 112668 | 11215 11242 11341 11341 11457 11631 | 11216 11249 11343 11392 11467 11505 11672 11632 11671 11807 11807 12070 12123 12235 122481 12351 12481 125629 12649 | 11217 11250 11343 11393 11418 11561 11606 11672 11818 11838 12047 12181 12193 12356 12457 12458 12457 12458 12650 12695 | 11218 11251 11348 11399 11568 11645 11665 11673 11839 12055 11773 11839 12087 12123 12231 123360 12458 12458 12458 12651 12696 | 11220 11252 11349 11349 113427 11566 11687 11687 11688 11880 | 1125 1125 11350 11404 11428 11576 11647 11776 11817 11884 12057 12089 12161 12238 12341 12381 12461 12461 12461 12654 12699 | 11231 11265 11351 11405 11429 11547 11589 11613 11655 11777 11819 11853 12058 12058 12058 12058 12239 12342 12375 12375 12464 12463 12655 12655 12655 12655 | 112.22 11319 11353 11430 11548 11590 11614 11656 11781 11854 11987 12060 12170 12240 12240 12343 12465 12465 12465 12465 12465 12662 12662 |

| PARAMETER CODING CZUAAA.P11 11-JAN-83 | MACY11 09:29 | 30(1046) | 11-JAN CROSS R | I-83 10: Eference | 13 PAGE | 297 - USER S | SYMBOLS | | | | | | 364 |
|--|---|--|--|---|---|---|---|--|---|--|---|---|--|
| | 12732 12770 12806 12851 12919 12934 12949 13092 1389# | 12733 12772 12807 12877 12920 12935 12950 13094 | 12/38 12773 12832 12878 12921 12936 12951 | 12739 12788 12833 12879 12922 12937 12952 | 12754 12789 12834 12880 12923 12938 12957 | 12755 12790 12835 12882 12924 12940 13081 | 12756 1279 12837 12883 12926 12941 13084 | 12757 12793 12838 12889 12927 12942 13085 | 12759 12794 12845 12890 12928 12943 13086 | 12760 12801 12846 12891 12929 12944 13087 | 12767 12802 12847 12892 12930 12945 13089 | 12768 12803 12848 12894 12931 12947 13090 | 12769 12804 12850 12895 12933 12948 13091 |
| SVCSUB= 000001 | 1389# | 4932 | 4962 | 5035 | 5065 | _90 | 5316 | 5596 | 5619 | 5041 | 6165 | 62.6 | 6342 |
| SVCTAG= 000001 | 64389 3079 3376 3376 3902 3902 3902 3902 3902 3902 3902 3902 | 1563 3091 3356 3696 4649 5038 5616 6722 7321 7947 8621 9435 10902 11686 12606 | 2897 3104 3391 3723 4761 5360 5638 6407 67324 8700 94346 11000 11780 12704 | 2912 3116 3403 3773 4785 5391 5683 6430 7408 87532 10414 11075 11869 12707 | 2933 31447 37447 451413 5488 5487 45148 5487 6879 8798 10483 11883 1295 | 2945 31489 37489 34820 5486 5486 5487 75158 89630 10168 12095 | 2957 3174 3508 3771 4834 5137 5459 6494 6938 7573 8929 9721 10567 11203 | 2973 3188 3528 3798 4855 4855 5162 6198 6982 7638 8025 9786 10264 1217 | 2992 3203 3548 3818 4875 5157 5465 6597 7656 9098 9098 10357 11353 | 3008 3231 3576 3860 4903 5163 5507 6538 7732 8382 9184 10721 11443 1226 | 3020 3259 3595 3872 4959 5211 5512 6620 7154 7794 8385 91948 10740 11456 12359 | 3041 3273 3636 3911 4983 5258 5547 6276 6640 7181 7815 8468 9974 10749 11466 12427 | 3067 3302 3663 3935 5000 5264 5563 6296 6667 7188 7878 8543 9291 10123 10828 11565 12498 |
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| PARAMETER CODING MACY11 CZUAAA.P11 11-JAN-83 09:29 | 30(1046) 11-JAN-83 CROSS REFE | 3 10:13 PAGE 298 ERENCE TABLE USER | SYMBOLS | | SE |
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| PARAMETER CODING CZUAAA.P11 11-JAN-83 | MACY11 09:29 | 30(1046) | 11-JAN CROSS R | -83 10: Eference | 13 PAGE | 299 - USER S | YMBOLS | | | | | | <i>5</i> |
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| PARAMETER CODING CZUAAA.P11 11-JAN-83 | MACY11 09:29 | 30(1046) | 1'-JAN CROSS R | I-83 10: EFERENCE | 13 PAGE | 300 - USER S | YMBOLS | | | | | | SEC |
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| PARAMETER CODING CZUAAA.P11 11-JAN-83 | MACY11 09:29 | 30(1046) | 11-JAN CROSS R | 1-83 10: REFERENCE | 13 PAGE | 301 - USER S | SYMBOLS | | | | | | SE |
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| T\$SEK0= 010001 T\$SEK1= 010002 | 4968# 5154 5443# 6210 6462# 7160# 7638 8120# 9786 10463# 10899 11527# 12177 11380# | 4983 5235# 5459 6230# 6494 6769# 7181 7694# 8158 8635# 9268 9846# 10501 | 4986# 5258 5493# 6259 6497# 6800 7224# 7732 8166# 8700 9329# 9884 10508# 11000 11576# 12253 | 5000 5322# 5507 6262# 6508 6809# 7262 7742# 8219 8760# 9367 9901# 10567 11010# 11661 12321# | 5071# 5338 5535# 6276 6583# 6874 7271# 7794 8268# 8798 9375# 9948 10623# 11075 11742# 12359 | 5086 5348# 5547 6348# 6620 6912# 7321 7847# 8306 8806# 9432 10085# 10661 11130# 11780 12367# | 5089# 5360 5551# 6390 6623# 6938 7878 8316# 8926 9494# 10123 10674# 11168 11787# 12427 | 5103 5374# 5563 6393# 6640 6944# 7408 7888# 8382 8987# 9532 10147# 10721 11183# 11869 12434# | 5106# 5391 5666# 6407 6643# 6982 7418# 7944 8430# 90232 10727# 11255 11978# 12498 | 5120 5403# 5680 6410# 6667 7042# 7500 7982# 8468 9038# 9605 10308# 10740 11319# 12568# | 5123# 5415 6171# 6433 6670# 7087 7535# 8020 8477# 9098 9683# 10346 10790# 11357 12033# 12606 | 5137 5424# 6193 6436# 6687 7104# 7573 8028# 8543 9156# 9721 10358# 10828 11370# 12103 12622# | 5140# 5440 6196# 6450 6693# 7154 7583# 8081 8583# 9194 9734# 10414 10934# 11456 12109# 12704 |
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| T\$TAGN= 010172 T\$TEMP= 000000 | 3071# 3306# 3667# 3939# 4963# 5620# 7218# 9323# 11736# 1498# 1511# 1524# 1537# | 1555N 3083N 3333N 3680N 4644N 5027N 5642N 7364N 9488N 11972N 1512N 1525N 1538N 2973N | 2888M 3095M 3360M 3700M 4661M 5036M 5708M 7529M 9677M 1513M 1513M 1526M 1539M 2992M | 2901# 3108# 3395# 3727# 4677# 5066# 6164# 7688# 9840# 1501# 1514# 1527# 1540# 3008# | 2916# 3120# 3407# 3739# 4771# 5179# 6166# 7841# 10079# 1502# 1515# 1528# 1541# 3020# | 2937# 3145# 3445# 3751# 4783# 5227# 6217# 7976# 10302# 1503# 1516# 1529# 1542# 3041# | 2949# 3158# 3493# 4818# 5286# 6340# 10457# 1504# 1517# 1530# 1547# | 2961# 3178# 3512# 3775# 4829# 5291# 6343# 8262# 10617# 1505# 1531# 1544# 3079# | 29?/# 3192# 3532# 3802# 4852# 5317# 6457# 8424# 10784# 1506# 1532# 1563# 3091# | 2996N 3207N 3552N 3822N 4871N 5488N 6579N 8577N 10956N 1507N 1520N 1533N 2897N 3104N | 3012# 3235# 3580# 3864# 4897# 5532# 6763# 8754# 11124# 1508# 1521# 1534# 2912# 3116# | 3024# 3263# 3599# 3876# 4924# 5595# 6907# 8981# 11313# 1509# 1535# 2933# | 3045# 3277# 3640# 3915# 4933# 5597# 7036# 9150# 11521# 1510# 1523# 1536# 2945# |
| | 2957# 3174# 3508# 3771# | 3188n 3528n 3798n | 3203# 3548# 3818# | 3231 N 3576 N 3860 N | 3259# 3595# 3872# | 3273# 3636# 3911# | 3302# 3663# 3935# | 3329# 3676# 3947# | 3356# 3696# 4646# | 3391# 3723# 4647 | 3403# 3735# 4649# | 3141# 3441# 3747# 4668# | 3154# 5489# 3759# 4761# |

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1\$151M= 177777

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3164 3256 3345 3175 3270 3357 3185 3274 3367 3171 3260 3155 3213 3303 3220 3311 3299 3291 3318 3338 3377 3479 3529 351. 3744 3748 3842 3932 3920 4507 4717 4573 5322 5434 7325 7394 7774 7863 9353 9379 9787 9865

| PARAMETER CODING (ZUAAA.P11 11-JAN-83 | MACY11 09:29 | 30(1046) | 11-JAN CROSS R | -83 10: EFERENCE | 13 PAGE | 304 - USER S | YMBOLS | | | | | | SEC |
|---|--|---|--|---|---|---|---|--|---|---|--|---|---|
| T\$TSTS= 000001 T\$\$AU = 010072 T\$\$AUT= 010067 T\$\$CLE= 010070 T\$\$DU = 010071 T\$\$HAR= 010171 | 10308 104527 104527 10736 10736 10736 10736 10736 10736 10736 10736 10737 1187 | 10317 10415 10643 10662 10741 10865 11039 11380 11536 11629 111884 12178 122495 12331 124495 124497 128924# 69813# 4873 4820 | 10327 10425 10537 10674 10750 110869 110149 112390 11544 11787 11544 11787 12340 12408 1273 12649 1273 1273 1273 1273 1273 1273 1273 1273 | 10332 10463 10548 10548 10790 11877 111549 11395 11555 11800 123428 12348 12468 12788 12788 12788 12788 12788 12788 12788 12788 | 10337 10472 10472 10583 10799 10883 11059 11156 11404 11562 11405 11405 11405 11405 11235 12437 12477 12663 12737 73488 11997 | 10342 10482 10483 10693 10893 111665 111669 115669 115669 1123541 1223541 1223541 1223541 122367 122867 122867 122867 122867 122867 122867 122867 122867 122867 122867 122867 | 10347 10487 10487 10568 10698 10814 10900 11169 11313 115674 11819 122366 12366 1236888 123688 123688 123688 123688 123688 123688 123688 123688 1236888 123688 123688 123688 123688 123688 123688 123688 123688 1236888 123688 123688 123688 123688 123688 123688 123688 123688 1236888 123688 123688 123688 123688 123688 123688 123688 123688 1236888 123688 1 | 10358 10492 10571 10702 10819 10903 111043 111328 11583 11583 112367 12367 12457 12698 12707 12698 12707 127 | 10366 10497 10623 10707 10824 10962 111087 11338 11427 11589 117428 12123 12218 12218 12218 122374 12460 12602 12705 12837 | 10371 10502 10632 10715 10829 10971 11058 11192 11343 11437 11594 11751 11837 12379 12464 12708 12845 5708# 8114# 10457# | 10389 10508 10642 10722 10834 10781 11068 11206 11348 11444 11603 11761 12388 12469 12388 12469 12622 12732 12850 6164# 10617# | 10394 10512 10647 10727 10838 10986 11076 11211 11353 11457 11608 11766 11863 1243 12254 12393 12479 12626 12738 12877 6340# 8424# 10784# | 10397 10517 10652 10731 10843 10991 11084 11215 11358 11467 11612 11771 11870 12055 12158 12257 12397 12484 12631 12754 12882 |
| T\$\$PRO= 010065 | 1555# 4677# 2888# 2992 3095# 3203 3360# 3548 3700# 3818 4661# | 13095 1563 4761 2897 2996N 3104 3207N 3391 3552N 3723 3822N | 2901 M 3008 3108 M 3231 3395 M 3576 3727 M 3860 | 2912 3012# 3116 3235# 3403 3580# 3735 3864# | 2916# 3020 3120# 3259 3407# 3595 3739# 3872 | 2933 3024# 3141 3263# 344 3599# 3747 3876# | 2937# 3041 3145# 3273 3445# 3636 3751# 3911 | 2945 3045# 3154 3277# 3489 3640# 3759 3915# | 2949# 3067 3158# 3302 3493# 3663 3763# 3935 | 2957 3071# 3174 3306# 3508 3667# 3771 3939# | 2961# 3079 3178# 3329 3512# 3676 3775# 3947 | 2973 3083# 3188 3333# 3528 3680# 3798 | 2977# 3091 3192# 3356 3532# 3696 3802# |
| T\$\$RPT= 010064 T\$\$SEG= 010001 | 4644# 4968# 5154# 5443# 6210# 6762# 7160# 7638# 8120# 9207# 9786# 10463# | 4646 4983# 5235# 5459# 6230# 6494# 6769# 7181# 7694# 8158# 8635# 9846# 10501# | 4649 4986N 5258N 5493N 6259N 6497N 6800N 7224N 7732N 8166N 8700N 9329N 9884N 10508N | 5000# 5322# 5507# 6262# 6508# 6809# 7262# 7742# 8219# 8760# 9367# 9901# 10567# | 5071# 5338# 5535# 6276# 6583# 6874# 7271# 7794# 8268# 8798# 9375# 9948# | 5086# 5348# 5547# 6348# 6620# 6912# 7321# 7847# 8306# 8806# 9432# 10085# 100661# | 5089# 5360# 55551# 6390# 6623# 6938# 7370# 7878# 8926# 9494# 10123# 10674# | 5103# 5374# 5563# 6393# 6644# 7408# 7888# 8382# 8987# 9532# 10147# 10721# | 5106# 5391# 5666# 6407# 6643# 6982# 7418# 7944# 8430# 9025# 10727# | 5120# 5403# 5680# 6410# 6667# 7042# 7500# 7982# 8468# 9038# 10308# 10740# | 5123# 5415# 6171# 6433# 6670# 7087# 7535# 8020# 8477# 9098# 9683# 10346# 10790# | 5137# 5424# 6193# 6436# 7104# 7573# 8028# 8543# 9156# 9721# 10828# | 5140# 5440# 6196# 6450# 6693# 7158# 8081# 8583# 9194# 9734# 10414# 10834# |

| | | | | | | | | D 8 | | | | | | | | |
|--|---|---|---|--|--|---|--|---|---|---|---|--|---|---|--|-----|
| PARAMET CZUAAA | ER CODING | 58-NAL | 09:29 | 30(1046) | 11-JAN CROSS R | 1-83 10: REFERENCE | 13 PAGE | 305 - USER S | YMBOL S | | | | | | SEQ | 1 3 |
| | | | 10899# 11443# 12103# 12622# 4852# 4933# | 10962# 11456# 12109# 12704# | 11000# 11527# 12177# | 11010# 11565# 12183# | 11075# 11576# 12253# | 11130# 11661# 12321# | 11168# 11742# 12359# | 11183# 11780# 12367# | 11255# 11787# 12427# | 11319# 11869# 12434# | 11357# 11978# 12498# | 11370# 12016# 12568# | 11380# 12033# 12606# | |
| T\$\$SUB= | 021710RG 021710RG 021736R 021736R 022014R 027332RG 027332R 027464R 027746RG 027752R 030304P | 002 002 002 002 002 002 002 | 14545298889963366950888899633669508888999036695884988899988899988339036695088889998833903669508888899988339036695088888899988889998888999888899988889998888 | 12704# 49559# 5609 5609 5609 5609 5609 5609 682545 77568 88150# 99302# 108143 11736# 12393# 12393 112393 123 | 4871# 4963# 5638# 5638# 55386 755386 75574 83577# 83577# 83577# 993170 10824# 11409 112069 11288 11288 11288 | 4875 56463 56463 56463 56463 56463 56463 6775 883 883 940 973 10643 111763 111763 1129 1129 1129 1129 1129 1129 | 4897# 556879# 56879# 568797 7781347 781347 88697 7781347 891935 991337 1008654 111743 111743 111743 111743 111743 | 4903 5062 6166# 52708# 76536# 7612 78129 83517 8920 97441 106474 11805 12169# 12729# | 5066# 62137# 5216 52716 70579 77821 77821 78145 83848 9233 10394 10394 10394 11536 112732 112732 | 5157 6217# 5264 5733 6616 7394 7651 781524 8662 9243 9770 10483 10956# 11551 11828 12738 | 5296 5296 5296 5296 5755 6636 7404 7656 79457 8471 9528 9799 10457 10698 10971 11883 12561 12759 | 5312 6343# 5308 5769 6663 71427 7688# 7976# 8454 9051 9813 104707 10986 11594 11594 115977 12777 | 5317# 6453 5465 6164# 6683 7188 77991 8265 8464# 93275 93275 9161 10487 10487 10487 11987 12793 | 5462 6457# 5488# 6189 6731 7457 7718 8002 8486 8769 9338 910749 93855 104749 11328 11617 12345 12806 | 5597# 6527 5512 6763# 7503 7728 8262# 8505 8784 93518 9870 105184 110784 | |
| 112 113 114 115 116 117 118 119 12 12.1 | 027752R 037752R 030304R 030534RG 031214RG 031632RG 032122RG 032630RG 033614RG 034172RG 022122RG 022150R 022230R 034552RG 035100RG 035470RG | 002 002 002 002 002 002 002 002 002 | 1509 1510 1511 1512 1513 1514 1515 1516 1499 5035# 5065# | 6578 <i>n</i> 6762 <i>n</i> 6906 <i>n</i> 7035 <i>n</i> 7217 <i>n</i> 7363 <i>n</i> 7528 <i>n</i> 7687 <i>n</i> 5026 <i>n</i> | | | | | | | | | | | | |
| 120 121 122 123 | 034552RG 035100RG 035410RG 035720RG | 002 002 002 | 1517 1518 1519 1520 | 7840# 7975# 8113# 8261# | | | | | | | | | | | | |

| PARAMET CZUAAA. | ER CODING P11 11 | -JAN-83 | MACY11 09:29 | 30(1046) | 11-JAN | -83 10:° EFERENCE | TABLE - | 306 - USER | SYMBOLS | | | | | | 261 |
|---|---|--|---|---|---|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|-------------------------|-------------------------|------------------------|-------------------------|--------------------------|-----------------------------|
| 1256789 0123456789 0123456 12 123 | 036360RG 036664RG 037016RG 037016RG 041016RG 041016RG 0411726RG 04 | 00000000000000000000000000000000000000 | 152234560789901 1552234560789901 1552260789901 15533553360789904 155336078904 1553360789904 155336078904 155336 | 8476# 85753# 85753# 8753# 9142# 91476# 91476# 10301# 104516# 104516# 104516# 104516# 104516# 115212# 115212# 115212# 115212# 115212# 115212# 115212# 115214# 1278# | | | | | | | | | | | |
| UAM = UDBB | 000200 G 000614RG | 002 | 1635# 1898# 4553* 6362* 12865* | 4514* 4554* 6363* 12866* | 4515* 4556* 6366 | 4521* 4557* 6473* | 4522* 4561 6474* | 4528* 6223 6589* | 6225* | 4535* 6237* 6591* | 4536* 6238* 6592* | 4542* 6239* 6596 | 4543* 6284* 12861 | 4549* 6360* 12863* | 4550 • 6361 • 12864 • |
| UNACSR UNAINT UNAPRI UNASRV UNAVEC UNIERR= | 000266RG 000670RG 000272RG 021656RG 000270RG 020000 G | 002 002 002 002 | 1774# 1907# 1776# 4871# 1775# 1695# | 4745* 4872* 4747* 6915 4746* 3893 | 4748 6920* 6914 7081 6916 4425 | 6956 6968 6985 4427 | 7115* 7080 7082 | 7125 | 7142 | | | | | | |
| UNIT UNLOD WCSADR= WCSMEM WCSSIZ= WLSA = WMAL = | 000005 G 000330RG 001515RG 000000 G 002165RG 020000 G 000025 G 000007 G 000005 G | 002 002 | 1728# 1796# 2041# 1656# 2096# 1652# 1762# 1748# 1746# 1750# | 4735* 4504 1657 6787 1657 | 4736* 4570 4557 6795 4557 | 4737 4585 4635 6815 4635 | 4740 4598 6363 6836 6354 | 4953 4613 6592 6843 6360 | 5056 4626 6695 6863 6363 | 5202 6870 6468 | 5252 6514 | 6592 | 6695 | | |

| PARAMET CZUAAA. | ER CODING P11 11- | JAN-83 | MACY11 09:29 | 30(1046) | 11-JAN CROSS F | N-83 10: Reference | 13 PAG | E 307 USER : | SYMBOLS | | | | | | 300 |
|--|--|--------------------------|--|--|---------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| WTM = XPWR = XSALWA= XSFALS= XSOFFS= | 000040 000400 | | 1760# 1754# 1705# 1389# 1389# | 5447 | | | | | | | | | | | |
| X\$TRUE= \$ADRER \$AFTER | 000020 001457RG 001340RG | 002 | 1389# 2030# 2012# 6703 8599 10978 | 6854 4465 6782 8775 11146 | 7470 5287 6929 9003 11335 | 5399 7059 9172 11543 | 5654 7240 9345 11758 | 5725 7386 9510 11994 | 6181 7551 9699 12337 | 6247 7710 9862 12584 | 6378 7860 19101 12751 | 6421 7998 10324 12785 | 6482 8136 10479 12829 | 6608 8284 10639 12874 | 6655 8446 10806 |
| \$BEFOR \$BITO \$BIT1 \$BIT10 \$BIT11 \$BIT12 | 001331RG 001267RG 001261RG 001172RG 001163RG | 002 002 002 002 | 2010# 1811 1812 1856 1857 | 1846 1847 1981# 1979# | 2001# 1999# | .,,,,, | , | ,, | | 12704 | 12171 | 12.05 | 12027 | 120,4 | |
| \$BIT13 \$BIT14 \$BIT15 | 001154RG 001145RG 001136RG 001127RG | 002 002 002 | 1858 1859 1860 1861 | 1977# 1975# 1973# 1971# | 8869 8899 8878 | 8890 | | | | | | | | | |
| \$BIT2 \$BIT3 \$BIT4 | 001253RG 001245RG 001237RG | 002 002 | 1813 1814 | 1848 1849 | 1997# 1995# | 8908 | | | | | | | | | |
| \$BIT5 \$BIT6 \$BIT7 | 001231RG 001223RG | 002 002 002 | 1815 1833 1834 1853 | 1832 1851 1852 1987# | 1850 1991# 1989# | 1993# | | | | | | | | | |
| \$BIT8 \$BIT9 \$CLR | 001215RG 001207RG 001201RG 001323RG | 002 002 002 | 1854 1820 2008# | 1985# 1855 | 1983# | | | | | | | | | | |
| SDATER SDNI | 001444RG 000776RG | 002 | 2028# 1822 6653 8444 10804 | 6850 1951# 6701 8597 10976 | 7466 4337 6780 8774 11144 | 4463 6927 9001 11333 | 5300 7057 9170 11541 | 5652 7238 9343 11756 | 5723 7384 9508 11992 | 6179 7549 9697 12335 | 6245 7708 9860 12582 | 6376 7853 10099 12749 | 6419 7996 10322 12783 | 6480 8134 10477 12827 | 6606 8282 10637 12872 |
| \$FATI \$GTCMD | 001017RG 001355RG | 005 005 | 1819 2015# 7999 10325 12830 | 1955# 6248 8137 10480 | 4351 6422 8285 10640 | 6483 8447 10807 | 6656 8600 10979 | 6704 8777 11147 | 6783 9004 11336 | 7060 9173 11544 | 7241 9346 11759 | 7387 9511 11995 | 7552 9700 12338 | 7711 9863 12585 | 7861 10102 12786 |
| SGTPCB SICAB | 001346RG 001074RG | 002 | 2013# 1842 | 12875 6182 1965# | 6379 5432 | 6609 | 12752 | | | | | | | | |
| SINTE SINTR SNCLR | 001041RG 001030RG 001311RG | 002 002 003 | 1817 1818 2006# | 1959# 1957# 4972 | 5329 5075 | 5345 | 5398 | 5431 | 5450 | | | | | | |
| \$NOP \$NSET | 001403RG 001275RG | 002 002 | 2020# 2003# 6702 8445 10805 | 5655 4464 6781 8598 10977 | 5930 5301 6928 8775 11145 | 5330 7058 9002 11334 | 5653 7099 9171 11542 | 5724 7239 9344 11757 | 6180 7385 9509 11993 | 6246 7550 9698 | 6377 7709 9861 12583 | 6420 7859 10100 12750 | 6481 7997 10323 12784 | 6607 8135 10478 12828 | 6654 8283 10638 12873 |
| SPARER SPATCH | 001500RG 053574RG | 002 | 2033# 13109# | 6856 | | 11774 | 11746 | 11171 | 11773 | 12336 | 16,703 | 16170 | 12104 | 16060 | 1,01) |
| SPCEI SPCTO SPDNDM | 000745RG 001105RG 001415RG | 002 002 002 | 1825 1835 2023# | 1945# 1967# | 4316 | | | | | | | | | | |
| S RCE I | 001006RG | 002 | 1821 | 1953# | 4344 | | | | | | | | | | |

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| PARAMETER CODING CZUAAA.P11 11-JA | MACY11 N-83 09:29 | 30(1046) | 11-JAI | N-83 10: REFERENCE | 13 PAG | E 308 USER : | SYMBOLS | | | | | | SEQ | 303 |
|--|---|--|---|---|---|---|---|--|---|---|---|--|---|-----|
| CZUAAA.P11 11-JA \$RESET 001436RG \$RMTC 001116RG \$RSET 001052RG \$RXI 000756RG \$SERI 000734RG \$SET 001305RG \$SET 001371RG \$SIFT 001431RG \$SIRT 001407RG \$TXI 000766RG \$XPWR 001063RG | 002 2027# 002 1831 002 1831 002 1824 002 1826 002 2005# 002 2026# 002 2021# 002 1823 002 1823 002 1843 002 1843 002 1843 002 1843 002 1843 002 1843 1903# 7114 7560 7899 8206 8593 9962 10488 10815 11165 11595 | 1969# 1961# 1947# 1943# 5726 | CROSS 1 4329 4330 4354 430 77598 86054 8011 10518 10518 10518 11618 | 4810# 4810# 6491 7253 8003 8066 9388 10120 10534 10124 11675 12124 | 4821 6617 7281 7628 7628 8017 8326 8663 9400 9762 101543 101543 11752 | 4832 6637 7293 7652 8038 8345 9112 9409 9771 10176 10633 10972 11344 11767 | 5309 6664 7380 7704 8059 8354 8770 9166 9800 10185 10648 10987 11354 11777 | 5663 6684 73719 8068 8785 9181 9519 98518 10658 10997 11396 11806 | 5717 6819 7405 7729 8130 8455 8795 9191 9529 9871 10333 10684 11023 11410 11820 | 5734 67428 7752 8145 88465 9221 93843 10699 11049 11419 11829 | 5756 7052 7449 7766 8155 8487 8834 9235 9576 9911 10372 10708 11051 11537 11988 | 6121# 7068 7458 7775 8176 8506 8843 9585 10395 10737 11140 1:552 12003 | 6190 7078 7545 7808 8197 8515 8997 9282 9619 9634 10473 10800 11155 11562 12013 | |
| | 12047 12403 12733 | 12061 12447 12739 | 12070 12461 12760 | 12124 12470 12773 | 12144 12485 12794 | 12196 12578 12807 | 12210 12593 12838 | 12219 12603 12851 | 12331 12632 12883 | 12346 12646 12895 | 12356 12655 13007# | 12380 12668 13108# | 12394 12699 13109# | |

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| PARAMET CZUAAA. | ER CODING | 5 1-JAN-83 | MACY11 09:29 | 30(1046) | | N-83 10 Referenci | 13 PAGE | 310 MACRO | NAMES | | | | | | 5 |
|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| BCOMPL BERROR | 1# | 1389# 1389# | 4684 | 4689 | 4711 | | | | | | | | | | |
| BGNAU BGNAUT BGNCLN BGNDU BGNHW BGNINI BGNMOD BGNMSG | 1# 1# 1# 1# 1# 1# 3094 3406 3762 | 1389# 1389# 1389# 1389# 1389# 1389# 1389# 3107 3444 3774 1389# | 4828 4770 4782 4817 13080 1554 4672 28119 3492 3801 4660 | 2900 3144 3511 3821 | 2915 3157 3531 3863 | 2936 3177 3551 3875 | 2948 3191 3579 3914 | 2960 3206 3598 3938 | 2976 3234 3639 | 2995 3262 3666 | 3011 3276 3679 | 3023 3305 3699 | 3044 3332 3726 | 3070 3359 3738 | 3082 3394 3750 |
| BGNPTA BGNRPT BGNSEG | 1# 1# 1# | 1389# 1389# 1389# | 4643 4967 | 4985 | 5070 | 5088 | 5105 | 5122 | 5170 | 527/ | 5721 | 57/7 | 5777 | 5/02 | 5/27 |
| BGNSEG | 5442 6582 7417 8582 9900 11182 12567 | 5492 6622 7534 8634 10084 11318 12621 | 5534 6642 7587 8759 10146 11369 | 5550 6669 7693 8805 10307 11379 | 5070 5665 6692 7741 8986 10357 11526 | 5088 6170 6768 7846 9037 10462 11575 | 6195 6808 7887 9155 10507 11741 | 5122 6229 6911 7981 9206 10622 11786 | 5139 6261 6943 8027 9325 10673 11977 | 5234 6347 7041 8119 9374 10726 12032 | 5321 6392 7103 8165 9493 10789 12108 | 5347 6409 7159 8267 9548 10833 12182 | 5373 6435 7223 8315 9682 10961 12320 | 5402 6461 7270 8429 9733 11009 12366 | 5423 6496 7369 8476 9845 11129 12433 |
| BGNSET BGNSFT | 14 | 1389# | | | | | | | | | | | | | |
| BGNSRV BGNSUB | 1# | 1389# 1389# | 4851 4931 | 4870 4961 | 4996 5034 | 5064 | 5289 | 5315 | 5595 | 5618 | 5640 | 6164 | 6215 | 6341 | 6455 |
| BGNSW BGNTST | 1# 1# 6905 9321 12313 | 1389# 1389# 7034 9486 12560 | 4922 7216 9675 12727 | 5025 7362 9838 | 5177 7527 10077 | 5225 7686 10300 | 5284 7839 10455 | 5486 7974 10615 | 5530 8112 10782 | 5593 8260 10954 | 5706 8422 11122 | 6162 8575 1311 | 5338 3752 11519 | 6577 8979 11734 | 6761 9148 11970 |
| BNCOMP BNERRO | 1# | 1389# 1389# | 4694 | 4699 | 4743 | | | | | | | | | | |
| BREAK GRESET | 1# 1# 1# | 1389# 1389# 1389# | 4243 4947 | 4390 | 5196 | 52/4 | | | | | | | | | |
| CLOSE CKLOOP | 1# | 1389# 1389# | 4707 | 5050 |) 1 7 0 | 5246 | | | | | | | | | |
| CLRVEC COMMEN | 1# | 1389# 1389# | 4949 | 5005 | 5052 | 5159 | 5198 | 5206 | 5248 | 5260 | 6984 | | | | |
| DELAY DESCRI DEVIYP DISPAT | 1# | 1389# 1389# 1389# 1389# | 1935 1927 1495 | | | | | | | | | | | | , |
| DISPLA DOCLN DODU | 100 | 1389# 1389# 1389# | 4757 4952 | 4955 5055 | 505 8 5201 | 5204 5251 | 5254 | | | | | | | | |
| DORPT ENDAU ENDAUT ENDCLN ENDCOM | 1 # 1 # 1 # 1 # | 1389# 1389# 1389# 1389# 1389# | 4833 4772 4812 | | | | | | | | | | | | |
| ENDOU | 1 # | 1389# | 4822 | | | | | | | | | | | | |

| PARAM [®] T CZUAAA. | ER CODING P11 11 | -JAN-83 | MACY11 09:29 | 30(1046) | | | 13 PAGE | 311 - MACRO | NAMES | | | | | | 31 |
|---|---|--|--|---|---|---|--|---|---|---|---|---|---|--|--|
| ENDHRD INDEW ENDINI ENDMOD ENDMSG | 1# 1# 1# 1# 3103 3440 3770 | 1389# 1389# 1389# 1389# 1389# 3115 3488 3797 1389# 1389# | 13093 1562 4760 13120 2896 3140 3507 3817 4667 | 2911 3153 3527 3859 | 2932 3173 3547 3871 | 2944 3187 3575 3910 | 2956 3202 3594 3934 | →72 5230 3635 3946 | 2991 3258 3662 | 3007 3272 3675 | 3019 3301 3695 | 3040 3328 3722 | 3066 3355 3734 | 3078 3390 3746 | 3090 3402 3758 |
| ENDRPT ENDSEG | 1# 1# 5458 6619 7499 8620 9947 11254 12605 | 1389# 1359# 5506 6639 7572 8699 10122 11356 | 4648 4982 5546 6666 7637 8797 10231 11442 | 4999 5562 6686 7731 8925 10345 11455 | 5085 5679 6721 7793 9024 10413 11564 | 5102 (199 6799 7877 9097 10500 11660 | 5119 6209 6873 7943 9193 10566 11779 | 5136 6258 6937 8019 9267 10660 11868 | 5153 6275 6981 8080 9366 10720 12015 | 5257 6389 7086 8157 9431 10739 12102 | 5337 6406 7153 8218 9531 10827 12176 | 5359 6432 7180 8305 9604 10898 12252 | 5390 6449 7261 8381 9720 10999 12358 | 5414 6493 7320 8467 9785 11074 12426 | 5439 6507 74 857 9255 11167 12497 |
| ENDSET ENDSET ENDSRV ENDSUB ENDSW ENDTST | 1 M 1 M 1 M 1 M 1 M 6996 9434 | 1389# 1389# 1389# 1389# 1389# 1389# 7187 | 4854 4958 5008 7323 9812 | 4874 5002 5162 7502 9973 | 4902 5061 5210 7655 10234 | 5156 5263 7814 10423 | 5311 5464 7946 10569 | 5461 5511 8083 10748 | 5615 5565 8221 10901 | 5637 5685 8384 1082 | 5682 5768 8545 11263 | 6212 6298 8704 11465 | 6, 95 6537 8928 11685 | 6452 6730 9120 11882 | 6526 6876 9290 12255 |
| E RRDF ERRHRD | 1# 1# 1# 5452 6269 6784 7147 7493 7862 8169 8499 8836 9174 9522 9904 10365 11057 11426 11822 12157 12454 12831 | 12706 1389# 1389# 1389# 1389# 15509 67174 7870 81887 7878 81887 99188 1118368 1118368 111838 111838 111838 | 12955 1575 4976 4976 6812 7563 8812 7563 8821 99567 10738 11545 11887 12876 | 5045 4993 5556 6833 7591 7906 8537 88539 9578 96407 10808 11158 11862 12491 12888 | 5191 5079 5603 6840 7605 8847 7605 88691 9955 10818 11588 11588 11588 11588 11258 | 5241 5096 5631 6846 7615 7615 78286 8611 89261 10103 10491 10837 11602 11996 122596 | 5113 5656 6484 6867 7332 8000 8296 86409 9275 9701 10113 10511 10859 11214 116 1 12246 12625 | 5130 5673 6501 6931 7314 7645 8010 8319 8656 8919 9711 101527 10868 11628 11628 12639 12639 | 5147 5718 69588 7771 887 93749 105362 110536 110536 110536 112348 | 5302 5727 6610 6975 7398 7798 8045 8045 80178 90178 10550 10892 11654 12661 12361 | 5331 5749 6630 6990 7421 7745 8055 8045 93934 101980 11337 11668 12387 12692 | 5353 5762 6657 7061 7442 7759 8061 8375 8778 9059 9402 9779 10211 10641 10990 11347 11760 12396 12753 | 5384 6183 6677 7071 7451 7768 8074 8448 8788 9068 9415 9793 10651 11016 11389 11770 12117 12410 12766 | 5408 6203 6705 7107 7474 7787 8138 8458 8809 9091 9425 9864 10677 11035 11799 12131 12420 12787 | 5433 6249 6715 7135 7481 7801 8148 8480 8827 9102 9874 10336 10692 11044 11412 11813 12137 12440 12800 |
| ERRSF ERRSOF ERRIBL ESCAPE | 1# | 1389# 1389# 1389# 1389# | 5307 | 5661 | 5715 | 5732 | 5754 | 6188 | 6254 | 6385 | 6428 | 6489 | 6615 | 6635 | 6662 |

| PARAMET CZUAAA. | ER CODIN | G 1-JAN-83 | MACY11 09:29 | 30(1046) | 11-JAN CROSS R | 1-83 10: EFERENCE | 13 PAGE | 312 - MACRO | NAMES | | | | | | SEQ | 3 506 |
|--|--|--|--|--|---|---|---|---|--|--|--|---|--|---|---|-------|
| EXIT FEQUAL GETBYT GETPRI | 6682 7426 7773 8204 8616 9073 9502 9869 10370 10798 11191 11673 12194 12601 | 6817 7447 7806 8276 8647 9110 9517 9879 10393 10813 11210 12208 12630 1389# 1389# 1389# | 6964 7456 7897 8291 8661 9164 9527 9909 10471 10823 11219 11765 12217 12644 4645 | 7050 7543 7911 8301 8670 9179 9560 9923 10486 10842 11327 11775 12359 12653 4799 | 7066 7558 7990 8324 8768 9189 9232 10864 11342 11804 12666 4819 | 7076 7568 8005 83783 9219 9580 10873 11352 11818 12697 4830 | 7112 7596 8015 8352 8793 9233 9617 10093 10532 10970 11394 11827 12378 12731 | 7232 7611 8036 8438 8814 9242 9691 10108 10541 10985 11408 11986 12392 12758 | 7247 7620 8057 8453 8832 9280 9706 10118 10995 11417 12001 12401 12771 | 7257 7650 8C66 8463 8841 9337 9716 10160 11021 11535 12011 12445 12792 | 7279 7702 8128 8485 8995 9352 9746 10174 10656 11040 11550 12045 12459 12805 | 7291 7717 8143 8504 9010 9362 9760 10183 10082 11049 11560 12059 12468 12836 | 7378 7727 8153 8513 9020 9383 9769 10316 10697 11138 12068 12483 12849 | 7393 7750 8174 8591 9050 9398 9798 10331 10706 11153 11607 12122 12576 12881 | 7403 7764 8195 8606 9064 9407 9854 10341 10735 11163 11616 12142 12591 12893 | |
| GETWOR GMANIA GMANID GMANIL GPHARD GPRMD GPRML HEADER I'LOOP IOSTAR KT11 LASTAD MANUAL MEMORY MSBYTE | 1 | 1389# 1389# 1389# 1389# 1389# 1389# 1389# 1389# 1389# 1389# 1389# 1389# 1389# 1389# | 4739 13083 1401 4702 1402# | 1 3088 1409 | 1410 | | | | | | | | | | | |
| MSCHEC MSCNTO MSCOUN | 1 M 1 M 1 M 3047 M 3209 M 3348 M 3495 M 3628 M 3783 M 3923 M | 1389# 1389# 1389# 3053# 3216# 3363 * 3501 * 364 * 375 J# 3929# | 4646# 13084# 2890# 3060# 3223# 3371# 3648# 3804# 3941# | 4800# 13059# 2903# 3073# 3237# 3381# 3520# 3656# 3110# 4353# | 2918 <i>n</i> 3085 <i>n</i> 3085 <i>n</i> 3244 <i>n</i> 3397 <i>n</i> 3534 <i>n</i> 3669 <i>n</i> 3824 <i>n</i> 4468 <i>n</i> | 4831 m 2925 m 3097 m 3251 m 3409 m 3540 m 3682 m 3831 m 4482 m | 12732# 2939# 3110# 3265# 3415# 3554# 3689# 3838# 4503# | 2951# 3122# 3279# 3424# 3562# 3702# 3845# 4569# | 2963N 3128N 3286N 3431N 3569N 3709N 3852N 4584N | 2979N 3134N 3294N 3449N 3582N 3715N 3866N 4597N | 2985 N 3147 N 3308 N 3456 N 3588 N 3729 N 3880 N 4612 N | 2998n 3160n 3314n 3462n 3601n 3741n 3888n 4625n | 3014# 3167# 3321# 3468# 3607# 3753# 3896# 4714# | 3020# 3180# 3335# 3475# 3614# 3765# 3904# 4792# | 3032# 3194# 3341# 3482# 3621# 3777# 3917# 12919# | |
| MSDATA | 12926# 1# 1435 1467 | 12933# 1389# 14 ₂ 7 1469 | 12940# 1402# 1439 1471 | 12947# 1411 1441# 1473 | 1413 1443 1475 | 1415 1445 1477 | 1417 1448 1479 | 1419 1451 1481 | 1421 1453 1483 | 1423 1455 1485 | 1425 1457 | 1427 1459 1936# | 1429 1461 | 1431 1463 | 1433 1465 | |
| MSDECR | 18 30918 34038 37598 48348 51578 55128 | 1389# 3104# 3441# 3771# 4855# 5163# 5547# | 1563 <i>m</i> 3116 <i>m</i> 3489 <i>m</i> 3798 <i>m</i> 4875 <i>m</i> 5211 <i>m</i> 5563 <i>m</i> | 2897# 3141# 3508# 3818# 4903# 5258# 5566# | 2912 <i>n</i> 3154 <i>n</i> 3528 <i>n</i> 3860 <i>n</i> 4959 <i>n</i> 5264 <i>n</i> 5616 <i>n</i> | 2933N 3174N 3548N 3872N 4983N 5312N 5638N | 294)# 3188# 3576# 3911# 5000# 5338# 5680# | 2957# 3203# 3595# 3935# 5003# 5360# 5683# | 1483 2973# 3231# 3636# 3947# 5009# 5391# 5686# | 2992n 3259n 3663n 4649n 5062n 5415n | 1928 <i>n</i> 3008 <i>n</i> 3273 <i>n</i> 3676 <i>n</i> 4668 <i>n</i> 5086 <i>n</i> 5440 <i>n</i> 6193 <i>n</i> | 3020n 3302n 3696n 4761n 5103n 5459n 6210n | 3041 m 3329 m 3723 m 4773 m 5120 m 5462 m 6213 m | 3067# 3356# 3735# 4813# 5137# 5465# 6259# | 3079# 3391# 3747# 4823# 5154# 5507# 6276# | |

| PARAMET (ZUAAA. | ER CODIN P11 1 | IG 1-JAN-83 | MACY11 09:29 | 30(1046) | 11-JAN CROSS R | I-83 10: Ifference | 13 PAGE TABLE - | 313 - MACRO | NAMES | | | | | | 250 |
|--------------------|---|--|---|---|--|--|---|---|--|--|---|---|---|--|---|
| M2777A | 6296# 6722# 7408# 8158# 9025# 9884# 10749# 11661# 12704# | 6299# 6731# 7500# 8219# 9098# 9948# 10828# 11686# 1278# | 6390# 6800# 7503# 8222# 9121# 9974# 10899# 11780# 12956# 13084# | 6407# 6874# 7573# 8306# 9194# 10123# 10902# 11860# 13094# | 6433# 6877# 7638# 8382# 9268# 10232# 11000# 11883# 13121# | 6450# 6938# 7656# 8385# 9291# 10235# 11075# 12016# | 6453# 6982# 7732# 8468# 9367# 10346# 11083# 12103# | 6494# 6997# 7794# 8543# 9432# 10414# 11168# 12177# | 6508# 7087# 7815# 8546# 9435# 10424# 11255# 12253# | 6527# 7154# 7878# 8621# 9532# 10501# 11264# 12256# | 6538# 7181# 7944# 8700# 9605# 10567# 11357# 12359# | 6620# 7188# 7947# 8705# 9630# 10570# 11443# 12427# | 6640# 7262# 8020# 8798# 9721# 10661# 11456# 12498# | 6667# 7321# 8081# 8926# 9786# 10721# 11466# 12507# | 6687# 7324# 8084# 8929# 9813# 10740# 11565# 12606# |
| MSDEFA MSENDE | 1# 1# 3091# 3403# 3759# 4855# 5163# 5547# 6299# 6731# 7500# 8219# 9098# | 1389# 1389# 3104# 3771# 4875# 5211# 5563# 6800# 7503# 8222# 9121# | 1563# 3116# 3489# 3798# 5903# 5258# 5566# 6407# 6874# 7573# 8306# 9194# | 13089# 2897# 3141# 3508# 3818# 4959# 5264# 5616# 6877# 7638# 9266# 10232# | 2912N 3154N 3528N 3860N 4983N 5312N 5638N 6450N 6938N 7656N 8385N | 2933M 3174M 3548M 3872M 5000M 5338M 5680M 6453M 6982M 7732M 8468M | 2945# 3188# 3576# 3911# 5003# 5360# 5683# 6494# 6997# 7794# 8543# | 2957# 3203# 3595# 3935# 5009# 5391# 5686# 6508# 7087# 7815# 8546# | 2973 <i>m</i> 3231 <i>m</i> 3636 <i>m</i> 3947 <i>m</i> 5062 <i>m</i> 5415 <i>m</i> 5769 <i>m</i> 6527 <i>m</i> 7154 <i>m</i> 7878 <i>m</i> 8621 <i>m</i> | 2959# 3259# 3663# 4649# 5086# 5440# 6193# 6538# 7181# 7944# 8700# | 3008 m 3273 m 3676 m 4761 m 5103 m 5459 m 6210 m 6620 m 7188 m 7947 m 8705 m | 3020 m 3302 m 3696 m 4773 m 5120 m 5462 m 6213 m 6640 m 7262 m 8020 m 8798 m | 3041 m 3329 m 3723 m 4813 m 5137 m 5465 m 6259 m 6667 m 7321 m 8081 m 8926 m | 3067# 3356# 3735# 4823# 5154# 5507# 6276# 6687# 7324# 8084# 8929# | 3079 m 339: m 3747 m 4834 m 5157 m 5512 m 4296 m 6722 m 7408 m 8158 m 9025 m 9884 m |
| M\$FRRI | 9948# 10828# 11686# 12707# 1# 5354# 5763# 6658# 7062# 7443# 7760# 8062# 8376# 8779# | 9974# 10899# 11780# 12956# 1389# 5385# 6184# 6678# 7072# 7769# 8075# 8449# 8789# | 10123# 10902# 11869# 13094# - 409# - 409# - 204# - 706# 7788# 8139# 8459# 8810# | 11000M 11883M 13121M 4977M 5434M 6250M 6716M 7136M 7482M 7802M 8149M 8481M 8828M | 10275# 11075# 12016# 4994# 5453# 6270# 6785# 7148# 7494# 7863# 8170# 8500# 8837# 9175# | 10346N 1 083N 12103N 5046N 5501N 6290N 6793N 7175N 7871N 8184N 8509N 8858N | 10414# 11168# 12177# 5080# 5541# 6381# 6381# 6813# 7243# 7893# 8191# 8527# 8871# 9215# | 10424# 11255# 12253# 5097# 5557# 6401# 6834# 7253# 7592# 7907# 8200# 8537# 8880# 9229# | 10501# 11264# 112256# 5114# 5610# 6424# 6841# 7275# 7607# 7916# 8213# 8602# 8892# | 10567# 11357# 12359# 5131# 5632# 6444# 6861# 7287# 7616# 7933# 8287# 2612# 8901# | 10570 m 11443 m 12427 m 5148 m 5657 m 6485 m 6868 m 7308 m 7633 m 8001 m 8297 m 8643 m 8910 m | 10661 M 11456 M 12498 M 5192 M 5674 M 6502 M 6932 M 7315 M 7646 M 8011 M 8320 M 8657 M 8920 M | 10721 m 11466 m 12507 m 5242 m 5711 m 6519 m 6960 m 7389 m 7713 m 8032 m 8339 m 8666 m 9006 m | 10740# 11565# 12606# 5303# 5728# 6611# 6976# 7399# 7723# 8046# 8348# 8684# 9016# | 10749# 11661# 12704# 5332# 5750# 6631# 6991# 7422# 7746# 8053# 8366# 8694# 9046# |
| M\$ESCA | 9060# 9403# 9780# 10212# 10642# 10991# 11348# 11761# 12097# 12754# 12754# 6256 6818# 7249 7448# 7622 7807# 8059 8277# | 9069# 9416# 970'# 10226# 10652# 11017# 11390# 11771# 12118# 12411# 12767# 1389# 6386# 6819 7258# 7449 7651# 7808 8067# 8278 | 9092N 9426N 9865N 10327N 10678N 11036N 11404N 11800N 12132N 12788N 6387 6965N 7259 7457N 7652 7898N 8068 8292N | 9106# 9513# 9875# 10337# 10693# 11045# 11413# 11814# 12138# 12441# 12801# 5309 6429# 6966 7280# 7458 7703# 7899 8129# 8293 | 9175N 9523N 9905N 10366N 10702N 11058N 11427N 11823N 12158N 12455N 1_832N 5662N 6430 7051N 7281 7544N 7704 7912N 8302N | 9185# 9556# 9919# 10389# 10715# 11068# 11437# 11837# 12169# 12845# 7052# 7545 7718# 7913 8144# 8303 | 9215# 9570# 9928# 10397# 10731# 11149# 11546# 11352# 12190# 12479# 12877# 5716# 6491 7067# 7293 7719 7719 7991# 8145 8325# | 9229# 9579# 9942# 10408# 10809# 11159# 11863# 12889# 5717 6616# 7768# 77560 77728# 7992 8154# 8326 | 9238# 9599# 9956# 10482# 10819# 11187# 11589# 11877# 12587# 5733# 6617 7077# 7380 7569# 7729 8006# 8155 8344# | 9262N 9613N 10104N 10492N 10838N 11206N 11603N 11997N 12237N 12597N 5734 6636N 7078 7394N 7570 7751N 8007 8175N 8345 | 9276# 9702# 10114# 10512# 10860# 11215# 11612# 12007# 12247# 12626# 5755# 6637 7113# 7395 7597# 7752 8016# 8176 8353# | 9348 m 9712 m 10156 m 10528 m 10869 m 11231 m 11629 m 12041 m 12340 m 12640 m 12640 m 12640 m 12765 m 8017 8196 m 8354 | 9358# 9742# 10170# 10537# 10883# 11239# 11644# 12055# 12649# 6189# 6664 7233# 7405 7612# 7766 8037# 8197 8439# | 9379# 9756# 10179# 10551# 10893# 11249# 11655# 12064# 12374# 12662# 6190 6683# 7234 7427# 7613 7774# 8038 8205# 8440 | 9394# 9765# 10196# 10561# 10981# 11338# 11669# 12086# 12388# 12693# 6255# 6684 7248# 7428 7621# 7775 8058# 8206 8454# |

| PARAMET CZUAAA. | ER CODI | NG 1 - J AN - 8 | MACY11 3 09:29 | 30(1046 | 11-JAI (ROSS I | N-83 10: Reference | 13 PAGE | 314 - MACRO | NAMES | | | | | | St |
|---|--|---|---|---|--|--|---|--|--|---|--|--|--|---|--|
| MSESCS | 8455 8648# 9888# 92889 9518# 96889 10394# 10633 10633 10799# 11419 11751# | 10347 10647 10815 110815 110815 111081 111752 111752 111752 111752 111752 111752 111753 111753 111751 | 8465# 8465# 98643# 97358# 97102# 10478# 10623# 110623# 110623# 112763# 122445# 123768# 12445# 12668# 12668# 12645# | 8996# 9353# 93529# 9741# 10477# 104575# 110457# 110457# 11221# 1124646# 12806# 12806# 77512# 8671# 9180# 9180# 9180# 9180# 9180# 9180# | 8487 8677 8677 8990 97361 97364 104858 104858 1157767 1157767 112807 112807 112807 112807 113805 | 8505# 8672# 90181 90181 90183# 90184# 104883# 104883# 104883# 104883# 11329 113261# 113261# 113261# 113261# 11327# 12837# 70569# 87820# 108557# 1 | 8769# 9719# 97199# 973752# 104845# 10686513# 108513# 113605# 113605# 113605# 113605# 113605# 113605# 1137758# 105371# 113738# 105331# 113738# 113738# | 85770 # 99194 # 99194 # 99194 # 99194 # 99194 # 99194 # 100498 # 11134 94 # 11234 84 # 1234 84 # 1234 84 # 1234 84 # 1234 84 # 12375 # 8824 94 # 112375 # 1237 | 87820 87820 87820 87820 87820 87820 87820 87820 87820 9793841 1069740 111399 111399 111399 111399 111399 111399 111399 111399 1113999 1113 | 87851 | 87924 87924 87924 903338 9033338 100777559 1113624 1113778 111378 11 | 86795 M 8795 M 8795 M 9035 M 9035 M 1035 36 M 1035 372 M 1035 372 M 1035 372 M 1045 M 1068 3 M | 86156 86156 86166 8792409 9692409 9692409 9692409 97034 107369 | 8617# 8816 9074# 9503# 9693 9693 10110 10371# 10799# 101410 11674# 11988 12195# 12394 127602# 127602# 127602# 1277# 111608# 121577# 11608# 121577# 12882# | 8618 8833# 9075 # 9504 9707# 9871 10372# 10800 10996# 11418# 11675 12002# 12196 |
| MSEXCP MSEXIT MSEXSE MSEXTJ MSGEN | 1# 1# 1# 1# 1435# 1467# 1936# 3116# 3263# 3489# 3667# 3798# 4897# 5103# 55338# 5594# 6213# | 1389# 1389# 1389# 1389# 1389# 1469# 2888# 3008# 31273# 3676# 3677# 4903# 5120# 5120# 5120# 5120# 5120# 5120# | 13084n 4646n 4646n 1402n 1439n 1471n 2897n 3012n 3141n 3277n 3508n 3680n 4923n 5137n 5616n 6259n | 13089N 4800N 4800N 4647 1411N 1441N 1473N 2901N 3020N 3145N 3512N 3696N 3712N 4932N 4932N 5154N 5619N 6276N | 4801 4820N 4820N 14820N 1443N 1443N 1443N 1443N 1475N 29024N 33154N 3528N 3700N 49557N 54438N 56296N | 4820N 4831N 4820N 1445N 1447N 1447N 29041N 30158N 3723N 37864N 4963N 54649N 5629N | 4831# 12732# 4821 14817# 1448# 1479# 3045# 3173# 3548# 3727# 4983# 51680# 5462# 5680# 6339# | 12732# 4831# 1419# 1451# 1451# 1481# 2937# 3067# 3178# 3552# 3735# 3876# 4818# 5000# 5211# 5465# 5683# 6342# | 12733 4832 1421# 1453# 1483# 2945# 3071# 3188# 3576# 3576# 3576# 3608# 5026# 5487# 5686# 6390# | 12732# 1423# 1455# 1485# 2949# 3079# 3192# 3580# 3747# 3915# 4829# 5207# 5707# 6407# | 1425 m 1425 m 1457 m 1497 m 2957 m 3083 m 3295 m 3751 m 3935 m 4826 m 5264 m 5264 m 5763 m | 1427# 1459# 1556# 2961# 3091# 3097# 3403# 3759# 3939# 4852# 5035# 5163# 6450# | 1429 N 1461 N 1557 N 2973 N 3095 N 3231 N 3407 N 3636 N 3763 N 5062 N 5290 N 5547 N 6165 N 6453 N | 1431 m 1463 m 1563 m 2977 m 3104 m 3235 m 3441 m 3640 m 3771 m 4644 m 4871 m 5065 m 512 m 6193 m 6456 m | 1433# 1465# 1928# 2992# 3108# 3259# 3445# 3663# 3775# 4649# 4875# 5086# 5316# 5566# 6210# 6494# |

| PARAMET CZUAAA. | ER CODI | NG 11-JAN-8] | MACY11 3 09:29 | 30(1046) | 11-JAI CROSS I | N-83 10: REFERENCE | 13 PAGE | 315 - MACRO | NAMES | | | | | | SE |
|--------------------|--|--|---|--|---|--|---|---|---|--|--|---|--|--|--|
| M\$GE NB | 6508# 6938# 7503# 8081# 8621# 9322# 9974# 10721# 11312# 12103# 13082# | 6527# 6982# 7528# 8084# 8700# 9367# 10078# 10740# 11357# 12177# 13095# | 6538# 6997# 7573# 8113# 8705# 9432# 10123# 10749# 11443# 12253# | 6578# 7035# 7638# 8158# 8753# 9435# 10232# 10783# 11456# 12256# | 6620# 7087# 7656# 8219# 8798# 9487# 10235# 10828# 11466# 12314# | 6640 <i>m</i> 7154 <i>m</i> 7687 <i>m</i> 8222 <i>m</i> 8926 <i>m</i> 9532 <i>m</i> 10301 <i>m</i> 10899 <i>m</i> 11520 <i>m</i> 12359 <i>m</i> | 6667# 7181# 7732# 8261# 8929# 9605# 10346# 10902# 11565# 12427# | 6687# 7188# 7794# 8306# 8980# 9630# 10414# 10955# 11661# 12498# | 6722M 7217M 7815M 8382M 9025M 9676M 10424M 11000M 11686M 12507M | 6731 <i>n</i> 7262 <i>n</i> 7840 <i>n</i> 8385 <i>n</i> 9098 <i>n</i> 9721 <i>n</i> 10456 <i>n</i> 11735 <i>n</i> 12561 <i>n</i> | 6762# 7321# 7878# 8423# 9121# 9786# 10501# 11083# 11780# 12606# | 6800# 7324 7944 8468, 91494 9813# 10567# 11123# 11869# 12704# | 6874# 7363# 7947# 8543# 9194# 9839# 10570# 11168# 11883/ 12707# | 6877# 7408# 7975# 8546# 9208# 9884# 10616# 11255# 11971# 12728# | 6906# 7500# 8020# 8576# 9291# 7948# 10661# 1264# 12016# 12956# |
| M\$GETS | 1 M 3091 M 3403 M 3759 M 4834 M 5157 M 6722 M 7408 M 8158 M 9025 M 9884 M 10749 M 11661 M | 1389N 1389N 3104N 3441N 3771N 4855N 5163N 5547N 6299N 6731N 7500N 8219N 9098N 9948N 10828N 11686N | 1563N 3116N 3489N 3798N 4875N 5211N 5563N 6390N 6800N 7503N 8222N 9121N 9974N 10899N 11780N | 2897N 3141N 3508N 3818N 4903N 5258N 5566N 6407N 6874N 7573N 8306N 9194N 10123N 10902N 11869N | 2912N 3154N 3528N 3860N 4959N 5264N 5616N 6433N 6877N 7638N 9268N 10232N 11000N 11883N | 2933N 3174N 3548N 3872N 4983N 5312N 5638N 6450N 6938N 7656N 8385N 9291N 10235N 11075N 12016N | 2945# 3188# 3576# 5000# 5338# 5680# 6453# 6982# 7732# 8468# 9367# 1083# 12103# | 2957# 3203# 3595# 3935# 5003# 5360# 5683# 6494# 6997# 7794# 8543# 10414# 11168# 12177# | 2973# 3231# 3636# 3947# 5009# 5391# 5686# 6508# 7815# 8546# 10424# 112253# | 2992# 3259# 3663# 4649# 5062# 5769# 6527# 7878# 8621# 10501# 11264# 12256# | 3008# 3273# 3676# 4668# 5086# 5440# 6193# 6193# 7181# 7944# 8700# 10567# 11357# 12359# | 3020# 3302# 3696# 4761# 5103# 5459# 6210# 6620# 7188# 7947# 8705# 10570# 11443# 12427# | 3041# 3329# 3723# 4773# 5120# 5462# 6213# 6640# 7262# 8020# 8798# 9721# 10661# 11456# 12498# | 3067# 3356# 3735# 4813# 5137# 5465# 6259# 6667# 7321# 8081# 8926# 9786# 10721# 11466# 12507# | 3079# 3391# 3747# 4823# 5154# 5507# 6276# 6687# 7324# 8084# 8929# 9813# 10740# 11565# 12606# |
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| 9839# | 9840# | 9846# | 9855# | 9865# | 9870# | 9875# | 9880# | 9885# | 9901# | 9905# | 9910# | 9919# | 9924# | 9928# |
| 9933# | 9942# | 9949# | 9956# | 9961# | 9975# | 10078# | 10079# | 10085# | 10094# | 10104# | 10109# | 10114# | 10119# | 10124# |
| ファンンボ | 7746# | 7747# | アアノログ | 7701# | アアイン原 | 10010# | 10017# | 10007 | 10074# | 10104# | 10107# | 10114# | 10117# | 10164 |

| PARAMET CZUAAA. | ER CODING P11 11-JAN-83 | MACY11 09:29 | 30(1046) | 11-JAN CROSS R | -83 10: EFERENCE | 13 PAGE TABLE - | 321 - MACRO | NAMES | | | | | | 52. |
|--|--|--|--|--|--|---|--|---|---|--|--|--|--|--|
| | 10147# 10156# 10317# 10327# 10456# 10457# 10551# 10678# 10683# 10799# 10893# 10900# 11036# 11041# 11164# 11169# 11313# 11418# 11427# 11576# 11589# 11736# 1241# 12508# 12561# 12508# 12561# 12654# 12772# 12788# 12937# 12944# | 10161# 10332# 10463# 10561# 10693# 10809# 11045# 11183# 11328# 11437# 11594# 12321# 12321# 12321# 12362# 12662# 12793# 12951# | 10170# 10377# 10472# 10568# 10698# 10814# 10955# 11187# 11338# 11444# 11603# 11761# 12055# 12178# 12338# 12468# 12667# 12801# 12957# | 10175# 10342# 10482# 10482# 10571# 10702# 10819# 11058# 11192# 11343# 11457# 11608# 11766# 12183# 12344# 12577# 12693# 12806# 13081# | 10179# 10347# 10487# 10616# 10707# 10824# 10962# 11068# 11206# 11348# 11467# 11612# 11771# 11884# 12345# 12345# 12587# 12698# 12832# | 10184# 10358# 10492# 10617# 10715# 10829# 110971# 11353# 11520# 11520# 12195# 12350# 12446# 12592# 12837# | 10196# 10366# 10497# 10623# 10722# 10834# 11084# 11215# 11358# 11521# 11972# 12086# 12355# 12455# 12597# 12845# | 10212# 10371# 10502# 10632# 10727# 10838# 10986# 111220# 11370# 11527# 11527# 11644# 11787# 12097# 12360# 12460# 12602# 12850# | 10226# 10389# 10508# 10642# 10731# 10843# 110843# 111231# 11236# 11536# 11655# 112267# 12367# 12367# 12367# 12367# 12377# | 10233# 10394# 10394# 10512# 10647# 10736# 10996# 111390# 11239# 11390# 112662# 12218# 12218# 12374# 12469# 12622# 12882# | 10236# 10397# 10517# 10652# 10741# 10865# 11001# 11139# 11249# 11395# 11551# 12669# 12118# 12237# 12379# 12626# 12889# | 10301 m 10408 m 10528 m 10528 m 10657 m 10750 m 11010 m 11149 m 11256 m 11404 m 11556 m 11674 m 12123 m 12247 m 12388 m 12484 m 12631 m 12894 m | 10302# 10415# 10533# 10662# 10783# 10874# 11017# 11154# 11265# 11409# 11561# 12132# 12254# 12393# 12492# 12640# 12923# | 10308# 10425# 10537# 10674# 10784# 10883# 11022# 11159# 11312# 11413# 11566# 11735# 12138# 12257# 12397# 12499# 12645# 12767# 12930# |
| M\$10SE M\$LDRO | 1# 1389# 1# 1389# 5160# 5199# | 4200# 5202# | 4214# 5207# | 4682# 5249# | 4687# 5252# | 4692# 5261# | 4697# 6950# | 4708# 6985# | 4740# 7123# | 4950# | 4953# | 5006# | 5053# | 5056# |
| M\$MASK M\$MCHI M\$MCLO M\$MSK1 M\$POP | 1 | 1563N 3116N 3489N 3798N 4875N 5563N 6390N 7503N 8222N 9121N 9974N 10899N 11780N 12956N | 2897N 3141N 3508N 3818N 4903N 5258N 5566N 6407N 6874N 7573N 8306N 9194N 10123N 10902N 11869N 13094N | 2912# 3154# 3528# 3860# 4959# 5616# 6433# 7638# 10232# 11883# 13121# 2988# | 2933M 3174M 3548M 3872M 4983M 5312M 5638M 6450M 6938M 7656M 8385M 9291M 10275M 12016M | 2945# 3188# 3576# 3911# 5000# 5338# 5083# 6453# 6982# 7732# 8468# 9367# 11083# 12103# | 2957# 3203# 3595# 3935# 5003# 5360# 5683# 6494# 6997# 7794# 85432# 10414# 11168# 12177# | 2973N 3231N 3636N 3947N 5009~ 5391N 5686N 7087N 7815N 10255N 10255N 12253N | 2992N 3259N 3663N 4649N 5415N 5769N 6527N 7154N 9532N 10264N 12256N | 3008# 3273# 3676# 4668# 5086# 5086# 6538# 7181# 96567# 113559# 2985# | 3020# 3302# 3696# 4761# 5103# 5459# 6210# 6620# 7188# 7947# 8705# 9630# 10570# 11443# 12427# | 3041# 3329# 3723# 4773# 5120# 5120# 6213# 6640# 7262# 8020# 8798# 9721# 10661# 12498# 3014# 3167# | 3067# 3356# 3735# 4813# 5137# 5465# 6259# 6667# 7321# 8081# 8926# 10721# 11466# 12507# 3026# 3180# | 3079# 3391# 3747# 4823# 5154# 5507# 6276# 6687# 7324# 8929# 9813# 10740# 11565# 12606# |
| M\$ PUSH | 3047# 3053# 3209# 3216# 3348# 3363# 3495# 3501# 3628# 3642# 3787# 3790# 3923# 3929# 12926# 12933# 1389# 3071# 3083# | 3060# 3223# 3371# 3514# 3648# 3804# 12940# 1393# 3095# | 3073N 3237N 3381N 3520N 3656N 3810N 4353N 12947N 1555N 3108N | 3085N 3244N 3397N 3534N 3669N 3824N 4468N 2888N 3120N | 3097# 3251# 3409# 3540# 3682# 3831# 4482# 2901# 3145# | 3110# 3265# 3415# 3554# 3689# 3838# 4503# 2916# 3158# | 3122# 3279# 3424# 3562# 3702# 3845# 4569# 2937# 3178# | 3128# 3286# 3431# 3569# 3709# 3852# 4584# 2949# 3192# | 3134m 3294m 3449m 3582m 3715m 3866m 4597m 2961m 3207m | 3147M 3308M 3456M 3588M 3729M 3880M 4612M 2977M 3235M | 3160# 3314# 3462# 3601# 3741# 3888# 4625# 2996# 3263# | 3167W 3321W 3468W 3607W 3753W 3896W 4714W 3012W 3277W | 3335W 3475W 3614W 3765W 3904W 4792W 3024W 3306W | 3341 # 3482 # 3621 # 3777 # 3917 # 12919 # 3045 # 3333 # |

| PARAMET CZUAAA. | ER CODIN P11 1 | G 1-JAN-83 | MACY11 09:29 | 30(1046) | 11-JAN CROSS R | -83 10: EFENENCE | 13 PAGE TABLE - | 322 - MACRO | NAMES | | | | | | 32.4 |
|-------------------------------|--|--|--|---|---|---|--|---|--|--|--|--|--|--|---|
| | 3360# 3739# 4818# 5035# 5286 5532 6164 6769# 7363# 7888# 8430# 9150 9839# 11124 11787# | 3395# 3751# 4829# 5036 5290# 5535# 6436# 67.64 7975# 9156# 10616# 1130# | 3407# 3763# 4852# 5065# 5291 55551# 6456# 6906# 7370# 7976 8576# 9846# 10617 11183# 11972 | 3445# 3775# 4871# 5066 5316# 5594# 6457 6907 74.8# 7982# 8577 9322# 10623# 11312# | 3493# 3802# 4897# 5071# 5317 5595 6196# 6912# 8028# 8583# 9323 10674# 11313 12033# | 3512# 3822# 4923# 5089# 5222# 5596# 6216# 6494# 7529 8113# 9329# 10727# 11319# 12109# | 3532# 3864# 4924 5106# 5348# 5597 6278# 7035# 7535# 8114 8753# 10783# 10783# 11370# 12183# | 3552# 3876# 4932# 5123# 5123# 56130# 6530# 6530# 6530# 8754 9487# 10784 11380# 12314# | 3580 m 3915 m 4933 5140 m 5403 m 56262 m 6583 m 7687 m 8166 m 8760 m 9488 10790 m 11520 m 12315 | 3593# 3935# 4962# 5178# 5424# 5641# 6623# 7108# 8261# 8806# 9494# 108321 108321# | 3640# 4664# 4963 5179 5642 6643# 71604 8262 8980# 9549# 10955# 11527# | 3667# 4661# 4968# 5226# 5487# 5666# 6670# 7742# 8981 9676# 10956 11576# 12434# | 3680# 4677# 4986# 5227 5488 5707# 6343 6693# 7218 7840# 8316# 8987# 9677 10962# 11735# 12561# | 3700 m 4771 m 5026 m 5235 m 5493 m 5708 6762 m 7224 m 7841 8423 m 9038 m 9683 m 10457 11010 m 11736 12562 | 3727# 4783# 5027 5285# 5531# 6163# 6763 7271# 7847# 8424 9149# 9734# 10463# 11123# 11742# 12568# |
| M\$PUT | 12622# 1# 3047# 3209# 3348# 3495# 3628# 3783# 4925# | 12728# 1389# 3053# 3216# 3363# 3501# 3642# 3790# 5028# | 12729 2890# 3060# 3223# 3371# 3514# 3648# 3804# 3941# 5180# | 13081# 2903# 3073# 3237# 3381# 3520# 3656# 3810# 4353# 5228# | 2918# 3085# 3244# 3397# 3534# 3669# 3824# 4468# 6914# | 2925M 3097M 3251M 3409M 3540M 3682M 3831M 4482M 7080M | 2939# 3110# 3265# 3415# 3554# 3689# 3838# 4503# 12919# | 2951# 3122# 3279# 3424# 3562# 3702# 3845# 4569# 12726# | 2963 m 3128 m 3286 m 3431 m 3569 m 3709 m 385 c m 4584 m 12933 m | 2979# 3°34# 3294# 3449# 3582# 3715# 3866# 4597# 12940# | 2985M 3147M 3308M 3456M 3588M 3729M 3880M 4612M 12947M | 2998# 3160# 3314# 3462# 3601# 3741# 3888# 4625# | 3014 <i>n</i> 3167 <i>n</i> 3321 <i>n</i> 3468 <i>n</i> 3607 <i>n</i> 3753 <i>n</i> 3896 <i>n</i> 4714 <i>n</i> | 3026N 3180N 3335N 3475N 3614N 3765N 3904N 4727N | 3032# 3194# 3341# 3482# 3621# 3777# 3917# 4792# |
| MSPUT1 | 1# 2986 3098 3161 3254# 33881 33881 33888 3671 3791 3885 4588 4728 4728 5180 | 1389# 13988 29886 29876 3092 3092 3092 3092 3092 3092 3092 3092 | 2899 M 2939 M 2938 M 301167 M 3116163 | 2891 28949 301168 31168 31168 31168 31687 31684 | 2892 892 892 8951 8951 8951 8951 8951 8951 8951 8951 | 2903# 2903# 29051 30523 | 2904 2904 2904 30058 30058 3181 3181 3181 3181 3181 3181 3181 31 | 2905 29063 3069 31265 31 | 2906 2906 2906 3006 3006 3006 3006 3006 3006 3006 3 | 2907 29065 30152 30152 3194 31937 3194 3194 3194 3194 3194 3194 3194 3194 | 2918# 2967 # 30736 30736 3195 3195 3195 3195 3195 3195 3195 3195 | 2968 3074 3074 3196 3196 3196 3196 3196 3196 3196 3196 | 2979# 3085# 3085# 31497 31497 31497 31497 3147 3147 3147 3147 3147 3147 3147 314 | 2980 3086 3086 3198 3198 3198 3198 3198 3198 3198 3198 | 2926 2985# 3097# 31609# 3286 33751# 3582# 3582# 3582# 3582# 3582# 36717 3888# 4571# 51819# |
| M\$RADI M\$RBRO M\$RNRO | 1# | 1389# 1389# 1389# | 13084# 4703# | 13089# 4704 | 4708# | 4710 | 4740# | 4742 | | | | | | | |

| PARAMET CZUAAA. | ER CODING P11 11-JAN-83 | MACY11 3 09:29 | 30(1046) | 11-JAN CROSS R | -83 10: REFERENCE | 13 PAGE | 323 - MACRO | NAMES | | | | | | SEC |
|--------------------|----------------------------|---|---|--|--|--|--|-------|--|--|--|--|--|-----|
| M\$SETS M\$STAR | 1 | 1393# 3095# 3407# 3763# 4852# 5140# 5532# 6263# 7370# 8120# 8984# 10784# 11576# 12622# | 1555 m 3108 m 3108 m 3775 m 4871 m 5179 m 5535 m 6340 m 6763 m 7418 m 8166 m 9901 m 10790 m 11736 m 12729 m | 2888# 3120# 3802# 4897# 5251# 6769# 6769# 9150# 10834# 11742# 13081# | 2901# 3145# 3512# 4924# 5235# 6309# 6809# 8256# 10085# 10787# | 2916# 3158# 3532# 3864# 4933# 5286# 5597# 6393# 6393# 6907# 10147# 10962# 11972# | 2937# 3178# 3552# 3876# 4963# 5291# 5620# 6410# 7688# 8424# 9323# 10302# 1197&#</th><th>2949# 3192# 3580# 3915# 4968# 5317# 5642# 6944# 7694# 8430# 9329# 10308# 11124# 12033#</th><th>2961 m 3207 m 3599 m 3939 m 4986 m 5322 m 5666 m 7742 m 8477 m 9375 m 10358 m 11130 m</th><th>2977# 3235# 3640# 4644# 5027# 5348# 5708# 7042# 7841# 8577# 9488# 10457# 11133# 12183#</th><th>2996# 3263# 3667# 4661# 5036# 5374# 6164# 7104# 7847# 8583# 9494# 10463# 11313# 12315#</th><th>3012# 3277# 3680# 4677# 5066# 5066# 6166# 6579# 7160# 7888# 8635# 9549# 10508# 11319# 12321#</th><th>3024# 3306# 3700# 4771# 5071# 5424# 6171# 6583# 7218# 7976# 8754# 9677# 10617# 11370# 12367#</th><th>3045# 3333# 3727# 4783# 5089# 5443# 6196# 6623# 7982# 8760# 9683# 10623# 11380# 12434#</th></tr><tr><td>MŠSVC</td><td>1</td><td>2892 # 2992 # 3098 # 31294 \$ 1</td><td>28943 8943 8943 8943 8947</td><td>28968</td><td>28953 28953 28953 30501 30</td><td>29548 # 29548</td><td>2909 2909 2909 2909 30105 4 7 30105 4 7 30105 4 4 4 4 4 4 5 5 5 5 6 6 6 7 7 8 8 8 8 8 8 8 8 8 8 8 8 8</td><td>2958 12958 12958 130610 15090</td><td>29637 3017 3017 3017 31637 316</td><td>2970 m 2970 m 2970 m 31164 m 33373 m 3</td><td>2273# 2273# 2273# 2373777 237373333333333</td><td>2974 # 29</td><td>2979 # 2979 # 30</td><td>2932 # 29</td></tr></tbody></table> | | | | | | | |

| 6279 630 6362 6343 6346 6358 6358 6358 6359 6379 6379 6379 6379 6402 6408 6410 6406 6409 6404 6404 6404 6404 6404 640 | | . 700 | 47400 | | | . = | | . = | | | | | | | |
|--|--------|--------|--------|--------|--------|--------|--------|--------|---------------|--------|--------|--------|--------|---------------|---------------|
| 6-627 6-631 6-502 6-508 6-509 6-519 6-527 8-528 6-538 | | | | | | | | | | | | | | | |
| 6623# 6631 6436# 6660# 6641 6722# 6723 6731 6732 6765# 6667# 6680# 6690# 6801 6809# 6801 6801 6809# 6801 6809# 6801 6809# 6801 6809# 6801 6809# 6801 6809# | | | | | | | | | | | | 6462# | 6485 | 6490 # | 6494# |
| 66528 6631 65168 65608 6574 6573 6558 66528 66628 6670 6678 6688 6670 670 6716 67228 6733 6732 6732 6732 6732 6732 6732 6732 | | | | | | | 6527# | 6528 | 6538# | 6539 | 6583# | 6611 | 6616# | 6620# | 6621 |
| 6637, 664, 686, 687, 672, 672, 672, 672, 672, 676, 687, 687, 687, 687, 687, 687, 687 | 6623# | | | 6640# | 6641 | 6643# | 6658 | 6663# | 6667# | 6668 | 6670# | | 6683# | | |
| 683. 684. 686.1 686.8 687.4 687.6 687.6 687.8 687.8 687.8 6912.8 6914.8 6914.6 693. 6938. 6939. 394.8 6939. 6935. | 6693# | 6706 | 6716 | 6722# | 6723 | 6731# | 6732 | 6769# | | | | | | | |
| 6950 6951 6960 6965 8976 6982 6983 6983 6985 6981 6991 6997 6998 7022 7057 7077 7077 7080 7084 7084 7084 7088 71048 7108 71108 71138 71238 71238 7124 7136 7136 7154 71557 71818 7182 71388 7189 71248 7138 71238 71238 71238 71248 77258 77288 77268 77288 7728 7728 7728 7728 | 6834 | 6841 | 6861 | 6868 | 6874# | | | | | | | 6932 | | | |
| 7056 7 707 707 7080 7080 7084 7084 7088 7104 7108 7113 7123 7124 7124 7136 7148 7157 7158 7157 7181 7182 7138 7189 7182 7138 7189 7124 7135 7180 7182 7138 7189 7124 7135 7180 7182 7138 7189 7124 7135 7180 7182 7138 7182 7182 7182 7182 7182 7182 7182 718 | 6950# | 6951 | 6960 | 6965# | | 6982# | | | | | | ŘÓÓŘ | 7042# | 7651# | 7062 |
| 7155 7160# 7175 7181# 7182 7138# 7189 7292# 7398 73159 7224# 7233# 7245 7258# 7253 7258# 7247 7394 7797 7394 7797 7394 7797 7394 7797 7418# 7422 7427 7443 7452 7452 7453 7454 7458 7452 7457 7464 7452 7459 7444# 7450 74514 7452 7452 7453 7454 7458 7452 7457 7464 7450 7454 7452 7454 7454 7454 7454 7454 7454 | 7067# | 7072 | 7077# | 7080# | | | | | | | | 7124 | | | 715/. |
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| 7501 7503 7504 7515 7527 7549 7540 7550 7560 7560 7560 7560 7560 7560 756 | 7271# | | | | | | | 7771# | 7777 | 777/# | 7775 | 7770# | 7770# | | 770/# |
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| 7612# 7616 7621# 7633 7633# 7639 7646 7651# 7668 7657 7694# 7703# 7713 7718# 7725 7772# 7732# 7732# 7735 7744# 77863 7871 7878# 7879 7888# 7893 7893 7893 7907 7912# 7916 7933 7944# 7815# 7816 7847# 7863 7871 7878# 7879 7888# 7893 7893 7890 7907 7912# 7916 7933 7944# 7945 7947# 7948 7988# 7991# 8001 8001# 8001# 8018 8020# 8021# 8022# 8032# 8032# 8046 8053 8058# 8062# 8062# 8075 8081# 8002 8084# 8085 8120# 8120# 8129# 8144# 8149 8154# 8158# 8158# 8166# 8170# 8152# 8184# 8189 8136# 8300 805 8120# 8120# 8129# 8120# 8221# 8222# 8222# 8232# 8032# 8046# 8057# 8068# 8277# 8280# 8292# 8297# 8302# 8300# 8016# 8020# 8021# 8028# 8020# 8021# 8221# 8222# 8222# 8232# | 7501 | | | | | 7551 | | | | | | | 7482 | | 7,000 |
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| 7815# 7816 7847# 7865 7871 7878# 7879 7888# 7879 7888# 7890 7907 7912# 7916 7933 794.4 7945 7947# 7948 7988# 7897# 8001 8006# 8011 8016# 8020# 8021 8022# 8032# 8032# 8046 8053 8058# 8062 8067# 8075 8081# 8082 8084# 8085 8120# 8120# 6129# 6139 814.4 8158# 8159 8166# 8170 8175# 8184 8191 8194 8200 8205# 8213 8219# 8120# 8220# 8222# 8232 | 77784 | 7010 | | | | | | | | | | | | | 7723 |
| 7945 7947# 7948 7948 7992# 7991# 8001 8000# 8016# 8020# 8020# 8020# 8023# 8032# 8032# 8037# 8036# 8058# 8058# 8052 8067# 8075 8081# 8082 8084# 8085 8120# 2139 8144# 8149# 8159# 8158# 8159# 8186# 8170# 8175# 8184# 8191# 8199# 8120# 2139# 8129# 2139# 8129# 2139# 8129# 8139# 8154# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8154# 8158# 8158# 8158# 8158# 8158# 8158# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8168# 8159# 8168# 8169# 8168# 8169# 8168# 8168# 8159# 8168# 8169# 8168# 8169# 8168# 8169# 8168# 8169# 8168# 8169# 8168# 8169# 8168# 8169# 816 | | | | | | | 7760 | | | | | | | | |
| 80578 80588 8062 80678 8075 80888 8085 8085 8085 81290 81294 8220 8228 8228 8238 8240 8227 8228 82688 8277 82828 8287 83088 8308 8307 83168 82058 8213 82109 8220 8228 82828 8383 8386 8385 83858 8385 8386 8386 83 | | | | 7865 | | | | | | | | | | | |
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| M\$WORD | 12957# 1# 1389# 1508 1509 1523 1524 1538 1539 4978 4979 5097# 5098 5151 5192# 5334 5335 5435 5436 5557# 5558 5660 5674# 5752 6251 6252 6401# 6402 6488 6502# 6633 6634 6717 6718 6834# 6835 6871 6932# 6993 7137 7138 7253# 7254 7311 7315# 7424 7425 7483 7484 7592# 7593 7636 7646# 7748 7749 | 1410 15120 1 | 5453# 5560 5676 5764 6270# 6404 6509 6785# 6837 6934 7063 7148# 7256 7317 | 1496# 1512 1527 1542 4995 51195 5195 5196 5196 56767 5767 6506 6786 6786 7149 7278 7495 77649 77649 | 1498 1528 1528 15243 1524 15243 1524 | 1499 1529 4697 51639 5385 5612 6127 6127 6127 6127 6127 6127 6127 6 | 1500 1515 15800 48046 5117 5386 5113 6227 6578 6793 68973 77178 77178 77170 | 1516 1516 1516 1516 1516 1516 1516 1516 | 1502 1517 1532 4831 5033 51308 | 1503 1518 1518 1518 15133 4949 51304 571304 571304 | 1504 1519 1534 45080 5134 5135 55410 55635 6670 6670 6670 6670 6864 6712 7747 7747 7777 77789 | 1505 1520 1535 1535 1535 1536 1536 15306 1 | 1506 1521 1536 1536 5082 5143 5543 5543 5543 55650 6670 6869 6711 7747 7747 7747 7747 7747 7747 | 1507 1522 1537 4978 5083 5153 5150 5334 5544 5659 66384 66384 66716 6870 6870 67124 6870 77482 77482 77635 77635 77802 |

| 7803 | 7804 | 7805 | 7863# | 7864 | 7865 | 7866 | 7871# | 7872 | 7873 | 7874 | 7893# | 7894 | 7895 | 7896 |
|-----------------------|-----------------|--------------------------|-----------------|-------------------------------|-----------------------|-------------------------|--------------------------|---|-----------------------------------|--|--------------------------|--|-------------------------|-----------------|
| 7907# 8004 | 7908 8011# | 7909 8012 | 7910 8013 | 7916# 8014 | 7917 8032# | 7918 8033 | 7919 8034 | 7872 7933# 8035 | 7934 8046# | 7935 8047 | 7936 | 8001# | 8002 | 8003 |
| 8055 8150 | 8056 8151 | 8062# 8152 | 8063 8170# | 8064 | 8065 | 8075# | 8076 | 8077 | 8078 | 8139# | 8048 8140 | 8049 8141 | 8053# 8142 | 8054 8149# |
| 8 200 # | 8201 | 8202 | 8203 | 8171 8213# | 8172 8214 8339# | 8173 8215 | 8184# 8216 | 8185 8287# | 8186 8288 | 8187 8289 | 8191# 8290 | 8192 8297# | 8193 8298 | 8194 8299 |
| 8300 8368 | 8320# 8369 | 8321 8376# | 8322 8377 | 8323 8378 | 8339# 8379 | 8215 8340 8449# | 8216 8341 | 8342 | 8348 <i>#</i> | 8349 | 8350 | 8351 | 8366# | 8367 8481# |
| 8482 | 8483 | 8484 | 8500# | 8501 | 850 <i>2</i> | 8503 | 8450 8509# | 8451 8510 | 8452 8511 | 8459# 8512 | 8460 8527# | 8461 8528 | 8462 8529 | 8481# 8530 |
| 8537# 8646 | 8538 8657# | 8539 8658 | 8540 8659 | 8 602 # 8660 | 8603 8666# | 8604 8667 | 8605 8668 | 8612# 8669 | 8613 8684# | 8614 | 8615 | 8643# | 8644 | 8645 |
| 8696 | 8697 | 8779# | 8780 | 8781 | 8782 | 8789# | 8790 | 8791 | 8792 | 8635 8810# | 8686 8811 | 8687 8812 | 8694# 8813 | 8695 8828# |
| 8829 8880# | 8830 8881 | 8831 8882 | 8837# 8883 | 8838 8892# | 8839 8893 | 8840 8894 | 8858# 8895 | 8859 8901# | 8860 8902 | 8861 8903 | 8871# 8904 | 8872 8910# | 8873 8911 | 8874 8912 |
| 8913 9048 | 8920# 9049 | 8921 9060# | 8922 | 8923 | 9006# | 9007 | 9008 | 9009 | 9016# | 9017 | 9018 | 9019 | 9046# | 9047 |
| 9107 | 9108 | 9109 | 9061 9175# | 9062 9176 | 9063 9177 | 9069# 9178 | 9070 9185# | 9071 9186 | 9072 9187 | 9092# 9188 | 9093 9215# | 9094 9216 | 9095 9217 | 9106# 9218 |
| 9229# 9279 | 9230 9348# | 9231 9349 | 9232 9350 | 9238# 9351 | 9239 9358# | 9240 9359 | 9241 | 9262# | 9263 | 9264 | 9265 | 9276# | 9277 | 9278 |
| 9396 | 9397 | 9403 # | 9404 | 9405 | 9406 | 9416# | 9360 9417 | 9361 9418 | 9379# 9419 | 9380 9426# | 9381 9427 | 9382 9428 | 9394# 9429 | 9395 9513# |
| 9514 9579# | 9515 9580 | 9516 9581 | 9523# 9582 | 9524 9599# | 9525 9600 | 9526 9601 | 9556# 9602 | 9557 9613# | 9558 9614 | 9559 9615 | 9570# | 9571 | 9429 9572 | 9573 |
| 9705 | 9712# | 9 713 | 9714 | 9715 | 9742# | 9743 | 9744 | 9745 | 9756 # | 9757 | 9616 9758 | 9702# 9759 | 9703 9765# | 9704 9766 |
| 9767 9876 | 9768 9877 | 9780# 9878 | 9781 9905# | 9782 9906 | 9783 9907 | 9794# 9908 | 9795 9919# | 9796 9920 | 9797 9921 | 9865# 9922 | 9866 9928# | 9867 9929 | 9868 9930 | 9875# 9931 |
| 9942# 10117 | 9943 10156# | 9944 10157 | 9945 | 9956 # | 9957 | 9958 | 9959 | 10104# | 10105 | 10106 | 10107 | 10114# | 10115 | 10116 |
| 10198 | 10199 | 10212# | 10158 10213 | 10159 10214 | 10170# 10215 | 10171 10226# | 10172 10227 | 10173 10228 | 10179# 10229 | 10180 10327# | 10181 10328 | 10182 10329 | 10196# 10330 | 10197 10337# |
| 10338 10408# | 10339 10409 | 10340 10410 | 10366# 10411 | 10367 10482# | 10368 10483 | 10369 | 10227 10389# | 10390 | 10391 | 10392 | 10397# | 10398 | 10399 | 10400 |
| 10515 | 10528# | 10529 | 10530 | 10531 | 10537# | 10484 10538 | 10485 10539 | 10492# 10540 | 10493 10551# | 10494 10552 | 10495 10553 | 10512# 10554 | 10513 10561# | 10514 10562 |
| 10563 10694 | 10564 10695 | 10642# 10696 | 10643 10702# | 10644 10703 | 10645 10704 | 10652# 10705 | 10653 10715# | 10654 10716 | 10551# 10655 10717 | 10678# | 10679 | 10680 | 10681 | 10693# |
| 10809# | 10810 | 10811 | 10812 | 10819# | 10820 | 10821 | 10822 | 10838# | 10839 | 10718 10840 | 10731# 10841 10895 | 10732 10860# | 10733 10861 | 10734 10862 |
| 10863 10983 | 10869# 10984 | 10870 10991# | 10871 10992 | 10872 10993 | 10883# 10994 | 10884 11017# | 10885 11018 | 10886 11019 | 10893# 11020 | 10894 11036# | 10895 11037 | 10896 11038 | 10981# 11039 | 10982 11045# |
| 11046 11159# | 11047 | 11048 | 11058# | 11059 | 11060 | 11061 | 11068# | 11069 | 11070 | 11071 | 11149# | 11150 | 11151 | 11152 |
| 11218 | 11160 11231# | 11161 11232 11348# | 11162 11233 | 11187# 11234 | 11188 11239# | 11189 11240 | 11190 11241 | 11206# 11242 | 11207 11249# | 11208 11250 | 11209 11251 | 11215# 11252 | 11216 11338# | 11217 11339 |
| 11340 11414 | 11341 11415 | 11348# 11416 | 11349 11427# | 11350 | 11351 | 11390# | 11391 | 11392 | 11393 | 11404# | 11405 | 11406 | 11407 | 11413# |
| 11556# | 11557 | 11558 | 11559 | 11428 11589# | 11429 11590 | 11430 11591 | 11437# 11592 | 11438 11603# | 11439 11604 | 11440 11605 | 11546# 11606 | 11547 11612# | 11548 11613 | 11549 11614 |
| 11615 11671 | 11629# 11672 | 11630 11761# | 11631 11762 | 11632 11763 | 11644# 11764 | 11645 | 11646 11772 11837# | 11647 11773 | 11655# | 11656 | 11657 | 11658 | 11669# | 11670 |
| 11815 | 11816 | 11817 | 11823# | 11824 | 11825 | 11826 | 11837# | 11838 11997# | 11774 11839 11998 | 11800# 11840 | 11801 11852# | 11802 11853 | 11803 11854 | 11814# 11855 |
| 11863# 12010 | 11864 12041# | 11865 12042 | 11866 12043 | 11877# 1204 | 11878 12055# | 11879 12056 | 11880 12057 | 12058 | 11998 12064# | 11999 | 12000 | 12007# | 12008 12086# | 12009 12087 |
| 12088 | 12089 | 12097# | 12098 | 12099 12159 | 12100 | 12118# | 12119 12169# | 12120 | 12121 | 12132# | 12066 12133 12190# | 12134 | 12135 | 12138# |
| 12139 12204# | 12140 12205 | 12141 12206 | 12158# 12207 | 12213# | 12160 12214 | 12161 12215 12351 | 12169# | 12170 12237# | 12121 12171 12238 12374# | 12172 122 39 | 12190# 12240 | 12191 12247# | 12192 12248 | 12193 12249 |
| 12250 12390 | 12340# 12391 | 12341 12397# | 12342 12398 | 12343 12399 | 12350# | 12351 | 12216 12352 12412 | 12120 12170 12237# 12353 12413 12465 | 12374# | 12065 12132# 12172 12239 12375 | 12240 | 12067 12134 12191 12247# 12377 | 12248 12388# | 12389 |
| 12442 | 12443 | 12444 | 12455# | 12456 | 12400 12457 | 12411# 12458 | 12464# | 12465 | 12414 12466 | 12421# | 12422 12479# | 12423 12480 | 12424 12481 | 12441# 12482 |
| 12492# 12629 | 12493 12640# | 12494 12641 | 12495 12642 | 12587# 12643 | 12588 12649# | 12589 12650 | 12590 12651 | 12597# 12652 | 12598 | 12467 12599 | 12600 | 12626# | 12627 | 12628 |
| 12695 | 12696 | 12732# | 12754# | 12755 | 12756 | 12757 | 12767# | 12768 | 12662# 12769 | 12663 12770 | 12664 12788# | 12665 12789 | 126 93# 12790 | 12694 12791 |

| PARAMET CZUAAA. | ER CODIN | IG 1-JAN-83 | MACY11 09:29 | 30(1046) | 11-JAN CROSS R | 1-83 10: REFERENCE | 13 PAGE | 329 - MACRO | NAMES | | | | | | 58 |
|---|--|--|--|---|---|---|---|---|--|--|--|--|--|--|--|
| M\$XFER | 12801# 12880 1# | 12802 12889# 1389# | 12803 12890 | 12804 12891 | 12832# 12892 | 12833 13084# | 12834 13089# | 12835 | 12845# | 12846 | 12847 | 12848 | 12877# | 12878 | 12879 |
| OPEN POINTE PRINTB | 1# 1# 3046 3208 3347 3494 3627 3782 3922 | 1389# 1389# 1389# 3052 3215 3362 3500 3641 3789 3928 1189# | 1399 2889 3059 3222 3370 3513 3647 3803 3940 4352 | 2902 3072 3236 3380 3519 3655 3809 12918 | 2917 3084 3243 3396 3533 3668 3823 12925 4481 | 2924 3096 3250 3408 3539 3681 3830 12932 4502 | 2938 3109 3264 3414 3553 3688 3837 12939 4568 | 2950 3121 3278 3423 3561 3701 3844 12946 4583 | 2962 3127 3285 3430 3568 3708 3851 4596 | 2978 3133 3293 3448 3581 3714 3865 | 2984 3146 3307 3455 3587 3728 3879 | 2997 3159 3313 3461 3600 3740 3887 | 3013 3166 3320 3467 3606 3752 3895 | 3025 3179 3334 3474 3613 3764 3903 | 3031 3193 3340 3481 3620 3776 3916 |
| PRINTS PRINTX READBU READEF RFLAGS SETPRI SETVEC | 1 # 1 # 1 # 1 # 1 # | 1389# 1389# 1389# 1389# 1389# 1389# 1389# | 4681 4199 4726 | 4686 4213 4924 | 4691 6949 5027 | 4696 7122 5179 | 5227 | 6913 | 7079 | | · · · · · · · · · · · · · · · · · · · | | , | | |
| SLASH STARS SVC XFER XFERF XFERT | 1# 1# 1# 1# 1# | 1389# 1389# 1389# 1389# 1389# 1389# | 4646# | | 4820# | 4831# | 12732# | | | | | | | | |
| . ABS. UNAREP MICRA MICRB MICRC MICRC MICRD MICRE MICRE | 000000 000000 053774 000000 000000 000000 000000 | 000 001 002 003 004 005 006 007 | | | | | | | | | | | | | |

ERRORS DETECTED: 0
% DEFAULT GLOBALS GENERATED: 15

010 011 012

MICRE 000000 MICRF 000000 MICRG 000000 NOMORE 000000

CZUAAA.OBJ,CZUAAA.LST/CRF/SOL/NL:TOC=SVC34R.P11,CZUAAA.P11 RUN-TIME: 77 91 11 SECONDS' RUN-TIME RATIO: 361/181=1.9 CORE USED: 33K (66 PAGES)

| | 10 3/110 03 11132 | |
|---|--|--|
| 1 2 3 | | .TITLE MICROA - MICROCODE MODULE A |
| 5 | 000000 | .CSECT MICRA .SBTTL REGISTER DEFINITIONS USED BY THE T11 |
| 789011234567890123456789012333333333333333333333333333333333333 | 021000 021002 021004 021006 021010 021012 021014 021016 021020 021022 021024 021026 021030 021032 021034 021036 021042 021042 021060 021062 021064 021062 | IPCSRO = 21000 ;INTERNAL PCSRO ADDRESS DMACSR = 21002 ;DMA ENGINE CONTROL STATUS REGISTER DMATO = 21004 ;DMA ENGINE TO ADDRESS REGISTER #0 DMAT1 = 21006 ;DMA ENGINE TO ADDRESS REGISTER #0 MDMA1 = 21010 ;MICROCPU DMA TO ADDRESS REGISTER #1 MDMA0 = 21012 ;MICROCPU DMA TO ADDRESS REGISTER #1 MDMARO = 21014 ;MICROCPU DMA DATA REGISTER - AUTO INCREMENT R/O MDMAR1 = 21016 ;MICROCPU DMA DATA REGISTER - AUTO DECREMENT R/O IPCSR1 = 21020 ;INTERNAL PCSR1 ADDRESS DMAF = 21022 ;DMA ENGINE FROM ADDRESS REGISTER MDMAWC = 21024 ;DMA ENGINE WORD COUNT REGISTER MDMAWO = 21026 ;MICROCPU DMA DATA REGISTEP - AUTU INCREMENT W/O LTAC = 21030 ;LINK TRANSMIT ADDRESS COL - R REGISTER LTRBUF = 21034 ;CLEAR FIFO MDMAWN = 21035 ;MICROCPU DMA DATA REGISTER - AUTO DECREMENT W/O PCSRSW = 21044 ;MICROCPU DMA DATA REGISTER LRBUF = 21045 ;MICROCPU DMA DATA REGISTER LRBUF = 21046 ;MICROCPU DMA STATUS REGISTER LRBUF = 21046 ;PHYSICAL ADDRESS ROM BYTE 0 HYAD1 = 21060 ;PHYSICAL ADDRESS ROM BYTE 1 PHYAD2 = 21064 ;PHYSICAL ADDRESS ROM BYTE 3 PHYAD4 = 21070 ;PHYSICAL ADDRESS ROM BYTE 3 PHYAD5 = 21072 ;PHYSICAL ADDRESS ROM BYTE 5 |
| 33 34 35 | | .SBTTL OTHER DEFINITIONS USED BY THE MICROCODE |
| 36789 4423456789 55555555555556 | 100000 040000 020000 010000 004000 001000 000400 000200 000100 000040 000020 000010 0000020 0000002 | BIT15 = 100000 BIT13 = 20000 BIT12 = 10000 BIT11 = 4000 BIT10 = 2000 BIT9 = 1000 BIT9 = 200 BIT9 = 100 BIT9 |
| 53 54 55 56 | 012400 000340 000300 000240 | LASFTP = BIT8!BI*10!BIT12 ; LCAD AND START FUNCTION TES PATTERN PRIO7 = 340 PRIO6 = 300 PRIO5 - 240 |

```
MICROA - MICROCODE MODULE A
                                                  MACY11 30(1046) 11-JAN-83 09:50 PAGE 2
MICROA.MAC
                      10-JAN-83 17:52
                                                                OTHER DEFINITIONS USED BY THE MICROCODE
                         000200
     200
                                                               PR104
                                                                           =
                                                               PRIO3
                         000100
                                                               PR102
                                                                                        100
                                                                           =
                         000040
                                                                                        40
                                                               PRI01
                                                                           Ξ
                         000000
                                                               PRIOD
                                                               PCSRO - PORT CONTROL STATUS REGISTER O
                         100000
                                                               ŠERI
                                                                                        BIT15
BIT14
                                                                           =
                                                               PCEI
                                                                           =
                         020000
                                                                                        BIT13
                                                               RXI
                                                                           =
                         010000
                                                                                        BIT12
                                                               IXI
                                                                           =
                         004000
                                                               DNI
                                                                           =
                                                                                        BIT11
                         002000
                                                               RCEI
                                                                           =
                                                                                        BIT10
                         000400
                                                                                       BIT8
                                                               FATI
                                                                                                    ; VECTOR ADDRESS FOR THE SANITY TIMER
; VECTOR ADDRESS FOR THE NON-EXISTANT MEMORY TIMOUT
; VECTOR ADDRESS FOR CSR WRITE INTERRUPT
; VECTOR ADDRESS FOR DMA DONE INTERRUPT
; VECTOR ADDRESS FOR LINK MEMORY PARITY ERROR
; VECTOR ADDRESS FOR NON-EXISTANT UNIBUS ADDRESS
; STACK LOCATION
                         000134 000150
                                                              SANVEC= 134
NXMVEC= 150
                         000064
                                                               CSRVEC= 64
                         000114
                                                               DMAVEC = 114
                         000140
                                                               PARVEC= 140
                         000150
                                                              NXMVEC= 150
                         001000
                                                               STACK= 1000
                                                                                                    ; IN MICROMONITOR STATE
; IN A TEST STATE
; IN ERROR_STATE
                         000001
                                                               INMON=
                         000002
                                                               INTST=
                         000003
                                                               INERR=
                         000001
                                                               CSRFLG= BITO
                                                                                                     CSR WRITE INTERRUPT OCCURED
                                                                                                    :UNEXPECTED ERROR OCCURED
:PARITY ERROR OCCURED
:NON-EXISTANT MEMORY ERROR OCCURRED
:AK WORDS
                         000002
                                                               ERRFLG= BIT1
                         000004
                                                               PARFLG= BIT2
                         000010
                                                              NXMFLG= BIT3
                         020000
                                                              S124K= 20000
                         040000
                                                               S128K=
                                                                                                     :8K WORDS
                                                                           S124K+2
                                                                                                    SIZE OF WRITEABLE CONTROL STORE
SIZE OF I/O PAGE
SIZE OF ROM
SIZE OF LINK MEMORY
                         020000
                                                              WCSSIZ= SIZ4K
                         020000
                                                              IOSIZ= SIZ4K
                         040000
                                                              ROMSIZ= SIZ8K
                                                              LINSIZ= SIZ8K+2-4
WCSADR= 0
                         077774
                                                                                                    ;SIZE OF LINK MEMORY
;BASE ADDRESS OF WCS
;BASE ADDRESS OF I/O PAGE
;BASE ADDRESS OF ROM
;BASE ADDRESS OF LINK MEMORY
;FLAG INDICATING DATA ERROR OCCURRED
;FLAG INDICATING ADDRESS ERROR OCCURRED
;FLAG INDICATING PARITY ERROR OCCURRED
                         000000
                                                              IOADR = WCSADR+WCSSIZ
                         020000
                         040000
                                                              ROMADR = IOADR + IOSIZ
                         100600
                                                              LINADR = ROMADR+ROMS1Z
                                                              DATERR= 0
                         000000
      98
                                                              ADRERR= 1
                         000001
      99
                         200000
                                                              PARERR= 2
     100
                         177774
                                                                                                    LINK MODE REGISTER
LINK STATION ADDRESS RAM REGISTER
                                                               MODREG= LINADR+LINSIZ
     101
                         177774
                                                               ADDREG = MODREG
                                                                                                    LINK COMMAND REGISTER
     102
                         177776
                                                              CMDREG= MODREG+2
    103
```

| MICRO MICRO | A - MICRO A.MAC | CODE MODE 10-JAN-8 | JLE A 5 17:52 | MACY11 | 30(1046) 11-JA OTHER DEFINIT | N-83 09:50 PAGE 3 |)E |
|--|--|-----------------------|----------------------------|------------------|----------------------------------|---|--|
| 10 10 10 10 | 4 15 6 17 18 | | | | .SBTTL MICRO | CODE MODULE A | |
| 10 10 10 10 11 11 11 | 9 0 1 2 3 | | | | THIS MODULE (FUNCTION TEST | ONTAINS MICROCODE THAT IS | USED FOR THE LOAD AND START |
| 11 11 11 | 6 000000 7 000004 8 000017 9 000020 | 012737 | 000340 012402 004000 | 021020 021000 | MICFOA::MTPS MOV MOV BR | #PRIO7 #LASFTP!INTST,@#IPCSR1 #DNI,@#IPCSR0 | DISABLE INTERRUPTS SET TEST PATTERN AND IN TEST STATE BITS SET DONE BIT HANG HERE UNTIL HOST RESETS US |
| · 12 | 1 00002 | 000024 | | | MICASZ::MICASZ .END | -MICROA+2 | SIZE OF MICROCODE MODULE A |

| MICROA - MICRO MICROA.MAC | CODE MODULE A 10-JAN-83 17:52 | MACY11 | 30(1046) 11-JAN-83 09:50 PAGE 5 CROSS REFERENCE TABLE USER SYMBOLS |
|--|--|--|---|
| ADDREG= 177774 ADRERR= 000001 BIT0 = 000002 BIT10 = 002000 BIT11 = 004000 BIT11 = 010000 BIT13 = 020000 BIT14 = 040000 BIT15 = 100000 BIT15 = 000010 BIT4 = 000020 BIT4 = 000020 BIT5 = 000040 | 101 m 98 m 51 m 50 m 41 m 40 m 39 m 38 m 37 m 36 m 49 m 48 m 47 m 46 m | 83 84 559 565 665 86 | 70 68 |
| BIT6 = 000100 BIT7 = 000200 BIT8 = 000400 BIT9 = 001000 CL IF = 021034 CMDREG = 177776 CSRFLG = 000001 CSRVEC = 000064 DATERR = 000000 DMACSR = 021002 DMAF = J21022 DMAT0 = 021004 DMAT1 = 021006 | 45 N 44 N 42 N 22 N 102 N 83 N 75 N 97 N 17 N 10 N 11 N | 53 | 71 |
| DMAVEC = 000114 DMAWC = 021024 DNI = 004000 ERRFLG = 000002 FATI = 000400 INERR = 000003 | 76 <i>n</i> 18 <i>n</i> 69 <i>n</i> 84 <i>n</i> 71 <i>n</i> 82 <i>n</i> | 118 | |
| INMON = 000001 INTST = 000002 IOADR = 020000 IDSIZ = 020000 IPCSR0= 021000 IPCSR1= 021020 LASFTP= 012400 LFRBUF = 021032 LINADR= 130000 LINSIZ= 077774 LRBUF = 021044 LTAC = 021030 | 80 m 81 m 94 m 90 m 8 m 16 m 53 m 21 m 96 m 92 m 26 m 20 m | 117 95 95 118* 117* 117 | |
| MDMARO = 021014 MDMAR1 = 021016 MDMAW0 = 021026 MDMAW1 = 021036 MDMAO = 021010 MDMA1 = 021012 MDMSR = 021042 MICASZ 0000221 MICROA 0000001 MODREG = 177774 NXMFLG = 000010 | 14 <i>n</i> 15 <i>n</i> 19 <i>n</i> 23 <i>n</i> 12 <i>n</i> 13 <i>n</i> 25 <i>n</i> RG 002 121 <i>n</i> | 121 101 | 102 |

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MICROA - MICROCODE MODULE A MICROA.MAC 10-JAN-83 17:52
                                                            MACY11 30(1046) 11-JAN-83 09:50 PAGE 6
                                                                           CROSS REFERENCE TABLE -- USER SYMBOLS
NXMVEC= 000150
PARERR= 000002
PARFLG= 000004
PARVEC= 000140
                                                   74#
                                                                  78#
                                                   99#
                                                   85#
77#
PARVEC = 000140

PCEI = 040000

PCSRSW = 021040

PHYAD0 = 021060

PHYAD1 = 021062

PHYAD2 = 021064

PHYAD3 = 021066

PHYAD4 = 021070

PHYAD5 = 021072

PRIO0 = 000000

PRIO1 = 000040

PRIO2 = 000100

PRIO3 = 000140

PRIO4 = 000200
                                                   60#
                                                   24N
27N
28N
29N
30N
                                                   31#
                                                   61#
                                                   60M
                                                   59#
                                                   58#
57#
PRIO4 = 000200
PRIO5 = 000240
PRIO6 = 000300
PRIO7 = 000340
                                                   56#
55#
                                                   54#
                                                               116*
RCEI = 002000
ROMADR= 040000
ROMSIZ= 040000
                                                   70#
                                                   95#
                                                                  96
                                                                 96
                                                   91#
RXI = 020000
SANVEC= 000134
                                                   67#
                                                   73#
SERI = 100000
SIZ4K = 020000
                                                   65#
                                                   87#
                                                                  88
                                                                                89
                                                                                               90
SIZ8K = 040000
STACK = 001000
                                                   88#
                                                                 91
                                                   79#
TXI = 010000
WCSADR= 000000
                                                   68#
                                                   93#
                                                                 94
WCSS1Z= 020000
= 000024R
                                                   89#
                                                                  94
                                    002
                                                 119
 . ABS.
               000000
                                    000
               000000
                                    001
MICRA
               000024
                                    002
  ERRORS DETECTED: 0
  DEFAULT GLOBALS GENERATED: 0
  MICROA.OBJ, MICROA.LST/CRF/DOC/NL:TOC/SOL=MICROA.MAC
  RUN-TIME: .5 .2 .2 SECONDS
RUN-TIME RATIO: 59/1=55.7
  CORE USED: 8K (16 PAGES)
  DOCUMENT PAGES: 5
```

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MACY11 30(1046) 11-JAN-83 09:50 PAGE 1
MICROB - MICROCODE MODULE B
MICROB.MAC
                 10-JAN-83 17:52
                                                  .TITLE MICROB - MICROCODE MODULE B
                    000000
                                                  .CSE'T MICRB
                                                  .SBTTL
                                                             REGISTER DEFINITIONS USED BY THE 111
                                                                      21000
21002
21004
21006
21010
21012
21014
                    021000
                                                  IPCSRO
                                                                                :INTERNAL PCSRO ADDRESS
                    021002
021004
                                                                                DMA ENGINE CONTROL STATUS REGISTER DMA ENGINE TO ADDRESS REGISTER #1
                                                  DMACSR
                                                           =
     DMATO
                                                            =
                    021006
                                                  DMAT1
                                                                                MICROCPU DMA TO ADDRESS REGISTER #0
MICROCPU DMA TO ADDRESS REGISTER #1
MICROCPU DMA DATA REGISTER - AUTO INCREMENT R/O
                    021010
                                                  MDMAO
                                                            =
                    021012
                                                  MDMA1
                                                            =
                    021014
                                                  MDMARO
                                                            =
                                                                      21016
21020
21022
                    021016
                                                                                MICROCPU DMA DATA RÉGISTER - AUTO DECREMENT R/O
                                                  MDMAR1
                    021020
                                                            =
                                                                                INTERNAL POSRT ADDRESS
                                                  IPCSR1
                    021022
                                                                                DMA ENGINE FROM ADDRESS REGISTER
                                                  DMAF
                                                                      21024
21026
                                                  DMAWC
                                                                                DMA ENGINE WORD COUNT REGISTER
                    021024
                                                                                MICROCPU DMA DATA REGISTER - AUTO INCREMENT W/O
                    021026
                                                  MDMAWO
                                                            =
                                                                      21030
                                                                                LINK TRANSMIT ADDRESS COUNTER REGISTER
                    021030
                                                  LTA'
                                                                      21032
                                                  LFRBUF
                                                                                LINK RECIEVE BUFFER ADDRESS FIFO
                    021032
                                                            =
                                                                      21034
                                                            =
                                                                                 CLEAR FIFO
                    021034
                                                  CLRFIF
                    021036
                                                                      21036
                                                                                 MICROCPU DMA DATA REGISTER - AUTO DECREMENT W/O
                                                  MUMAW1
                                                                      21040
                    021040
                                                                                 SWITCH PACK REGISTER
                                                  PCSRSW
                                                           =
                                                                                MICROCPU DMA STATUS REGISTER
LINK RECIEVE BUFFER COMPLETED
                    021042
                                                  MDMSR
                                                                      21042
                    021044
                                                                      21044
                                                  LRBUF
                    021060
                                                                      21060
                                                                                 PHYSICAL ADDRESS ROM BYTE
                                                  PHYAD0
                                                                                PHYSICAL ADDRESS ROM BYTE PHYSCIAL ADDRESS ROM BYTE
                    021062
                                                                      21062
                                                  PHYAD1
                    021064
                                                  PHYAD2
PHYAD3
                                                                      21064
                    021066
                                                                      21066
                                                                                 PHYSICAL ADDRESS RUM BYTE
                                                                      21070
21072
                                                                                PHYSICAL ADDRESS ROM BYTE PHYSICAL ADDRESS ROM BYTE
                    021070
                                                  PHYAD4
                                                            =
                    021072
                                                           =
                                                                                                      ROM BYTE
                                                  PHYAD5
                                                  .SBTTL
                                                             OTHER DEFINITIONS USED BY THE MICROCODE
                    100000
040000
020000
                                                                      100000
                                                  BIT15
                                                  BIT14
                                                            =
                                                                      20000
                                                  BIT13
                                                            =
                    010000
                                                                      10000
                                                  BIT12
                                                                      4000
                    004000
                                                  BIT11
                    002000
                                                                      2000
                                                  BIT10
                                                                      1000
                    001000
                                                  BIT9
                                                            =
                                                  BI 18
BI 17
                                                                      400
200
                    000400
                                                            =
                    000200
                                                            =
                                                                      100
                    000100
                                                  BI16
                                                            =
                    000040
                                                  BIT5
                                                            =
                    000020
                                                  BI14
                                                            =
                                                                      10
                    000010
                                                  BIT3
                                                            =
                                                                      421
                    000004
                                                  BIT2
                                                            =
                    000002
                                                  BITT
                                                            =
                    000001
                                                  BI10
                                                                      BIT8:BIT10:BIT12 : LCAD AND START FUNCTION TEST PATTERN 340
                    012400
                                                  LASFTP
                                                            Ξ
                                                  PR107
                                                            =
                                                                      300
                    000300
                                                  PR106
                                                            =
```

PR105

=

240

56

000240

```
MICROB - MICROCODE MODULE B
                                                        MACY11 30(1040) 11-JAN-83 09:50 PAGE 2
MICROB.MAC
                         10-JAN-83 17:52
                                                                        OTHER DEFINITIONS USED BY THE MICROCODE
                                                                                                   200
140
                            000200
                                                                       PR104
       58
59
                            000140
                                                                       PRIO3
                                                                                    =
                            000100
                                                                       PRT 02
                                                                                                   100
                                                                                    =
      000040
                                                                       PRIOT
                                                                                                   40
                                                                                    =
                            000000
                                                                       PRIOD
                                                                                                   0
                                                                                    =
                                                                       PCSRO - PORT CONTROL STATUS REGISTER O
                            100000
                                                                       ŠERI
                                                                                                   BIT15
                            040000
                                                                       PCEI
                                                                                                   B1114
                                                                                    =
                            020000
                                                                       RXI
                                                                                                   BIT13
                                                                                     =
                            C10000
                                                                       TXI
                                                                                                   BIT12
                                                                                    =
                            004000
                                                                                                   BIT11
                                                                       DNI
                                                                                    =
                            002000
                                                                                                   BIT10
                                                                       RCEI
                                                                                    =
                            000400
                                                                                                   B:18
                                                                       FATI
                                                                                    =
                                                                                                                :VECTOR ADDRESS FOR THE SANITY TIMER
:VECTOR ADDRESS FOR CSR WRITE INTERRUPT
:VECTOR ADDRESS FOR DMA DONE INTERRUPT
:VECTOR ADDRESS FOR LINK MEMORY PARITY ERROR
:STACK LOCATION
:IN MICROMONITOR STATE
:IN A TEST STATE
:IN ERROR STATE
:CSR WRITE INTERRUPT OCCURED
:UNEXPECTED ERROR OCCURED
:PARITY ERROR OCCURED
:NON-EXISTANT MEMORY ERROR OCCURRED
:NPR TIMEOUT OCCURRED
:PCSRO FLAG INDICATING NPR ERROR OCCURRED
                                                                       SANVEC= 134
CSRVEC= 64
                            000134
                            000064
                            000114
                                                                       DMAVEC= 114
                            000140
                                                                       PARVEC= 140
                            001000
                                                                       STACK= 1000
                            000001
                                                                       INMON=
                            000002
                                                                       INTST=
                            000003
                                                                       INERR=
                                                                      CSRFLG= BITO
ERRFLG= BIT1
PARFLG= BIT2
NXMFLG= BIT3
NPRFLG= BIT4
                            000001
                            000002
                            000004
                            000010
                            000020
                                                                                                                 PCSRO FLAG INDICATING NPR ERROR OCCURRED PCSRO FLAG INDICATING NON-EXISTANT MEMORY ERROR OCCURRED PCSRO FLAG INDICATING UNEXPECTED INTERRUPT OCCURRED
                            100000
                                                                      NPRERR= BIT15
                            040000
                                                                      NXMERR= BIT14
                            020000
010000
                                                                      UNIERR= BIT13
PARERR= BIT12
                                                                                                                 PCSKU FLAG INDICATING LINK MEMORY PARITY ERROR OCCURRED
                                                                      SIZ4K= 20000

SIZ8K= SIZ4K+2

WCSSIZ= SIZ4K

IOSIZ= SIZ4K

ROMSIZ= SIZ8K

LINSIZ= SIZ8K+2-4
                            020000
                                                                                                                  :4K WORDS
                                                                                                                 :8K WORDS
:SIZE OF WRITEABLE CONTROL STORE
:SIZE OF I/O PAGE
:SIZE OF ROM
                            040000
                            020000
                            040000
077774
                                                                                                                 ;SIZE OF LINK MEMORY
;BASE ADDRESS OF WCS
;BASE ADDRESS OF I/O PAGE
;BASE ADDRESS OF ROM
;BASE ADDRESS OF LINK MEMORY
;FLAG INDICATING DATA ERROR OCCURRED
                            000000
                                                                       WCSADR= 0
                            020000
                                                                       IOADR= WCSADR+WCSSIZ
                            040000
                                                                       ROMADR = IOADR + IOSIZ
                            100000
                                                                      LINADR = ROMADR+ROMSIZ
     100
                                                                      DATERR= 0
                            000000
     101
                            000001
                                                                       ADRERR= 1
                                                                                                                 :F! AG INDICATING ADDRESS ERROR OCCURRED
                                                                                                                 LINK MODE REGISTER
LINK STATION ADDRESS RAM REGISTER
LINK COMMAND REGISTER
                            177774
     102
                                                                       MODREG= LINADR+LINSIZ
     103
                                                                      ADDREG= MUDREG
                            177776
                                                                      CMDREG= MODREG+2
     104
     105
```

| MICROB - MICROCODE MODULE B MICROB.MAC 10-JAN-83 17:52 | MACY11 30(1046 UTHER | S) 11-JA R DEFINIT | N-83 09:50 PAGE 3 IONS USED BY THE MICROCO | DE |
|--|---|---|---|--|
| 106 107 108 | .SBTTL | MICROC | ODE MODULE & | |
| 109 110 111 112 113 114 115 | THIS | 1-4(5) | ONTAINS A MICROMONITOR AP | ND MICROCODE FOR: |
| 117 118 000000' 106427 000340 119 000004' 012737 000000 125 000012' 012706 001000 '21 000016' 012767 000001 122 000024' 016737 000504 123 000032' 012737 004000 124 000040' 010700 125 000042' 062700 000344 126 000046' 005001 127 000050' 010021 128 000052' 012721 000340 | 177776 000510 021^20 021600 10\$: | 3::MTPS MOV MOV MOV MOV MOV ADD CLR MOV CMP BLT | #PRIO7 #0,a#CMDREG #STACK,SP #INMON,PCSR1 PCSR1,a#IPCSR0 PC,R0 #ERRINT,R0 R1 R0,(R1)+ #PRIO7,(R1)+ R1,#1000 | DISABLE INTERRUPTS TURN OFF THE LINK SETUP STACK TELL HOST WE ARE IN MICROMONITOR TELL HOST THE LOAD AND START FINISHED GET ADDRESS OF UNEXPECTED ERROR HANDLER FILL ALL UNUSED VECTORS WITH TRAP HANDLER |
| 130 000062' 002772 131 132 00064' 010700 133 000066' 062700 000422 134 000072' 010037 000140 135 000076' 012737 000340 | 000142 | MOV ADD MOV MOV | PC,RO #PARINT,RO RO,@#PARVEC #PRIO7,@#PARVEC+2 | SETUP PARITY TRAP VECTOR |
| 137 000104' 010700 138 000106' 062700 000324 139 000112' 010037 000114 140 000116' 012737 000340 | 000116 | MOV ADD MOV MOV | PC.RO #DMAINTRO RO.@#DMAVEC #PRIO7.@#DMAVEC+2 | SETUP DMA INTERRUPT VECTOR |
| 141 142 000124' 010700 143 000126' 062700 000250 144 000132' 010037 000064 145 000136' 012737 000200 | 000066 | MOV ADD MOV MOV | PC.RO #CSRWRTRO RO.a#CSRVEC #PRIO4.a#CSRVEC+2 | :SETUP CSR WRITE VECTOR |
| 146 147 030144' 010700 148 900146' 062700 000256 149 000152' 010037 000134 150 000156' 012737 000240 | 000136 | MOV ADD MOV MOV | PC,RO #TIMINT,RO RO,@#SANVÉC #PRIO5,@#SANVEC+2 | SETUP SANTITY TIMER VECTOR |
| 151 152 000164' 013700 021040 153 000170' 052700 176000 154 000174' 006300 155 000176' 006300 156 000200' 006300 157 000202' 062700 000004 158 000206' 010067 000324 159 000212' C12767 000003 | 000320 | MOV BIS ASL ASL ADD MOV MOV | a#PCSRSW.RO #176000.RO RO RO RO #4.RO RO,IPCSR2 #3.IPCSR2+2 | GET SWITCH PACK BITS MAP THEM INTO HOST I/O PAGE SHI, I OVER TO POSITION CORRECTLY :PCSR2 IS PCSR0+4 :SAVE PCSR2 ADDRESS :HIGH ORDER BITS 17:16 :INITIALIZE FLAG WORD |
| 160 000220° 005067 000304 161 000224° 106427 000000 | 15\$: | CLR MTPS | FLĞ2 #PRIOD | ;INITIALIZE FLAG WORD ;ALLOW INTERRUPTS |

| MICROB - MICROCODE MODULE MICROB.MAC 10-JAN-83 1 | E B MACY11 30 17:52 M |)(1046) 11-JAN- MICROCODE MODULE | -83 09:50 PAGE 4 | |
|--|---|---|---|--|
| 1(4 000234 0017/5 | 000274 2 | 20 \$: TST BEQ | FLG2 20\$ | ;WAIT FOR A COMMAND FROM HOST |
| 165 166 000236' 106427 0 167 000242' 032767 0 168 000250' 001001 169 000252' 000777 170 | 000340 000001 000260 | MTPS BIT BNE BR | #PRIO7 #CSRFLG,FLG2 30\$ | RAISE CPU PRIORITY TO SERVICE COMMAND DID HOST GIVE US A COMMAND? YES NO, ERROR SO JUST SIT HERE FOR LACK OF ANYTHING BETTER TO DO |
| 172 000254 013700 0 173 000260 042700 1 174 000264 001004 175 000266 012737 0 176 000274 000432 | 177760 000001 021020 | 50\$: MOV BIC BNE MOV BR 55\$: CMP | GWIPCSRO,RO 4177760,RO 35\$ WINMON, @WIPCSR1 50\$ W17,RO | GET WHAT HOST WROTE TO PCSRO STRIP ALL BUT COMMAND BITS WAS IT THE CLEAR FUNCTION? YES, CLEAR SELF TEST BITS RETURN TO OPERATIONAL MICROCODE? |
| 178 000302 001432 179 000304 162700 0 180 000310 010701 | 000017 000001 0002 4 | BEQ SUB Mov ADD | 60\$ #1,R0 PC,R1 #TBLB,R1 | :YES :WILL FORM A TABLE INDEX WITH THIS :GET ADDRESS OF OUR COMMAND TABLE |
| 183 000320° 060001 184 000322° 061101 185 000324° 004711 186 000326° 103404 187 000330° 112767 0 188 000336° 000403 189 000340° 112767 0 | | ASL ADD ADD ISR S MUVB BR MOVB | RO RO,R1 (R1),R1 Pi,(R1) 40\$ #INMON,PCSR1 45\$ #INERR,PCSR1 | :MAKE COMMAND A BYTE OFFSET :USE IT TO INDEX INTO COMMAND TABLE :R1 NOW HAS COMMAND ROUTINE ADDRESS :EXECUTE AS COMMANDED FROM HOST :ERROR OCCURRED :INDICATE TO HOST WE ARE BACK IN :MICROMONITR :INDICATE TO HOST ERROR OCCURRED |
| 191 000354 012737 0 | 004000 021000 | 55\$: MOV MOV 50\$: CLR BR | PCSR1, aMIPCSR1 MDNI, aMIPCSR0 FLG2 15\$ | :TELL HOST THIS MICROTES? FINISHED :RESET FLAG WORD :GO WAIT FOR ANOTHER COMMAND |
| 195 000370 005000 | 040006 | 00\$: CLR. JMP | R0 a#40006 | :FAKE SUCCESSFULL SELF TEST DONE :START OPERATIONAL MICROCODE |
| 198 000376' 052767 0 199 000404' 000002 | 000001 000124 0 | SRWRT: BIS | #CSRFLG,FLG2 | ; INDICATE A CSR WRITE INTERRUPT OCCURED |
| | 000002 000114 E 020000 021000 | RRINT: BIS MOV BR | WERRFLG, FLG2 WUNIERR, @WIPCSRO | :INDICATE A UNEXPECTED INTERRUPT OCCURED :TELL HOST AN UNEXPECTED INTERRUPT :HAPPENED :JUST SIT HERE AND SPIN WHEELS |
| 205 206 000424 005267 0 207 000430 000002 | 000102 t | TIMINT: INC RTI | SANTIM | COUNT TICKS AS THEY OCCUR |
| 210 000440° 032767 0 211 000446° 001404 | 021002 000106 D 040000 000100 040000 021000 | OMAINT: MOV BIT BEU MOV | a#DMACSR,DMDONE #BIT14,DMDONE 105 #NXMERR,a#IPCSRO | GET DMA STATUS DID A NON-EXISTANT MEMORY INTERRUPT OCCUR? NO YES, TELL HOST A NON-EXISTANT MEMORY LOCATION WAS ADDRESSED |
| 214 000456' 000407 215 000460' 032767 1 216 000466' 001407 | 100000 000060 1 100000 021000 | BR BIT BEQ MOV | 20\$ #BIT15,DMDONE 30\$ #NPRERR,@#IPCSRO | DID A NPR TIMEOUT OCCUR? |

| MICROB. | - MICROCO MAC 1 | ODE MODUI 0-JAN-83 | LE B 17:52 | MACY11 | 30(1046) MICROCOL | 11-JAN E MODUL | -83 09:50 PAGE 5 | |
|--|-------------------------------|---|------------------|------------------|--|-------------------|--|--|
| 218 219 220 | 000476' 000504' 000506' | 000777 | 100000 | 021002 | 20 \$: | MOV BR RTI | #BIT15,@#DMACSR | CLEAR THE INTERRUPT IN THE DMA ENGINE SIT HERE AND SPIN WHEELS |
| 221 222 223 | 000510° 000516° | 0>2767 | 000004 010000 | 000012 021000 | PARINT: | _ | #PARFLG,FLG2 #FARERR,@#IPCSRO | ;SET PARITY ERROR OCCURRED :TELL HOST A LINK MEMORY PARITY ERROR |
| 224 225 226 | 0005241 | 000777 | | | | BR | • | CCCURRED :WALT FOR HOST TO TIME OUT |
| 227 | 000526 | 000024 | | | TBLB: | .WORD | MICB! | ;WCS MEMORY TEST |
| 221 222 223 223 223 223 223 233 233 233 | | 000000 000000 000000 000000 000000 00000 | 000000 | | FLG2: SANTIM: PCSR1: IPCSR2: PCBADR: DMDONE: BAKPAT: | .WORD | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | :FLAG WOPD :COUNT FOR SANITY TIMER :COPY OF PCSR1(BECAUSE WE CAN'T DO BYTE) :ADDRESS IN HOST MEMORY FOR PCSR2 :ADDRESS IN HOST MEMORY FOR PCB :DMA INTERRUPT HAPPENED :BACKGROUND PATTERN FOR MEMORY TESTS |

| 238 238 241 242 243 2445 2467 248 249 255 257 | | | | THIS MICROTEST CHECKS THE WCS MEMORY. IT DOES SO BY RUNNI'NG A SERIES OF MICROSUBTESTS ON THE MEMORY BETWEEN O AND 2K(000000-10000) AND THEN RELOCATES ITSELF TO THE LOWER HALF OF WCS AND TESTS THE UPTER HALF. THE SUBTESTS ARE: A-ACCESS TEST B-ADDRESS SHIFT TEST C-DATA LATCH TEST D-ADDRESS BIT SHIFT #1 E-ADDRESS BIT SHIFT #2 F-MARCH TEST | | | | | | |
|---|--|--|--------------------------------------|--|---|---|--|--|--|--|
| 249 251 251 253 255 255 255 256 261 263 | 000552* 112767 00056 * 016737 000566* 005067 000572* 012767 000600* 012767 | | 177754 021020 000304 000300 | MICB1: | | | ; TELL HOST WE ARE TESTING ; START TESTING BOTTOM HALF FIRST ; SET LOW LIMIT JUST ABOVE VECTORS ; HIGH LIMIT IS HALF WAY INTO WCS | | | |
| 261 262 263 264 | 000606° 010700 000610° 062700 | | | 5 \$: | MOV | PC BU | GET ADDRESS OF SURTEST LIST | | | |
| 264 265 266 267 268 269 270 271 272 273 | 000614' 005067 000620' 011001 000622' 001437 000624' 060001 000626' 004711 000630' 103403 000632' 062700 000636' 000766 | 000002 | | | CLR MOV BEQ ADD JSR BCS ADD BR | FLG2 (RO),R1 30\$ RO,R1 PC,(R1) 20\$ #2,R0 10\$ | CLEAR THE FLAG WORD GET OFFSET FROM ENTRY TO SUBTEST NO MORE ENTRIES CALC SUBTEST ADDRESS GO EXECUTE SUBTEST ERROR OCCURRED IN SUBTEST POINT TO NEXT SUBTEST IN LIST | | | |
| 274 275 276 277 278 279 280 | 000640' 016737 000646' 016737 000654' 013700 000660' 013702 000664' 010037 000670' 010237 000674' 016737 | 177672 177666 021014 021014 021010 021012 000210 | 021010 021012 021026 | 20\$: | MOV MOV MOV MOV MOV MOV | IPCSR2,@#MDMA0 IPCSR2+2,@#MDMA1 @#MDMARO,R0 @#MDMARO,R2 R0,@#MDMAO R2,@#MDMA1 SUBNUM,@#MDMAWO | | | | |
| 281 283 284 285 286 | 290702 010137 002706 010337 000712 010437 000716 290261 000720 000434 | 021026 021026 021026 | | | MOV MOV SEC BR | R1,@#MDMAWO R3,@#MDMAWO R4,@#MDMAWO | LOAD PCBB+2 WITH FAILING ADDRESS LOAD PCBB+4 WITH GOOD DATA LOAD PCBB+6 WITH BAD DATA INDICATE THIS MICROTEST FAILED | | | |
| 287 288 289 290 291 292 | 000722 005767 000726 001030 000730 005267 000734 012767 000742 012767 | 000164 000156 010000 020000 | 000142 000136 | 30\$: | TST BNE INC MOV MOV | BOTH 40\$ BOTH #WCSSIZ/2,LOWLIM #WCSSIZ,HILIM | :HAVE WE DONE BOTH HALVES YET? :YES :NO. WE ARE ABOUT TO DO OTHER HALF :SET LOW LIMIT AT BOTTOM OF UPPER HALF :HIGH LIMIT IS TOP OF UPPER HALF | | | |

| MICROB - MICROCODE MODULE B MICROB.MAC 10-JAN-83 17:52 | MACY11 30(1046) 11-JA MODULE B, MICR | N-83 09:50 PAGE 7 OTEST #1 | |
|--|---|---|--|
| 293 000750' 010700 294 000752' 062700 177026 295 000756' 016701 001330 296 000762' 012702 001000 297 000766' 112022 298 000770' 005301 299 000772' 001375 300 000776' 062700 177610 301 000776' 062700 177610 | MOV ADD MOV MOV 35\$: MOVB DEC BNE | #MICROB,RO MICBSZ,R1 ; #1000,R2 ; (RO)+,(R2)+ R1 35\$ | GET BASE ADDRESS OF THIS MICROTEST GET ITS SIZE RELOCATE TO JUST ABOVE STACK RELOCATE THIS MICROTEST |
| 301 000776 062700 177610 302 001002 162700 007000 303 001006 000110 304 C01010 000241 305 001012 106746 306 001014 005767 000072 307 001020 001412 308 001022 010700 | MOV ADD SUB JMP 40\$: CLC 45\$: MFPS TST BEQ MOV | מברב • | GO DO THE UPPER HALF TEST INDICATE THIS MICROTEST SUCCESS SAVE RESULT STATUS WE DONE BOTH HALVES? NO YES, WE HAVE TO RELOCATE BACK TO |
| 297 000766* 112022 298 000770* 005301 299 000772* 001375 300 000776* 062700 177610 302 001002* 162700 007000 303 001006* 000110 304 C01010* 000241 305 001012* 106746 306 001014* 005767 000072 307 001020* 001412 308 001022* 010700 309 001024* 062700 176754 310 001030* 016701 001256 311 001034* 012702 010000 312 001040* 112022 313 001042* 005301 314 001044* 001375 315 001046* 106426 316 001050* 112767 000001 317 001056* 016737 177452 318 001066* 000026 321 001070* 000162 322 001072* 000320 323 001074* 000432 324 001076* 000670 325 001100* 001002 326 001102* 000000 | 50\$: MOV MOV MOV MOV DEC BNE S5\$: MTPS MOVB MOV RTS | #MICROB,RO MICBSZ,R1 #WCSSIZ/2,R2 (RO)+,(R2)+ R1 50\$ (SP)+ #1,PCSR1+1 PCSR1,@#IPCSR* | WHERE WE WERE RESTORE RESULT STATUS TELL HOST WHICH TEST THIS WAS RETURN TO MICROMONITOR |
| 319 320 001066' 000026 321 001070' 000162 322 001072' 000320 323 001074' 000432 324 001076' 000670 325 001100' 001002 326 001102' 000000 | B1STBL: MICB1A MICB1B MICB1C MICB1D MICB1E MICB1F .WORD | | END OF LIST |
| 328 001104' 000000 329 001106' 000000 330 001110' 000 331 001111' 000 332 001112' 000000 | LOWLIM: .WORD HILIM: .WORD SUBNUM: .BYTE ERRTYP: .BYTE BOTH: .WORD | | LOW LIMIT OF MEMORY TESTS HIGH LIMIT OF MEMORY TESTS CURRENT SUBTEST # BEING EXECUTED TYPE OF ERROR, DATA =0, ADDRESS-1 FLAG INDICATING WHEN BOTH HALVES OF MCS HAVE BEEN TESTED |

| MICROB - MICROCODE MODULE B MA MICROB.MAC 10-JAN-83 17:52 334 335 336 337 338 339 340 341 342 343 | .SBTTL MODU | 30(1046) 11-JAN-83 09:50 PAGE 8 MODULE B, MICROTEST #1, MICROSUBTEST A .SBITL MODULE B, MICROTEST #1, MICROSUBTEST A .THIS IS AN ACCESS TEST OF WCS MEMORY. IT WRITES ONES IN MEMORY BETWEEN LOWLIM AND HILIM AND VERIFIES SAME. IT THEN WRITES .ZEROS AND VERIFIES SAME. IT ALSO CHECKS FOR BOGUS PARITY ERRORS. | | | | | |
|--|--|---|--|--|--|--|--|
| 344 001114' 010046 345 001116' 112767 000001 17 346 001124' 106427 000300 347 001130' 012703 177777 348 001134' 016700 177744 | MICB1A: MOV MOVB MTPS MOV 5\$: MOV 10\$: MOV CMP BLO | #1,SUBNUM #PRIO6 #177777,R3 LOWLIM,RO R3,(R0)+ R0,HILIM 10\$ | :SAVE RO :TELL WE ARE IN SUBTEST A :ALLOW PARITY ERRORS :GOOD DATA = ALL ONES :GET BASE ADDRESS OF MEMORY :WRITE ALL OVER MEMORY | | | | |
| 349 001140' 010320 350 001142' 020067 177740 351 001146' 103774 352 353 001150' 016701 177730 354 001154' 011104 355 001156' 032767 000004 17 356 001166' 020304 358 001170' 001007 359 001172' 112767 010000 17 360 001200' 000261 361 001202' G00421 362 | BEQ CMP BNE | LOWLIM,R1 (R1),R4 #PARFLG,FLG2 15\$ R3,R4 20\$ #PARERR,ERRTYP | POINT BACK TO BASE READ DATA DID A PARITY ERROR OCCUR? NO YES, WAS DATA READ GOOD? NO, DATA ERROR TELL MICROMONITOR TYPE OF ERROR TELL MICROMONITOR ERROR OCCURRED LEAVE | | | | |
| 363 001204' 020304 364 001206' 001405 365 001210' 112767 000000 17 366 001216' 000261 367 001220' 000412 | 15\$: CMP BEQ 7673 20\$: MOVB SEC BR | R3,R4 30\$ #DATERR,ERRTYP 40\$ | :WAS DATA GOOD? :YES :TELL MICROMONITOR TYPE OF ERROR :TELL MICROMONITOR ERROR OCCURRED | | | | |
| 368 369 001222' 062761 000002 370 001226' 020167 177654 371 001232' 001350 372 001234' 005703 373 001236' 001402 374 001240' 005103 375 001242' 000734 | 30\$: ADD CMP BNE TST BEQ COM BR | #2,R1 R1,HILIM 12\$ R3 35\$ R3 5\$ | POINT TO NEXT MEMORY ADDRESS DONE ALL MEMORY? NOT YET DONE BOTH DATA TYPES? YES NO, WRITE ONES NOW | | | | |
| 376 377 001244' 000241 378 001246' 012600 379 001250' 000207 380 | 35\$: CLC 40\$: MOV RTS | (SP)+,RO PC | :INDICATE SUCCESS :RESTORE RO | | | | |

| MICROB MICROB. 381 382 383 384 385 386 388 389 390 391 393 395 396 397 398 399 400 | - MICROC MAC | ODE MODU ^-JAN-83 | 17:52 | MACY11 | MODULE .SBTTL .****** ADDRES | MODULE B, MICROTEST W1, MICROSUBTEST B SBITL MODULE B. MICROTEST W1, MICROSUBTEST B ADDRESS SHIFT TEST THIS TEST ASSUMES ALL MEMORY BETWEEN LOWLIM AND HILIM IS ZEROS IT CHECKS FOR PROPER BANK SELECTION BY WRITING 1'S IN A LOCATION AND CHECKING FOR 1'S IN THE SAME LOCATION OF OTHER 4K BANKS (ADDRESS ERROR). IT ALSO CHECKS FOR DATA ERRORS I.E. NON-ZERO DATA IN LOCATIONS NOT WRITTEN WITH 1'S AND MAKES SURE LOCATIONS WRITTEN WITH 1'S HAVE 1'S IN THEM | | | | | | |
|--|--|--------------------------------------|----------------------------|--------|------------------------------|---|--|---|--|--|--|--|
| 394 395 396 397 | 001252 ' 001254 ' | 010046 112767 | 000002 | 177626 | MICB1B: | MOV MUVB | | ;SAVE RO ;TELL HIM WE ARE IN THE SECOND SUBTEST | | | | |
| 398 399 400 | 001262' 001266' 001272' | 016701 | 177616 177612 177777 | | 10\$: | MOV MOV MOV | LOWLIM,RO LOWLIM,R1 #177777,(RO) | :SET 'WRITTEN TO' ADDRESS :SET 'READ FROM' ADDRESS :WRITE DATA INTO LOCATION AT BASE | | | | |
| 402 403 | 0012761 | 011104 | | | 20\$: | MOV | (R1),R4 | READ DATA FROM MEMORY WHICH IS AN EVEN | | | | |
| 404 405 | 001300 | 020001 | | | | CMP | RO,R1 | :INCREMENT AWAY :IS 'READ FROM AND 'WRITTEN TO' | | | | |
| 406 407 408 409 410 | 001302' 001304' 001306' 001310' | 005003 005704 | | | | BEQ CLR TST BEQ | 70\$ R3 R4 50\$ | ;ADDRESSES THE SAME? ;YES, SO DATA IN BOTH SHOULD BE THE SAME ;GOOD DATA IS ZEROS ;DATA IN 'READ FROM' MUST BE O'S ;OK GO CHANGE 'READ FROM' ADDRESS ;ERROR OCCURRED BUT WE DON'T KNOW IF ;IT IS A DATA ERROR OR AN ADDRESS ERROR ;WAS DATA READ ALL 1'S? ;NO, SO IT WAS A DATA ERROR ;YES, IT WAS AN ADDRESS ERROR | | | | |
| 411 412 413 | 001312' 001316' | 022704 | 177777 | | | CMP | #177777,R4 40\$ | ;IT IS A DATA ERROR OR AN ADDRESS ERROR ;WAS DATA READ ALL 1'S? | | | | |
| 414 | 0013201 | 112/6/ | 000001 | 177563 | | BNE MOVB | 40\$ #ADRERK,ERRTYP | ;NO, SO IT WAS A DATA ERROR ;YES, IT WAS AN ADDRESS ERROR | | | | |
| 415 416 417 418 | 001326' 001330' 001332' 001336' | 000261 000426 022704 001407 | 177777 | | 70\$: | SEC BR (MP BEQ | 60\$ #177777,R4 50\$ | :INDICATE FAILURE :LEAVE THIS SUBTEST :DATA READ MUST BE ALL 1'S :IT IS GOOD | | | | |
| 419 420 421 422 423 | 001330° 001332° 001336° 001340° 001352° 001354° | 012703 112767 000261 000414 | 177777 | 177537 | 40\$: | MOV MOVB SEC BR | #177777,R3 #DATERR,ERRTYP 60\$ | GOOD DATA IS ONES IT WAS A DATA ERROR INDICATE FAILURE LEAVE THIS SUBTEST | | | | |
| 424 425 426 | 001356' 001362' 001366' 001370' | 020167 103743 005010 | 001000 177520 | | 50\$: | ADD CMP BLO CLR | #1000.R1 R1.HILIM 20\$ (R0) | CHANGE 'READ FROM' ADDRESS BY .25k; WE GO PAST BOUNDARY? NO CONTINUE WITH SAME 'WRITTEN TO': CLEAR OLD 'WRITTEN TO' ADDRESS; CHANGE 'WRITTEN TO' ADDRESS BY .25k | | | | |
| 427 428 429 430 | 001372 | 062700 020067 | 001000 177504 | | | ADD CMP | #1000,R0 RO,HILIM | ;WE PASI BUUNDARY! | | | | |
| 430 431 432 433 434 435 | 001402° 001404° 001406° 001410° | 000241 012600 000207 | | | 60\$: | BLO CLC MOV RTS | 10\$ (SP)+,RO PC | NO CONTINUE THIS SUBTEST :INDICATE SUCCESS OF THIS SUBTEST :RESTORE RO | | | | |

| MICROB MICROB. | - MICROCODE MOD MAC 10-JAN-8 | ULE B 3 17:52 | MACY11 | 30(1046) MCCULE | 11-JAN B, MICRO | N-83 09:50 PAGE 10 DTEST #1, MICROSUBTEST | C | | | | | |
|---------------------------------|--|------------------|--------|---|--------------------|--|--|--|--|--|--|--|
| 436 | | | | .SBITL | MODULE | B, MICROTEST #1, MICRO | SUBTEST C | | | | | |
| 436 437 438 439 440 | | | | ;************************************* | | | | | | | | |
| 440 441 | | | | DATA LATC TEST | | | | | | | | |
| 443 | | | | AT THE FIRST LOCATION OF EACH BANK A '1' IS SHIFTED THROUGH EACH | | | | | | | | |
| 444 | | | | AT THE FIRST LOCATION OF EACH BANK A '1' IS SHIFTED THROUGH EACH BIT POSITION AND CHECKED FROM LSB TO MSB. THEN IN THE SAME LOCATION A '0' IS SHIFTED THROUGH EACH BIT POSITION | | | | | | | | |
| 445 | | | | : AND CH | ECKED. | | | | | | | |
| 447 448 | | | | ***** | ***** | ************* | ********* | | | | | |
| 449 450 451 452 | 001412' 010046 001414' 112767 001422' 016701 | 000003 | 177466 | MICB1C: | MOV MOVB MOV | RO,-(SP) #3,SUBNUM LOWLIM,R1 #1,RO RO,R2 RO,(R1) (R1),R4 RO,R4 | ; SAVE RO : TELL WEA ARE IN SUBTEST 'C' | | | | | |
| 453 454 | 001426' 012700 001432' 010002 | 000001 | | 15: | MOV MOV | #1,R0 | DATA = 1 IN LEAST SIGNIFICANT BIT | | | | | |
| 452 453 454 455 456 | 001434' 010011 001436' 011104 | | | 2\$: | MOV MOV | RO, (R1) | GET BASE ADDRESS OF MEMORY DATA = 1 IN LEAST SIGNIFICANT BIT INDICATE WE ARE SHIFTING A '1' WRITE LOCATION WITH GOOD DATA READ DATA FROM SAME LOCATION | | | | | |
| 457 458 | 001440' 020004 001442' 001406 | | | 3\$: | CMP | RO, R4 4\$ | IS DATA THE SAME AS WRITTEN? | | | | | |
| 459 | 001444 112767 001452 010003 001454 000261 | 000000 | 177437 | | BEQ MOVB | #DATERR, ERRTYP | ERROR IS DATA ERROR | | | | | |
| 460 461 462 | 001454' 000261 001456' 000421 | | | | MOV SEC | RO,R3 | GOOD DATA :INDICATE THIS SUBTEST FAILED | | | | | |
| 463 464 | 001460' 005702 001462' 001406 | | | 45: | BR TST | 6 \$ R2 | LEAVE THIS SUBTEST ; ARE WE SHIFTING A 1 OR A 0? | | | | | |
| 465 466 | 001464' 006300 001466' 103362 | | | | BEQ ASL | R2 5\$ R0 | ZERO SHIFT THE ONE OVER IF THE '1' HAS NOT BEEN SHIFTED | | | | | |
| 467 468 | 001470 | | | | BCC | 2\$ | THRU THE 16 POSITIONS CONTINUE WITH 1 | | | | | |
| 469 470 | 001472' 012700 001476' 000756 | 177776 | | | CLR MOV | R2 #177776,R0 2\$ | THRU THE 16 POSITIONS CONTINUE WITH 1 ELSE START SHIFTING A 'O'; START WITH LSB = 0 ALL OTHERS 1'S | | | | | |
| 471 | 001500 000261 | | | 5\$: | BR SEC | | CONTINUE WITH SHIFTING A O MOVE OF OVER ONE BIT POSITION | | | | | |
| 472 473 | 001502' 006100 001504' 103753 | 001000 | | | ROL BCS | R0 2 \$ | MOVE 'O' OVER ONE BIT POSITION HAS 'O' BEEN IN ALL POSITIONS? NO CONTINUE WITH SHIFTING A O | | | | | |
| 474 475 | 001506' 062701 001512' 020167 001516' 103743 | 001000 177370 | | | ADD CMP | #1000,R1 R1,HILIM | CONTINUE TEST AT NEXT BOUNDARY DONE ALL OF MEMORY? | | | | | |
| 476 477 | 001520' 000241 | | | | BLO CLC | 1\$ | :NO :INDICATE THIS SUBTEST SUCCESSFUL | | | | | |
| 478 479 | 001522' 012600 001524' 000207 | | | 6\$: | MOV RTS | (SP)+,RO PC | ; RESTORE RO | | | | | |

| 480 481 482 483 484 485 486 437 488 489 490 491 | MACV11 | 30(1046) 11-JAN-83 09:50 PAGE 11 MODULE B, MICROTEST #1, MICROSUBTEST D SBITL MODULE B, MICROTEST #1, MICROSUBTEST D ADDRESS BIT SHIFT #1 THIS TEST CHECKS FOR DUAL ADDRESS PROBLEMS BY FIRST WRITING A BACKGROUND PATTERN THROUGHOUT MEMORY. THEN STARTING AT THE LOWEST LOCATION IN A BANK IT WRITES THE COMPLEMENT OF THE BACKGROUND PATTERN. THEN READS THE MEMORY FOR CURRECT CONTENTS IT THEN SHIFTS A '1' THROUGH THE ADDRESS POINTER AND REPEATS THE ABOVE. IT DOES THIS FOR EACH BANK. | | | | | | |
|---|------------------|--|---|---|---|--|--|--|
| 492 493 494 495 001526' 010046 496 001530' 112767 000004 497 001536' 012767 000377 498 001544' 005003 499 001546' 016700 177332 500 001552' 016720 176772 501 001556' 020067 177326 | 177352 177004 | ; | ****** | | ;SAVE RO ;TELL WE ARE IN SUBTEST 4 ;LOAD BAKPAT CONSTANT ;CONTAINS BANK ADDRESS ;WRITE LINK MEMORY WITH BACKGROUND ;PATTERN ;RO CONTAINS GOOD DATA | | | |
| 504 505 001570' 005002 506 001572' 050302 507 001574' 020267 177304 508 001600' 103450 509 001602' 020267 177300 510 001606' 103061 511 001610' 000312 512 001612' 005001 513 001614' 050301 514 001616' 020167 177262 515 0C'622' 103426 516 001624' 020167 177256 517 001630' 103033 518 001632' 011104 | | 4\$: 6\$: 7\$: | CLR BISP BIMP S BHAB CLS BIMP OP S CMP OP S CMP OP | R2 R3,R2 R2,LOWLIM 16\$ R2,HILIM 20\$ (R2) R1 R3,R1 R1,LOWLIM 12\$ R1,HILIM 15\$ (R1),R4 R1,R2 10\$ R0,R4 | ;R2 WILL BE OUR 'WRITTEN TO' ADDRESS;INDEX INTO THIS BANK ;IS RESULT LESS THAN MEM BASE? ;YES, DON'T USE THIS ADDRESS;IS RESULT LARGER THAN MEM TOP? ;YES, DON'T USE THIS ADDRESS EITHER ;WRITE COMPLEMENT OF PATTERN ;R1 WILL BE OUR 'READ FROM' ADDRESS;INDEX INTO THIS BANK ;IS RESULT LESS THAN MEM BASE? ;YES, DON'T USE THIS ADDRESS ;IS RESULT LARGER THAN MEM TOP? ;YES, DON'T USE THIS ADDRESS EITHER ;READ DATA ;IS 'READ FROM' AND 'WRITTEN TO' SAME? ;YES, GO CHECK DATA ;NO, DATA READ SHOULD BE SAME AS BAKPAT ;IF SO CONTINUE WITH NEW INDEX | | | |
| 523 524 001644' 112767 000001 525 001652' 010003 526 001654' 000261 527 001656' 000441 528 001660' 020067 176664 529 001664' 001405 530 001666' 000403 531 532 001670' 000300 533 001672' 020004 | 177237 | 8\$: 10\$: | MOVB MOV SEC BR CMP BEQ BR SWAB CMP | #ADRERR, ERRTYP RO, R3 25\$ RO, BAKPAT 12\$ 11\$ RO RO, R4 | :INDICATE ADDRESS ERROR :GET GOOD DATA :INDICATE THIS SUBTEST FAILED :LEAVE THIS SUBTEST :DOES RO CONTAIN SWAPPED DATA? :NO :YES :MAKE GOOD DATA LIKE SWAPPED BAKPAT :IS DATA READ SAME AS DATA WRITTEN? | | | |
| 534 001674° 001363 535 001676° 000300 | | 115: | BNE SWAB | 8\$ RO | :NO, ERROR :RESTORE GOOD DATA TO BAKPAT | | | |

| MICKOR. | | JLE B MACY1 5 17:52 | 1 30(1046 MODULE |) 11-JA B, MICR | N-83 09:50 PAGE 12 OTEST #1, MICROSUBTEST D | |
|---|---|------------------------|----------------------------------|---------------------------|--|---|
| 536 537 538 539 | 001700' 040301 001702' 005701 001704' 001001 001706' 005201 | | 12\$: | BIC TST BNE | R3,R1 R1 13% | REMOVE BANK SELECT FROM 'READ FROM' DID AN INDEX EXIST? YES |
| 540 541 542 543 | 001710 006101 001712 020127 001716 103736 | 001000 | 13\$: | INC ROL (MP BLO | R1 R1 R1,#1000 7\$ | ;NO, MAKE ONE ;SHIFT INDEX OVER ;IS IT LESS THAN 25k |
| 538 538 541 543 5445 5445 5545 5557 5558 5559 560 | 001720' 000312 001722' 040302 001724' 005702 001726' 001001 | | 15 \$: 16 \$: | SWAB BIC TST BNE | (R2) R3,R2 R2 | ;YES, CONTINUE CHECKING FOR BOGUS DATA ;IN THIS BANK ;RESTORE CONTENTS OF 'WRITTEN TO' ;REMOVE BANK SELECT FROM 'WRITTEN TO' ;DOES 'WRITTEN TO' CONTAIN AN ADDRESS? |
| 548 549 550 551 | 001724 040302 001724 005702 001726 001001 001730 005202 001732 006102 001734 020227 001740 103714 001742 060203 001744 020367 | 001060 | 18\$: | INC ROL (MP BLO | 18\$ R2 R2 R2,#1000 6\$ | :YES :NO. MAKE ONE :SHIFT 'WRITTEN TO' ADDRESS :IS 'WRITTEN TO' LARGER (HAN .25K? :NO |
| 553 554 | | 177136 | | ADD CMP | R2,R3 R3,HILIM | :MAKE 'WRITTEN TO' POINT TO NEXT .25K |
| 555 556 557 | 001752' 000367 001756' 001672 001760' 000241 | 176572 | 20\$: | BLO SWAB Beq | 48 BAKPAT 18 | :NO CONTINUE TESTING :REPEAT TEST WITH COMPLEMENTED PATTERN |
| 558 559 560 | 001762 012600 001764 00020 | | 25\$: | CLC MOV RTS | (SP)+,RO PC | ; INDICATE THIS SUBTEST SUCCESS ; RESTORE RO |

| MICROB . | - MICROCODE M MAC 10-JAN | ODUL B -83 17:52 | MACY11 | 30(1046) MODULE 1 | 11-JAN B, MICRO | 1-83 09:50 PAGE 1 DIEST #1, MICROSUBT | 3 EST E |
|--|--|--|--------|-------------------------|---|---|--|
| 561 562 563 564 565 566 567 568 571 572 573 | | | | ADDRES | S BIT SH EST CHEC ORY WITH N DOES T | KS FOR DUAL ADDRES I ITS ADDRESS AND T THE SAME THING BUT | SING PROBLEMS BY WRITING EACH LOCATION HEP VERIFYING EACH LOCATION. US S THE COMPLEMENT OF THE ADDRESS |
| 574 | 001766' 0100 001770' 1127 001776' 0050 002000' 0167 002004' 0101 002006' 0057 002010' 0014 002012' 0051 002014' 0100 002016' 0201 002022' 1037 | 67 000005 03 177100 00 03 01 00 00 21 67 177064 | 177112 | MICBIE: 1\$: 2\$: | MOV MOVB CLR MOV TST BEQ COM MOV CMP BLO | | ;SAVE RO ;TELL WHICH SUBTEST WE ARE IN ;FLAG INDICATING ADDRESS IS COMPLEMENTED ;GET STARTING ADDRESS OF MEMORY ;GET ADDRESS TO WORK WITH ;SHOULD WE COMPLEMENT THE DATA TO STOF? ;NO STORE AS IS ;COMPLEMENT DATA ;WPITE DATA ;IS NFW ADDRESS LARGER THAN MEM? ;NO, KEEP FILLING MEMORY |
| 585 586 588 589 591 593 593 599 599 601 603 605 | 002024' 0141 002026' 0200 002030' 0014 002032' 1127 002040' 0100 002042' 0002 002044' 0004 002046' 0101 002050' 1627 002056' 0014 002060' 0051 002062' 0201 002066' 1013 002070' 0051 002072' 0013 002074' 0002 002076' 0126 002100' 0002 | 04 06 67 000001 61 14 00 00 00 00 01 00 67 177016 56 03 44 41 | 177051 | 3\$: 4\$: 5\$: | MOV CMP BEQ MOV SEC BROV SER VSUB TST BEQ CMP BHI CMP BHI CMP BUC BNE CMP BLC MOV RTS | -(D1) D/ | READ DATA STORED IS DATA READ SAME AS WRITTEN? YES INDICATE ADDRESS ERROR GET GOOD DATA INDICATE FAILURE LEAVE THIS SUBTEST CALC GOOD DATA FOR NEXT LOCATION HAVE WE CHECKED ALL LOCATIONS NOT YET HAVE WE DONE IT COMPLEMENTED? NO. REPEAT WITH COMPLEMENT INDICATE SUCCESS RESTORE RO |

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| MICROB MICROB. | - MICROCOD MAC 10- | E MODUL | LE B 17:52 | MACY11 | 30(1046) MODULE 1 | 11-JAN B, MICRO | -83 09:50 PAGE 14 TEST #1, MICROSUBTEST F | |
|---------------------------------|--|-----------------|------------------|--------|----------------------|--------------------|---|---|
| 606 607 | | | | | .SBTTL | MODULE | B, MICROTEST #1, MICROSU | BTEST F |
| 608 609 | | | | | ***** | ****** | **************** | *********** |
| 610 611 | | | | | MARCH | TEST | | |
| 612 613 | | | | | THIS T | EST WRIT | ES A BACKGROUND PATTERN | IN ALL OF MEMORY |
| 614 615 | | | | | 1-READ | EVERY L | OCATION FOR CORRECT DATA | , SWAPS BYTES AT EACH LOCATION |
| 616 617 | | | | | 2-READ | EVERY LON AND P | OCATION FOR SWAPPED DATA | , WRITES ORIGINAL PATTERN IN EACH RECTION ON |
| 618 619 | | | | | 3-REPE | AT 1 GOI | NG IN MIN TO MAX DIRECTIONS IN MAX TO MIN DIRECTION | ON ON |
| 620 621 622 623 | | | | | **** | ****** | | ****** |
| 623 623 | 002102 0 | 10046 | | | MICB1F: | MOV | RO,-(SP) | :SAVE RO |
| 624 625 | 002104' 1 002112' 0 002114' 0 | 12767 105003 | 000006 | 176776 | | MOVB CLR | #6,SUBNUM | :TELL WHICH SUBTEST WE ARE IN |
| 626 627 | 0021201 0 | 12700 | 176764 000377 | | 10\$: | MOV MOV | R5 LOWLIM,R1 #377,R0 R0,(R1)+ | FILL MEMORY WITH BACKGROUND PATTERN BACKGROUND PATTERN=LOW BYTE ALL 1°S |
| 628 629 | 002124' 0 | 20167 | 176754 | | 125: | LMP | KI'HIFIW | |
| 629 630 631 632 633 | 002132' 1 | | | | 206. | BL0 | 12\$ | |
| 633 | 002134' 0 002136' 0 002140' 0 | 20004 | | | 20\$: | MOV (MP | -(K1),K4 R0,R4 | STARTING FROM THE TOP, READ DATA RO = GOOD DATA, R4 = DATA READ |
| 634 635 636 | 002142' 1 | 12767 | 000000 | 176741 | | BEQ MOVB | 30\$ #DATERR,ERRTYP RO,R3 | : IF SAME OK : INDICATE DATA ERROR |
| 637 638 | 002152' 0 002154' 0 002156' 0 002160' 0 | 00261 | | | | 5- Č B | 200\$ | GET GOOD DATA INDICATE FAILURE LEAVE THIS SUBTEST |
| 639 640 | 002156° 0 | 00300 | | | 30\$: | SWAB MOV | RO RO,(R1) | NEW GOOD DATA PATTERN STORE AT SAME PLACE |
| 641 642 | 002162° 0 002164° 0 | 11104 | | | | MOV CMP | (R1) R4 R4,R0 | READ IT BACK RO-GOOD DATA, R4-DATA READ |
| 643 | 002166' 0 | 01406 12767 | 000000 | 176713 | | BEQ MOVB | 40\$ #DATERR, ERRTYP | : IF SAME OK : INDICATE DATA ERROR : GET GOOD DATA |
| 64 5 64 6 | 002176' 0 | | | | | MOV SEC | RO,R3 | GET GOOD DATA |
| 647 648 | | 00441 | | | 40\$: | BR SWAB | 200 \$ R0 | LEAVE THIS SUBTEST SWITCH GOOD DATA AGAIN |
| 649 650 | (| 01 7 | | | | BNE | 90\$ | :IF ORIGINAL PATTERN THEN WE ARE :READING THE MEMORY TO CONTAIN A |
| 651 652 653 | | | | | | | | BACKGROUND OF LOW BYTE = ALL 1'5 AND WRITING IT BACK SWAPPED AND |
| 653 654 | 002210' 0 | 05703 | | | 50\$: | 151 | R3 | :VERIFING SWAPPED DATA |
| 654 655 656 | 002212' 0 002214' 0 | 62701 | 000002 | | 60\$: | BNE ADD | 100\$ #2.R1 | WE ARE GOING MIN->MAX SO ADJUST POINTER |
| 657 658 | 002220' 0 002224' 1 | 03012 | 176662 | | 20 | CMP BHIS | R1 HILIM 80\$ | ;WE AT MAX? ;YES |
| 659 660 661 | 002226° 0 | 20004 | | |)\$: | MOV (MP | (R1),R4 R0,R4 | READ DATA RO-GOOD DATA, R4 DATA READ |
| 001 | 002232' 0 | V1771 | | | | BEQ | 30\$ | ; OK IF SAME |

| M | ICROB | - MICROCOD MAC 10- | JAN-83 | 17:52 | MACYII | MODULE | 11-JAN B, MICRO | -83 09:50 PAGE 15 TEST #1, MICROSUBTEST F | |
|---|--|--|--|--------|--------|-----------------|---|---|---|
| | 662 663 664 665 6667 668 670 671 672 | 002242' 0 002246' 0 002250' 0 002252' 0 002254' 0 002256' 0 | 10003 00261 002417 00342 00300 01727 05103 | 176620 | 176647 | 80\$: | MOVB MOV SEC BR BR SWAB BEQ COM MOV BR | #DATERR, ERRTYP RO, R3 200\$ 30\$ R0 20\$ R3 LOWLIM, R1 70\$ | :INDICATE DATA ERROR :GET GOOD DATA :INDICATE FAILURE :LEAVE THIS SUBTEST :SWITCH GOOD DATA :IF LOW BYTE = ALL O'S GO IN MAX->MIN :ELSE GO IN MIN->MAX DIRECTION :SET ADDRESS POINTER TO MIN |
| | 673 674 675 | 002266' 0 002270' 0 | 05703 01347 | | | 90\$: | TST BNE | R3 50\$ | :ARE WE GOING MIN->MAX? :YES |
| • | 676 677 678 679 680 | 002300' 0 002302' 0 002304' 0 | 01316 00300 01751 000241 | 176606 | | 100\$: | CMP BHI SWAB BEQ CLC | R1,LOWLIM 20\$ R0 70\$ | :NO. CHECK TO SEE IF WE ARE AT MIN :NOT YET :WE ARE AT MIN SO SWITCH GOOD DATA :IF LOW BYTE = ALL O'S ELSE WE ARE DONE :INDICATE SUCCESS |
| i | 681 682 683 684 685 | 002306' 0 002310' 0 | 12600 | | | 200\$: | MOV RTS | (SP)+,RO PC | RESTORE RO |
| | .684 .685 | 002312' 0 | 02314 00001 | | | MICBSZ: .END | :MICBSZ- | MICROB+2 | ;SIZE OF MICROCODE MODULE B |

| MICROS - MICROCODE MICROB.MAC 10-J | MODULE | B 7:52 | MACY11 | 30(1046) CROSS RE | 11-JAN- FERENCE | 83 09:5 TABLE | O PAGE USER SY | 17 MBOLS | | | | | | 31.4 |
|--|------------|--|----------------------------------|----------------------|-----------------------|---------------------|---------------------|-------------|-------------|---------------------|------------|-------------|-------|------|
| ADDREG= 177774 ADRERR= 000001 BAKPAT 000557R BITO = 000001 | 002 | 103# 101# 235# 51# | 414 497* 81 | 524 500 | 589 503 | 528 | 555* | | | | | | | |
| BIT1 = 000002 BIT1C = 002000 BIT11 = 004000 BIT12 = 010000 BIT13 = 020000 | | 50# 41# 40# 39# | 81 82 53 69 53 67 | 70 58 | 89 | | | | | | | | | |
| BIT13 = 020000 BIT14 = 040000 BIT15 = 100000 BIT2 = 000004 BIT3 = 000010 | | 38# 37# 36# 49# 48# | 66 65 83 | 88 87 86 | 210 215 | 218 | | | | | | | | |
| BIT4 = 000020 BIT5 = 000040 BIT6 = 000100 | | 47# 46# 45# 44# | 84 85 | | | | | | | | | | | |
| B118 = 000400 | | 43# | 53 | 71 | | | | | | | | | | |
| BIT9 = 001000 BOTH 001112R B1STBL 001066R CLRFIF= 021034 | 002 | 42# 258* 263 22# | 288 320# | 290+ | 306 | 332# | | | | | | | | |
| CMDREG= 177776 CSRFLG= 000001 CSRVEC= 000064 | | 104# 81# 74# | 119* 167 144* | 198 145* | | | | | | | | | | |
| CSRWRT 000376R DATERR= 000000 DMACSR= 021002 DMAF = 021022 | 002 | 143 100# 9# 17# | 198# 365 209 | 420 218* | 459 | 635 | 644 | 662 | | | | | | |
| DMAINT 000432R DMATO = 021004 DMAT1 = 021006 | 002 | 138 10# 11# | 209# | | | | | | | | | | | |
| DMAVEC= 000114 DMAWC = 021024 | | 75# 18# | 139* | 140* | | | | | | | | | | |
| DMDON. 000546R DNI = 004000 ERRFLG= 000002 | 002 | 209* 69# 82# | 210 123 201 | 215 191 | 234# | | | | | | | | | |
| ERRINT 000406R ERRIYP 0C1111R | 002 002 | 125 331# | 201# 359* | 365* | 414* | 420* | 459* | 524* | 589* | 635* | 644* | 662* | | |
| FATI = 000400 FLG2 000530R HILIM 001106R | 002 | 71# 160* 260* 629 | 163 292• 657 | 167 329# | 192* 350 | 198* 370 | 201 * 425 | 222* 429 | 229# 475 | 265 * 501 | 355 509 | 516 | 553 | 583 |
| INERR = 000003 INMON = 000001 INTST = 000002 | | 80 <i>n</i> 78 <i>n</i> 79 <i>n</i> 97 <i>n</i> | 189 121 256 98 | 175 | 187 | | | | | | | | | |
| IOADR = 020000 IOSIZ = 020000 IPCSR0= 021000 IPCSR1= 021020 IPCSR2 000536R | 002 | 93# 8# 16# 158* | 98 123* 122* 159* | 172 175* 232# | 191 • 190 • 274 | 202* 257* 275 | 212* 317* | 217• | 223* | | | | | |
| LASFTP= 012400 LFRBUF= 021032 LINADR= 100000 LINSIZ= 077774 | | 53# 21# 99# 95# | 102 102 | ••• | 7.0 | 757 | 200 | 700 | 153 | , 00 | 60? | 51 7 | 577 | 598 |
| LOWLIM 001104R | 002 | 259• | 291• | 328# | 348 | 353 | 398 | 399 | 452 | 499 | 507 | 514 |) (T | ,70 |

| MICROB - MICROCODE MODULE B MICROB.MAC 10-JAN-83 17:52 | MACY11 | 30(1046) (ROSS RE | 11-JAN- FERENCE | 83 09:5 TABLE | O PAGE USER SY | 18 Mbols | | | |
|--|------------------------------|----------------------|--------------------|------------------|-------------------|-------------|-----|------|-----|
| LRBUF = 021044 624 | 670 | 676 | | | | | | | |
| LTAC = 021030 20# MDMARO= 021014 14# | 276 | 277 | | | | | | | |
| MDMAR1 = 021016 15# MDMAW0 = 021026 19# | 280* | 282* | 283* | 284* | | | | | |
| MDMAW1 = 021036 23# MDMAO = 021010 12# | 274. | 278+ | | | | | | | |
| MDMA1 = 021012 13# MDMSR = 021042 25# MICBSZ 002312RG 002 295 | 275* 310 | 279* 684# | | | | | | | |
| MICB1 000552R 002 227 MICB1A 001114R 002 320 | 256# 344# | 004# | | | | | | | |
| MICBSZ 002312RG 002 295 MICB1 000552R 002 227 MICB1A 001114R 002 320 MICB1B 001252R 002 321 MICB1C 001412R 002 322 MICB1D 001526R 002 323 | 395N 450N | | | | | | | | |
| MICRIE ONIVOOR ONS 324 | 495 <i>N</i> 574 <i>N</i> | | | | | | | | |
| MICROB 000000RG 002 118# | 623 # 294 | 309 | 684 | | | | | | |
| MODREG= 177774 102# NPRERR= 100000 86# NPRFLG= 000020 85# | 103 217 | 104 | | | | | | | |
| NXMERR= 040000 87% NXMFLG= 000010 84% | 212 | | | | | | | | |
| PARERR= 010000 89% PARFLG= 000004 83% | 223 222 | 359 355 | | | | | | | |
| PARINT 000510R 002 133 PARVEC= 000140 | 222# 134* | 135* | | | | | | | |
| PCBADR 000542R 002 253# PCEI - 040000 66# | 150 | | | | | | | | |
| PCSRSW= 021040 24# PCSR1 000534R 002 121* PHYAD0= 021060 27# | 152 122 | 187+ | 189+ | 190 | 231# | 256* | 257 | 316* | 317 |
| PHYAD1= 021062 28# PHYAD2= 021064 29# | | | | | | | | | |
| PHYAD3= 021066 30M PHYAD4= 021070 31M | | | | | | | | | |
| PHYAD5= 021072 32# PRIO0 = 000000 61# | 161+ | | | | | | | | |
| PRIO1 = 000040 60N PRIO2 = 000100 59N | | | | | | | | | |
| PRIC3 = 030140 58# PRIO4 = 000200 57# PRIO5 = 000240 56# | 145 150 | | | | | | | | |
| PRIO6 = 000300 55% PRIO7 = 000340 54% | 345* 118* | 128 | 135 | 140 | 166* | | | | |
| RCE1 = 002000 70N ROMADR= 040000 98N | 99 | | . • • | - · • | | | | | |
| ROMSIZ= 040000 94# RXI = 020000 67# | 99 | | | | | | | | |
| SANTIM 000532R 002 206* SANVEC= 000134 73% | 230# 149* | 150+ | | | | | | | |
| SERI = 100000 65% S1Z4K = 020000 90% S1Z8K = 040000 91% | 91 94 | 92 95 | 93 | | | | | | |
| STACK = 001000 77W | 120 | ,, | | | | | | | |

| MICROB - MICROCOD MICROB.MAC 10- | E MODULE B JAN-83 17:52 | MACY11 | 30(1046) CROSS PE | 11-JAN- FERENCE | -83 09:5 TABLE | O PAGE | | | | | | | 364 |
|--|-------------------------------------|-------------|----------------------|--------------------|-------------------|-------------------|-------------------|------------|-----|-----|-----|-----|-----|
| SUBNUM 001110R TBLB 000526R TIMINT 000424R TXI = 010000 | 002 280 007 181 002 148 68 | • | 345* | 396* | 451+ | 496+ | 575* | 624* | | | | | |
| UNIERR= 020000 WCSADR= 000000 WCSSIZ= 020000 = 002314R | 88 96 92 002 125 301 | y 97 | 260 138 320 | 291 143 321 | 292 148 322 | 302 169 323 | 311 181 324 | 204 325 | 219 | 225 | 227 | 263 | 294 |

000000 000000 002314 000 001 002 . ABS. MICRB

ERRORS DETECTED: 0
DEFAULT GLOBALS GENERATED: 0

MICROB.OBJ.MICROB.LST/CRF/DOC/NL:TOC/SOL=MICROB.MAC RUN-TIME: .9 1 .3 SECONDS RUN-TIME RATIO: 43/2=15.4 CORE USED: & (16 PAGES)

DOCUMENT PAGES: 18

```
.TITLE MICROC - MICROCODE MODULE C
                  000000
                                                     .CSECT MICRC
                                                    .SBTTL
                                                                 REGISTER DEFINITIONS USED BY THE T11
                                                    IPCSRO
DMACSR
                  021000
                                                                           21000
21002
                                                                                       ; INTERNAL PCSRO ADDRESS
                  021002
                                                               =
                                                                                       DMA ENGINE CONTROL STATUS REGISTER
10
11
                                                    DMATO
                  021004
                                                                                       DMA ENGINE TO ADDRESS REGISTER #0: DMA ENGINE TO ADDRESS REGISTER #1
                                                               =
                                                                           21004
                  021006
                                                    DMAT1
                                                               =
                                                                           21006
                                                                                       MICROCPU DMA TO ADDRESS REGISTER #0
MICROCPU DMA TO ADDRESS REGISTER #1
MICROCPU DMA DATA REGISTER - AUTO INCREMENT R/O
                  021010
12
13
14
15
16
17
                                                    MDMAO
                                                                           21010
                  021012
                                                    MDMA1
                                                                           21012
                                                    MDMARO
                  021014
                                                                           21014
                                                                           21016
21020
21022
21024
21026
                                                    MDMAR1
IPCSR1
                                                                                       MICROCPU DMA DATA REGISTER - AUTO DECREMENT R/O
                  021016
                                                                                       ;INTERNAL PCSR1 ADDRESS
;DMA ENGINE FROM ADDRESS REGISTER
;DMA ENGINE WORD COUNT REGISTER
;MICROCPU DMA DATA REGISTER - AUTO INCREMENT W/O
;LINK TRANSMIT ADDRESS COUNTER REGISTER
                  021020
                  021022
                                                    DMAF
DMAWC
MDMAWO
                  021024
                                                                =
                  021026
                                                                           21030
                  021030
                                                    LTAC
                                                    L RBUF
CLRF IF
MDMAW1
PCSRSW
                  021032
                                                                           21032
                                                                                       LINK RECIEVE BUFFER ADDRESS FIFO
                  021034
                                                                           21034
                                                                                       :CLEAR FIFD
                                                                                       ;MICROCPU DMA DATA REGISTER - AUTO DECREMENT W/O
;SWITCH PACK REGISTER
;MICROCPU DMA STATUS REGISTER
;LINK RECIEVE BUFFER COMPLETED
;PHYSICAL ADDRESS ROM BYTE 0
;PHYSICAL ADDRESS ROM BYTE 1
                  021036
                                                                           21036
                  021040
                                                                           21040
                                                    MDMSR
LRBUF
PHYADO
PHYAD1
                  021042
                                                                           21042
                  021044
                                                                           21044
                 021060
                                                                           21060
                 021062
                                                                           21062
                 021064
                                                    PHYAD2
                                                                           21064
                                                                                       PHYSCIAL ADDRESS ROM BYTE
                 021066
                                                    PHYAD3
                                                                                       PHYSICAL ADDRESS ROM BYTE
                                                                           21066
                 021070
                                                    FHYAD4
                                                                                       PHYSICAL ADDRESS ROM BYTE
                                                               =
                                                                           21070
                                                    PHYAD5
                 021072
                                                               =
                                                                                       PHYSICAL ADDRESS ROM BYTE 5
                                                                           21072
                                                                 OTHER DEFINITIONS USED BY THE MICROCODE
                                                    .SBTTL
                 100000
                                                    BIT:5
                                                                           100000
                                                               Ξ
                 040000
                                                    B1114
                                                                           40000
                                                               =
                 020000
                                                    BIT13
                                                               =
                                                                           20000
                 010000
                                                                           10000
                                                    BIT12
                 004000
                                                    BIT11
                                                                           4000
                 002000
                                                    BIT10
                                                                           2000
                 001000
                                                                           1000
                                                    BITY
                 000400
                                                    BIT8
                                                               =
                                                                           400
                 000200
                                                    BIT7
                                                                           200
                                                               =
                 000100
                                                                            ÖÖ
                                                               =
                                                    BI16
                                                                           40
                 000040
                                                    BIT5
                                                                           20
10
                 000020
                                                               =
                                                    BIT4
                 000010
                                                    BIT3
                                                               Ξ
                 000004
                                                    BIT2
                                                               =
                 000002
                                                    BIT1
                                                               Ξ
                 000001
                                                    BITO
                 012400
000340
                                                    LASFTP
                                                               =
                                                                           BIT8:BIT10:BIT12 : LCAD AND START FUNCTION TEST PATTERN
                                                    PR107
                 000300
                                                    PR106
                                                                           240
                 000240
                                                    PR105
```

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MACY11 30(1046) 11-JAN-83 09:51 PAGE 2
MICROC - MICROCODE MODULE C
                       10-JAN-83 17:53
MICROC.MAC
                                                                   OTHER DEFINITIONS USED BY THE MICROLODE
                                                                                            200
140
                                                                  PR104
                          000200
      58
59
                          000140
                                                                  PRI03
                                                                              =
                                                                                            100
                                                                  PRI02
                          000100
                                                                              Ξ
      60
                          000040
                                                                  PRIOT
                                                                               =
                                                                                            40
      61
62
63
                          000000
                                                                  PR100
                                                                                            0
                                                                  PCSRO - PORT CONTROL STATUS REGISTER O
     ŠERI
                          100000
                                                                                            BIT15
                          040000
                                                                  PCEI
                                                                               =
                                                                                            BIT14
                          020000
                                                                                            BIT13
                                                                  RXI
                                                                               =
                          010000
                                                                                            BIT12
                                                                  IXI
                                                                               =
                                                                                            BIT11
                          004000
                                                                  DNI
                                                                               =
                          002000
                                                                                            BIT10
                                                                  RCEI
                                                                               =
                                                                  FATI
                                                                                            BIT8
                          000400
                                                                                                          :VECTOR ADDRESS FOR THE SANITY TIMER
:VECTOR ADDRESS FOR CSR WRITE INTERRUPT
:VECTOR ADDRESS FOR DMA DONE INTERRUPT
:VECTOR ADDRESS FOR LINK MEMORY PARITY ERROR
                                                                  SAN/EC= 134
CSRVEC= 64
                          000134
                          000064
                          000114
                                                                  DMAVEC= 114
                          000140
                                                                  PARVEC= 140
                                                                  STACK=
                                                                               1000
                                                                                                          STACK LOCATION
                          001000
                                                                                                          IN MICROMONITOR STATE
                                                                  INMON=
                          000001
                                                                                                         IN A TEST STATE

IN ERROR STATE

CSR WRITE INTERRUPT OCCURED

UNEXPECTED ERROR OCCURED

PARITY ERROR OCCURED

NON-EXISTANT MEMORY ERROR OCCURRED
                                                                  INTST=
                          000002
                                                                  INERR=
                          000003
                                                                 CSRFLG= BITO
ERRFLG= BIT1
PARFLG= BIT2
NXMFLG= BIT3
                          000001
                          000002
                          000004
                          000010
                                                                                                          :NPR TIMEOUT ERROR OCCURRED
                                                                  NPRFLG= BIT4
NPRERR= BIT15
                          000020
                                                                                                          PCSRO FLAG INDICATING NPR ERROR OCCURRED
                           100000
                                                                                                          PESRE FLAG INDICATING NON-EXISTANT MEMORY ERROR OCCURRED
                                                                  NXMERR= BIT14
UNIERR= BIT13
                          040000
                                                                                                          PCSRO FLAG INDICATING UNEXPECTED INTERRUPT OCCURRED
                          020000
                                                                                                         PCSRO FLAG INDICATING UNEXPECTED INTERRUPT UCCURRED
PCSRO FLAG INDICATING LINK MEMORY PARITY ERROR OCCURRED

4K WORDS
SIZE OF WRITEABLE CONTROL STORE
SIZE OF I/O PAGE
SIZE OF ROM
STORE OF I TAIK MEMORY
                                                                 UNIERR= BITTS
PARERR= BITTS
SIZ4K= 20000
SIZ8K= SIZ4K*2
WCSSIZ= SIZ4K
IOSIZ= SIZ4K
ROMSIZ= SIZ8K
LINSIZ= SIZ8K*2-4
WCSADR= 0
                          010000
                          020000
                          040000
                          020000
                          020000
                          040000
                                                                                                         :SIZE OF LINK MEMORY
:BASE ADDRESS OF WCS
:BASE ADDRESS OF I/O PAGE
:BASE ADDRESS OF ROM
:BASE ADDRESS OF LINK MEMORY
:FLAG INDICATING DATA ERROR OCCURRED
:FLAG INDICATING ADDRESS ERROR OCCURRED
                           077774
                           000000
                                                                  IOADR= WCSADR+WCSSIZ
                           020000
                                                                  ROMADR = IOADR + IOSIZ
                           040000
                                                                  LINADR = ROMADR+ROMSIZ
                           100000
                                                                  DATERR= 0
                           000000
                                                                  ADRERR= 1
                           000001
                                                                                                          LINK MODE REGISTER
LINK STATION ADRESS RAM REGISTER
LINK COMMAND REGISTER
                                                                  MODREG= LINADR+LINSIZ
                           177774
                           177774
                                                                  ADDREG = MODREG
                                                                  CMDREG= MODREG+2
                           177776
     105
```

| MICROC - MICROCODE MODULE C MICROC.MAC 10-JAN-83 17:53 | MACY11 30(1046) OTHER I | 11-JAN DEFINITI | -83 09:51 PAGE 3 ONS USED BY THE MICROCOD | E |
|--|---|--|--|--|
| 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 000000' 106427 000340 125 000004' 012737 000000 | THIS MO | 1-CLEAR 2-PCSRO 3-SANIT 4-COMPRI 5-DMA | CODE MODULE C *********************************** | |
| 126 000012 012706 001000 127 000016 012767 000001 (128 000024 016737 000476 (| MICROC: 000502 021020 021000 10\$: | MTPS MOV MOV MOV MOV MOV ADD CLR MOV CMP BLT | WPRIO7 WO, aWCMDREG WSTACK, SP WINMON, PCSR1 PCSR1, aWIPCSR1 WDN1, aWIPCSR0 PC, RO WERRINT, RO R1 RO, (R1)+ WPRIO7, (R1)+ R1, W1000 10\$ | DISABLE INTERRUPTS TURN OFF THE LINK SETUP STACK TELL HOST WE ARE IN MICROMONITOR TELL HOST THE LOAD AND START FINISHED GET ADDRESS OF UNEXPECTED ERROR HANDLER FILL ALL UNUSED VECTORS WITH TRAP HANDLER |
| 138 000064' 010700 139 000066' 062700 000376 140 000072' 010037 000140 141 000076' 012737 000340 0 | 000142 | MOV ADD MOV MOV | PC.RO #PARINTRO RO.a#PARVEC #PRIO7.a#PARVEC+2 | SETUP PARITY TRAP VECTOR |
| 142 143 000104' 010700 144 000106' 062700 000300 145 000112' 010037 000114 146 000116' 012737 000300 0 | 000116 | MOV ADD MOV MOV | PC,RO #DMAINT,RO RO,@#DMAVEC #PRIO6,@#DMAVEC+2 | SETUP DMA INTERRUPT VECTOR |
| 147 148 000124' 010700 149 000126' 062700 000224 150 000132' 010037 000064 151 000136' 012737 000200 0 | 000066 | MOV ADD MOV MOV | PC.RO #CSRWRTRO RO.a#CSRVEC #PRIO4.a#CSRVEC+2 | ;SETUP CSR WRITE VECTOR |
| 151 000136' 012737 000200 (152 153 000144' 010700 154 000146' 062700 000232 155 000152' 010037 000134 156 000156' 012737 000240 (| 00013e | MOV ADD MOV MOV | PC.RO MTIMINTRO RO.@MSANVÉC MPRIO5.@MSANVEC+2 | SETUP SANTITY TIMER VECTOR |
| 158 000164° 013700 021040 159 000170° 052700 176000 160 000174° 006300 161 000176° 006300 | | MOV BIS ASL ASL | a#PCSRSW,RO #176000,RO RO RO | GET SWITCH PACK BITS MAP THEM INTO HOST I/O PAGE SHIFT OVER TO POSITION CORRECTLY |

| MICROC - MICROCODE MODULE C MICROC.MAC 10-JAN-83 17:53 | MACY11 30(1046) MICROC | 11-JAN-83 09:51 PAGE 4 CDE MODULE C | |
|--|---------------------------|--|--|
| 162 000200' 006300 163 000202' 062700 000004 164 000206' 010067 000316 165 000212' 012767 000003 166 000220' 005067 000276 167 000224' 106427 000000 | 000312 | ASL RO ADD #4,RO MOV RO,IPCSR2 MOV #3,IPCSR2+2 CLR FLG3 MTPS #PRIOO | :PCSR2 IS PCSR0+4 ;SAVE PCSR2 ADDRESS ;HIGH ORDER BITS 17:16 ;INITIALIZE FLAG WORD ;ALLOW INTERRUPTS |
| 169 000230' 005767 000266 170 000234' 001775 | | TST FLG3 BEQ 20\$ | ; WAIT FOR AN INTERRUPT |
| 171 172 000236' 106427 000340 173 000242' 032767 000001 174 000250' 001001 175 000252' 000777 | 000252 | MTPS #PRIO7 BIT #CSRFLG,FLG3 BNE 30\$ BR . | RAISE CPU PRIORITY DID HOST GIVE US A COMMAND? YES NO. ERROR SO JUST SIT HERE FOR LACK OF ANYTHING BETTER TO DO |
| 177 178 | 000206 | MOVB a#IPCSRO,RO BIC #177760,RO CMP #17,RO BEQ 60\$ MOV PC,R1 ADD #TBLC,R1 ASL RO ADD RO,R1 ADD (R1),R1 JSR PC,(R1) BCS 40\$ MOVB #INMON,PCSR1 BR 45\$ MOVB #INERR,PCSR1 | GET WHAT HOST WROTE TO PCSRO STRIP ALL BUT COMMAND BITS RETURN TO OPERATIONAL MICROCODE? YES GET ADDRESS OF OUR COMMAND TABLE MAKE COMMAND A BYTE OFFSET USE IT TO INDEX INTO COMMAND TABLE R1 NOW HAS COMMAND ROUTINE ADDRESS EXECUTE AS COMMANDED FROM HOST ERROR OCCURRED INDICATE TO HOST WE ARE BACK IN MICROMONITR INDICATE TO HOST ERROR OCCURRED |
| 192 000330' 016737 000172 193 000336' 005067 000160 194 000342' 000730 | 021020 45\$: | MOV PCSR1,@#IPCSR1 CLR FLG3 BR 15\$ | RESET FLAG WORD COMMAND |
| 195 196 000344' 005000 197 000346' 000137 040006 | | CLR RO JMP a#40006 | FAKE SUCCESSFUL SELF TEST RESULTS |
| 198 199 000352 052767 000001 200 000360 000002 | 000142 CSRWRT: [| BIS #CSRFLG,FLG3 RTI | ; INDICATE A CSR WRITE INTERRUPT OCCURED |
| 200 000360' 000002 201 202 000362' 052767 000002 203 000370' 012737 020000 204 205 000376' 000777 206 207 208 000400' 005267 000120 209 000404' 000002 210 211 000406' 013767 021002 212 000414' 032767 040000 | 000132 ERRINT: 021000 | BIS #ERRFLG,FLG3 MOV #UNIERR,@#IPCSRO | :INDICATE A UNEXPECTED INTERRUPT OCCURED :TELL HOST AN UNEXPECTED INTERRUPT |
| 205 000376° 000777 206 | | BR . | :HAPPENED :JUST SIT HERE AND SPIN WHEELS :COUNT ON THE HOST TO TIMEOUT WAITING |
| 208 000400 005267 000120 209 000404 000002 | TIMINT: | INC SANTIM | COUNT TICKS AS THEY OCCUR |
| 210 211 000406' 013767 021002 212 000414' 032767 040000 213 000422' 001404 214 000424' 012737 040000 215 | | MOV @#DMACSR,DMDONE BIT #BIT14,DMDONE BEQ 10\$ MOV #NXMERR,@#IPCSRO | GET DMA STATUS DID A NON-EXISTANT MEMORY INTERRUPT OCCUR? NO YES, TELL HOST A NON-EXISTANT MEMORY LOCATION WAS ADDRESSED |
| 216 000432 000407 217 000434 032767 100000 | | BR 20% BIT #BIT15,DMDONE | ; DID A NPR TIMEOUT OCCUR? |

| MICROC . | - MICROCO MAC 10 | DE MODUL S8-NAL- | E C 17:53 | MACY11 | 30(1046) MICRO(| 11-JAN- CODE MODU | -83 09:51 PAGE 5 | |
|--|---|--|------------------|------------------|--|--|--|---|
| 218 219 220 221 222 223 | 000442' 000444' 000452' 000460' 000462' | 012737 012737 000777 | 100000 100000 | 021000 021002 | 20 \$: | BEQ MOV MOV BR RTI | 30\$ #NPRERR,@#IPCSRO #BIT15,@#DMACSR | :NO :TELL HOST NPR TIMEOUT HAPPENED :CLEAR THE INTERRUPT IN THE DMA ENGINE :SIT HERE AND SPIN WHEELS |
| 225 226 227 228 | 000464° 000472° 000500° | C12737 | 000004 010000 | 000030 021000 | PARINT: | | #PARFLG,FLG3 #PARERR,@#IPCSRO | ;SET PARITY ERROR OCCURRED ;TELL HOST A LINK MEMORY PARITY ERROR ;OCCURRED |
| 2121234567890123456789012 22222222222222222222222222222222222 | 000502 | 000042 000050 000136 000222 001662 001772 002166 | | | TBLC: | WORD WORD WORD WORD WORD WORD | CLRC MICC1 MICC2 MICC3 MICC4 MICC5 MICC5 MICC6 MICC7 | CLEAR COMMAND PCSRO INTERRUPT BIT TEST SANITY TIMER TEST COMPREHENSIVE LINK MEMORY TEST DMA 'TO' ADDRESS REGISTER TEST DMA 'FROM' ADDRESS REGISTER TEST DMA BLOCK TRANSFER TEST RIPPLE TEST |
| 239 240 241 242 243 244 245 246 | | 000000 000000 000000 000000 | 000000 000000 | | FLG3: SANTIM: PCSR1: IPCSR2: PCBADR: DMDONE: BAKPAT: | .WORD .WORD .WORD | 0 0 0 0,0 0,0 0,0 0 377 | FLAG WORD COUNT FOR SANITY TIMER COPY OF WHAT GOES TO IPCSR1 ADDRESS IN HOST MEMORY FOR PCSR2 ADDRESS IN HOST MEMORY FOR PCB DMA INTERRUPT HAPPENED BACKGROUND PATTERN FOR MEMORY TESTS |

M1CROC - M1CROCODE MODULE C MACY11 30(1046) 11-JAN-83 09:51 PAGE 6
M1CROC.MAC 10-JAN-83 17:53 MICROCODE MODULE C

247
248
249
250
251 000544' 105067 177757 CLRC: CLRB PCSR1+1 ;CLEAR THE SELF TEST FIELD
252 000550' 000241
253 000552' 000207 RTS PC

| MICROC. | - MICROCO MAC 10 | DE MODU -JAN-83 | | MACY11 | 30(1046) MODULE | | N-83 09:51 PAGE 7 DTEST #1 | |
|---|---|--|--|--------------------------------------|--------------------|--|--|---|
| 254 | | | | | .SBTTL | MODULE | C, MICROTEST #1 | |
| 255 255 255 255 261 263 264 265 267 | 000562° 000570° 000576° 000604° 000610° | 112767 016737 016737 016737 013700 013701 010037 010137 | 060002 177740 177734 177730 021014 021014 021010 021012 | 1777-4 021020 021010 021012 | MICC1: | MOVB MOV MOV MOV MOV MOV MOV | #INTST,PCSR1 PCSR1,@#IPCSR1 IPCSR2,@#MDMA0;PICK IPCSR2+2,@#MDMA1 @#MDMARO,RO @#MDMARO,R1 RO,@#MDMAO R1,@#MDMA1 | UP ADDRESS OF PCBB :RO HAS CONTENTS OF HOST'S PCSR2 :R1 HAS CONTENTS OF HOST'S PCSR3 :FETCH CONTENTS OF PCBB+0 |
| 265 | | | | | ;AT THI | S POINT | MDMARO WILL CONTAIN TH | E INTERRUPT BIT THAT WE ARE TO SET |
| 267 268 269 270 | 000632' 000640' | 013737 112767 000241 000207 | 021014 000001 | 021000 177667 | | MOV MOVB CLC RTS | a#MDMARO,a#IPCSRO #1,PCSR1+1 PC | SET CORRESPONDING INTERRUPT BIT TELL HOST WHAT TEST WE JUST FINISHED SUCCESS |

| MICROC. | - MICROCODE MODU MAC 10-JAN-83 | ILE C 5 17:53 | MACY11 | 30(1046) MODULE | 11-JAN C, MICRO | -83 09:51 PAGE 8 TEST #2 | |
|---------------------------------|-----------------------------------|------------------|------------------|--------------------|--------------------|----------------------------------|---|
| 271 272 273 274 | | | | .SBTTL | MODULE | C, MICROTEST #2 | |
| 274 275 | 000644' 112767 000652' 016737 | 000002 177650 | 177654 021020 | MICC2: | MOVB MOV | WINTST, PCSR1 PCSR1, awipcsR1 | ; TELL HOST WE ARE TESTING |
| 276 277 | 000660 005067 000664 106427 | 177640 000200 | 021020 | | (LR | SANTIM | CLEAR TIMER COUNT |
| 278 | 000670 026727 | 177630 | 000012 | 105: | MTPS CMP | MPRIO4 SANTIM, W10. | LOWER PRIORITY TO ALLOW TIMER INTERRUPT ; WAIT FOR TEN TICKS OF THE TIMER |
| 279 280 281 282 283 | 000676' 002774 000700' 106427 | 000340 | , | | BLT MTPS | 10\$ #PRI07 | ;RAISE PRIORITY TO STOP TIMER |
| 281 282 | 000704' 112767 000712' 016737 | 000002 177610 | 177615 021020 | | MOVB MOV | #2,PCSR1+1 PCSR1,@#IPCSR1 | TELL HOST WHAT TEST WE JUST FINISHED |
| 283 284 | 000720° 012737 000726° 000241 | 004000 | 021000 | | MOV CLC | #DNI,@#IPCSRO | ;TELL HOST WE ARE DONE |
| 284 285 | 000730 000207 | | | | RTS | PC | |

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MICROC - MICROCODE MODULE C
                                    MACY11 30(1046) 11-JAN-83 09:51 PAGE 9
MICROC.MAC
               10-JAN-83 17:53
                                             MODULE C. MICROTEST #3
                                              .SBTTL MODULE C. MICROTEST #3
   287
   288
                                                **********************************
   289
290
                                             THIS MICROTEST CHECKS THE LINK MEMORY. IT DOES SO BY RUNNING A SERIES OF MICROSUBTESTS ON THE MEMORY BETWEEN 16K AND 32K (100000-177776). THE SUPTESTS ARE:
   291
292
293
                                                       A-ACCESS IEST
B-ADDRESS SHIFT TEST
C-DATA_LATCH_TEST
   294
   295
                                                      D-ADDRESS BIT SHIFT #1
E-ADDRE'S BIT SHIFT #2
F-MARCH TEST
   296
   297
   298
   299
   300
                                              301
        000732' 112767
   302
                           000002 177566 MICC3: MOVB
                                                                #INTST,PCSR1
                                                                                           :TELL HOST WE ARE TESTING
                                                               PCSR1, ##IPCSR1
PC_RO
#C3STBL-.,RO
        000740 016737
   303
                           177562 021020
                                                       MOV
        000746' 010700
   304
                                                       MOV
                                                                                           GET ADDRESS OF SUBTEST LIST
        000750' 062700
   305
                           000134
                                                       ADD
   306
   307
        000754' 011001
                                             105:
                                                       MOV
                                                                (RO)_R1
                                                                                           GET OFFSET FROM ENTRY TO SUBTEST
   308
        000756' 001437
                                                       BEQ
                                                                30$
                                                                                           ; NO MORE ENTRIES
                                                                RO,R1
PC,(R1)
20$
        000760' 060001
   309
                                                                                           CALC ACTUAL SUBTEST ADDRESS GO EXECUTE SUBTEST
                                                       ADD
        000762' 004711
   310
                                                       JSR
        0007641 103403
   311
                                                       BCS
                                                                                           ;ERROR OCCURRED IN SUBTEST
        000766' 062700
000772' 000770
                                                                #2,R0
10$
   312
                           000002
                                                       ADD
                                                                                           POINT TO NEXT SUBTEST IN LIST
   313
                                                       BR
   314
        000774' 016737
   315
                                                                IPCSR2,@MMDMA0
IPCSR2+2,@MMDMA1
                           177530
                                    021010
                                             205:
                                                       MOV
                                                                                           GET CONTENTS OF HOST'S PCSR2 AND PCSR3
   316
        001002' 016737
                           177524
                                    021012
                                                       MOV
        001010 013700
   317
                           021014
                                                       MOV
                                                                a/MDMARO,RO
                                                                                           ;RO=CONTENTS OF PCSR2
        001014' 013702
                           021014
   318
                                                                a/MDMARO.R2
                                                                                           R2=CONTENTS OF PCSR3
                                                       MUA
        001020' 010037
                           021010
   319
                                                                RO, AMMDMAO
R2, AMMDMA1
                                                       MCV
                                                                                           :POINT TO PCBB+0
                           021012
   320
        001024' 010237
                                                       MOV
   321
        001030' 016737
                           000066
                                    021726
                                                                                           :LOAD PCBB+0 WITH SUBJEST # ...
                                                                SUBNUM, 2#MDMAWO
                                                       MOV
   322
                                                                                           ; AND PCBB+1 WITH ERROR TYPE
   323
                           021026
021026
        001036' 010137
                                                                OWAMDMWG, 19
R3, a/MDMAWO
                                                       MOV
                                                                                           :LOAD PCBB+2 WITH FAILING ADDRESS
        001042° 010337
001046° 010437
   324
                                                       MOV
                                                                                           :LOAD PCBB+4 WITH GOOD DATA
   325
                           021026
                                                       MOV
                                                                R4, a#MDMAWO
                                                                                           :LOAD PCBB+6 WITH BAD DATA
        001052° 000261
001054° 000401
   326
                                                       SEC
                                                                                           :TELL MICROMONITOR THIS TEST FAILED
   327
                                                       BR
                                                                40$
   328
329
        001056' 0002-1
                                                       CLC
                                                                                           :TELL MICROMONITOR THIS TEST WAS SUCCESSFUL
        0010601 112767
   330
                           000003
                                    177441
                                             405:
                                                       MOVB
                                                                #3,PCSR1+1
                                                                                           :TELL HOST WHICH TEST THIS WAS
                           177434
        001066' 016737
   331
                                    021020
                                                                PCSR1_a#IPCSR1
                                                       MOV
        001074' 012737
                                    021000
   332
                           004000
                                                       MOV
                                                                WDNI. a WIPCSRO
                                                                                           :TELL HOST THIS MICROTEST IS FINISHED
   333
        001102' 000207
                                                       RIS
   334
   335
        001104' 000020
                                             C3STBL: MICC3A-.
        001106' 000160
   336
                                                      MICC38-.
        001110 · 000322
001112 · 000436
   337
                                                      MICC3C-.
   338
                                                      MICC3D-.
        001114' 000704
   339
        001116' 001024
                                                      MICC3F-.
        001120
   341
                  000000
                                                       .WORD
                                                                                           :END OF LIST
```

MICROC - MICROCODE MODULE C MACY11 30(1046) 11-JAN-83 09:51 PAGE 10 MICROC.MAC 10-JAN-83 17:53 MCDULE C, MICROTEST #3

342 3.3 001122' 000 344 001123' 000 345

SUBNUM: .BYTE O ERRTYP: .BYTE O

CURRENT SUBTEST # BEING EXECUTED TYPE OF ERROR, DATA = 0, ADDRESS=1

| MICROC . MICRO . MICROC . MICROC . MICROC . MICROC . MICROC . MICROC . MICRO . MICROC . MICRO . MICROC . MICROC . MICROC . MICROC . MICROC . MICROC . MICRO . MICROC . MICRO . MICROC . MICROC . MICROC . MICROC . MICROC . MICROC . MICRO . MICROC . | - MICROCO | ODE MODU O-JAN-83 | LE (17:53 | MACY11 | 30(1046) 11-JAN-83 09:51 PAGE 11 MODULE C, MICROTEST #3, MICROSUBTEST A .SBTTL MODULE C, MICROTEST #3, MICROSUBTEST A THIS IS AN ACCESS TEST OF LINK MEMORY. IT WRITES DATA ALL THROUGH 16K TO 32K(100000,177772) AND VERIFIES SAME. IT THEN WRITES ZEROS. IT ALSO CHECKS FOR PARITY ERRORS. | | | |
|---|--|--------------------------------------|----------------------------|------------------|--|---|---|--|
| 554 355 | 001124° 001126° 001134° | 010046 112767 106427 | 000001 000300 | 177766 | MICC3A: | MOV MOVB MTPS | RO,-(SP) #1,SUBNUM #PRIO6 | ;SAVE RO :TELL WE ARE IN SUBTEST A ;ALLOW PARITY ERRORS |
| *60 | 001140' 001142' 001146' 001152' 001156' | 012706 012705 004767 | 177774 037776 000000 | | 5\$: 10\$: | MOV MOV MOV JSR SOB | SP.RO #LINADR+LINSIZ,SP #LINSIZ/2,R5 PC,10\$ R5,5\$ | SAVE THE STACK POINTER FOR A MOMENT POINT STACK TO TOP OF LINK MEMORY NUMBER OF WORDS IN LINK MEMORY WRITE ADDRESS OF NEXT INSTUCTION ALL OVER LINK MEMORY |
| 365 366 367 368 | 001160' 001162' 001164' | | 177772 | | | MOV MOV ADD | RO.SP PC.R3 #10\$R3 | RESTORE STACK GET DATA THAT WAS WRITTEN TO LINK MEMORY |
| 361 362 363 364 365 366 367 370 371 372 373 | 001170' 001174' 001176' 001204' | 011104 032767 | 100000 | 177316 | 12\$: | MOV MOV BIT BNE | #LINADR,R1 (R1),R' #PARFLG,FLG3 20\$ | :POINT TO BASE OF LINK MEMORY :READ DATA :DID A PARITY ERROR OCCUR? :YES |
| 375 376 377 378 379 380 | 001206' 001210' 001212' 001220' 001226' 001230' | 001410 112767 112767 000261 | 000003 | 177306 177675 | 15 \$: 20 \$: | CMP BEQ MOVB MOVB SEC BR | R3,R4 30\$ #INERR,PCSR1 #DATERR,ERRTYP | :NO. WAS DATA GOOD? :YES :TELL HOST THIS SUBTEST FAILED :TELL MICROMONITOR TYPE OF ERROR :TELL MICROMONITOR ERROR OCCURRED |
| 581 382 383 384 | 001232' 001236' 001242' | 062701 020127 001354 | 000002 177774 | | ₹0\$: | ADD CMP BNE | #2.R1 R1.#LINADR+LINSIZ 12\$ | POINT TO NEXT ADDRESS; DONE ALL OF LINK MEMORY?; NOT YET |
| 381 382 383 384 385 386 388 389 390 | 001244* 001250* 901252* 001256* | 012701 005021 020127 001374 | 100000 | | 32\$: | MOV CLR CMP BNE | #LINADR,R1 (R1)+ R1,#LINADR+LINSIZ 32\$ | ;OK NOW FILL WITH ZEROES |
| 391 392 393 394 | 001260° 001262° 001264° | 012600 | | | 35\$: 40\$: | CLC MOV RTS | (SP)+,RO PC | ; INDICATE SUCCESS ; RESTORE RO |

| MICROC MICROC 395 396 397 398 399 400 401 402 403 404 405 406 407 | - MICROCO | ODE MODU O-JAN-83 | LE C 17:53 | MACY11 | SBTTL ##### ADDRES THIS TI IT CHE AND CHE IT ALS WRITTE | MODULE ****** S SHIFT EST ASSU CKS FOR ECKING FO O CHECKS N WITH 1 | MES ALL MEMORY BETS PROPER BANK SELECT OR 1'S IN THE SAME FOR DATA ERRORS I 'S AND MAKES SURE I | |
|---|--|--|----------------------------|------------------|--|---|---|--|
| 408 409 410 411 | 001266' 001270' | 010046 112767 | 000005 | 177624 | MICC38: | MOV MOVB | RO,-(SP) #2,SUBNUM | :SAVE RO :TELL HIM WE ARE IN THE SECOND SUBTEST |
| 412 413 414 | 001276' 001302' 001306' | 012701 | 100000 | | 10\$: | MOV MOV MOV | #LINADR,RO #LINADR,R1 #177777,(RO) | :SET 'WRITTEN TO' ADDRESS :SET 'READ FROM' ADDERSS :WRITE DATA INTO LOCATION \T BASE |
| 415 416 | 001312 | 011104 | | | 20\$: | MOV | (R1),R4 | ;UF A 4K BUUNDARY :READ DATA FROM MEMORY ADDRESS WHICH |
| 417 418 | 0013141 | 020001 | | | | CMP | RO,R1 | IS AN EVEN 4K INCREMENT AWAY IS 'READ FROM' AND 'WRITTEN TO' |
| 419 420 421 422 423 424 425 426 | 001316' 001320' 001322' 001324' | 005003 005704 | | | | BEQ CLR TST BEQ | 70\$ R3 R4 50\$ | ADDRESSES THE SAME? YES, SO DATA IN BOTH SHOULD BE THE SAME; GOOD DATA IS ZEROS; DATA IN 'READ FROM' MUST BE O'S OK GO CHANGE 'READ FROM' ADDRESS; ERROR OCCURRED BUT WE DON'T KNOW IF IT IS A DATA BEAD ALL 1'S? |
| 426 427 428 429 430 431 | 001326' 001332' 001334' 001342' 001350' 001352' | 001615 112767 112767 000261 | 000001 | 177561 177156 | | CMP BNE MOVB MOVB SEC BR | #177777,R4 40\$ #ADRERR,ERRTYP #INERR,PCSR1 | NO. SO IT WAS A DATA ERROR YES, IT WAS AN ADDRESS ERROR TELL HOST THIS TEST FAILED INDICATE FAILURE |
| 432 433 | 001354 | 022704 | 177777 | | 70\$: | CMP BEQ | 177777,R4 50 \$ | LEAVE THIS SUBTEST DATA READ MUST BE ALL 1'S |
| 4 20 | 001354' 001360' 001362' 001366' 001374' 501452' | 012703 112767 112767 000261 000410 | 177777 000000 000003 | 177527 177124 | 40\$: | MOV MOVB MOVB SEC BR | #177777,R3 #DATERR,ERRTYP #INERR,PCSR1 | :IT IS GOOD :GOOD DATA IS ONES :IT WAS A DATA ERROR :TELL HOST THIS TEST FAILED :INDICATE FAILURE :LEAVE THIS SUETEST |
| 439 440 441 442 443 | 001406' 001412' 001414' 001416' 001422' | 103337 005010 062700 103327 | 020000 | | 50\$: | ADD BCC CLR ADD BCC | #20000,R1 20\$ (R0) #20000,R0 10\$ | CHANGE 'READ FROM' ADDRESS BY 4K CONTINUE SAME 'WRITTEN TO' IF NOT PAST 32K CLEAR OLD 'WRITTEN TO' ADDRESS CHANGE 'WRITTEN TO' ADDRESS BY 4K CONTINUE IF NOT PAST 32K INDICATE SUCCESS OF THIS SUBTEST |
| 445 446 447 448 449 | 001424° 001426° 001430° | 012600 | | | 60\$: | CLC MOV RTS | (SP)+,RO PC | :INDICATE SUCCESS OF THIS SUBTEST :RESTORE RO |

| MICROC. MICROC. | - MICROCODE MODU MAC 10-JAN-83 | 17:53 | MACY11 | 30(1046) MODULE | 11-JAN C, MICRO | 1-83 09:51 PAGE 13 DTEST #3, MICROSUBTE | ST C |
|--|--|----------------------------|------------------|-------------------------|---|--|--|
| 450 451 453 455 455 456 456 459 460 | | | | DATA L | ATCH TES FIRST L SITION A N THE SA | OCATION OF EACH 4K IND CHECKED FROM LSB IME LOCATION A 'O' I | BANK A '1' IS SHIFTED THROUGH EACH TO MSB. S SHIFTED THROUGH EACH BIT POSITION |
| 461 463 464 465 466 467 469 471 473 | 001432' 010046 001434' 112767 001442' 012701 001446' 012700 001452' 010002 001454' 010011 001456' 011104 001460' 020004 001462' 001411 001464' 112767 | 000003 100000 000001 | 177460 177431 | MICC3C: 1\$: 2\$: 3\$: | MOVB MOV MOV MOV MOV CMP BEQ MOVB | RO,-(SP) #3,SUBNUM #LINADR,R1 #1,RO RO,R2 RO,(R1) (R1),R4 RO,R4 4\$ #DATERR,ERRTYP | : ERROR IS DATA ERROR |
| 474 475 476 477 478 479 480 481 482 483 | 001472' 010003 001474' 112767 001502' 000261 001504' 000417 001506' 005702 001510' 001406 001512' 006300 001514' 103357 001516' 005002 001520' 012700 | 000003 | 177024 | 4\$: | MOVB SEC BR TST BEQ ASL BCC | RO,R3 #INERR,PCSR1 6\$ R2 5\$ RO 2\$ | :INDICATE THIS SUBTEST FAILED :LEAVE THIS SUBTEST :ARE WE SHIFTING A 1 OR A 0? :ZERO :SHIFT THE ONE OVER :IF THE '1' HAS NOT BEEN SHIFTED :THRU THE 16 POSITIONS CONTINUE WITH 1 :ELSE START SHIFTING A '0' |
| 485 486 487 488 489 490 491 493 | 001520' 012700 001524' 000753 001526' 00026! 001530' 006100 001532' 103750 001534' 062701 001540' 103342 001542' 000241 001544' 012600 001546' 000207 | 020000 | | 5 \$: | MOV BR SEC ROL BCS ADD BCC CLC MOV RTS | #177776,R0 2\$ R0 2\$ #SIZ4K,R1 1\$ (SP)+,R0 PC | START WITH LSB = 0 ALL OTHERS 1'S CONTINUE WITH SHIFTING A 0 MOVE '0' OVER ONE BIT POSITION HAS '0' BEEN IN ALL POSITIONS? NO CONTINUE WITH SHIFTING A 0 CONTINUE TEST AT NEXT 4K BOUNDARY IF NOT PAST 32K INDICATE THIS SUBTEST SUCCESSFUL RESTORE RO |

| THIS TE PATTERN THEN STOF THE IT THEN | 30(1046) 11-JAN-83 09:51 PAGE 14 MODULE C, MICROTEST #2, MICROSUBTEST D SBTTL MCDULE C, MICROTEST #2, MICROSUBTEST D ADDRESS BIT SHIFT #1 THIS TEST CHECKS FOR DUAL ADDRESS PROBLEMS BY FIRST WRITING A BACKGROUND PATTERN THROUGHOUT LINK MEMORY. THEN STARTING AT THE LOWEST LOCATION IN A BANK IT WRITES THE COMPLEMENT OF THE BACKGROUND PATTERN. THEN READS THE MEMORY FOR CORRECT CONTENTS IT THEN SHIFTS A '1' THROUGH THE ADDRESS POINTER ND REPEATS THE ABOVE. IT DOES THIS FOR EACH 4K BANK. | | | | | | | |
|---------------------------------------|---|--|---|--|--|--|--|--|
| MICC3D: 45: 45: 65: | MOVB MOVB MOV CLR MOV CMP BLO MOV CLS CMP BLO CMP SHAB CLR | RO,-(SP) #4,SUBNUM #377,BAKPAT R3 #LINADR,R0 BAKPAT,(R0)+ R0,#LINADR+LINSIZ 3\$ BAKPAT,R0 | ;SAVE RO ;TELL WE ARE IN SUBTEST 4 ;LOAD BAKPAT CONSTANT ;CONTAINS 4K BANK ADDRESS ;WRITE LINK MEMORY WITH BACKGROUND ;PATTERN ;RO CONTAINS GOOD DATA ;R2 WILL BE OUR 'WRITTEN TO' ADDRESS ;INDEX INTO THIS 4K BANK ;IS RESULT LESS THAN LINK MEM BASE ;YES, DON'T USE THIS ADDRESS ;IS RESULT LARGER THAN LINK MEM TOP? ;YES, DON'T USE THIS ADDRESS EITHER ;WRITE COMPLEMENT OF PATTERN ;R1 WILL BE OUR 'READ FROM' ADDRESS ;INDEX INTO THIS 4K BANK ;IS RESULT LESS THAN LINK MEM BASE? ;YES, DON'T USE THIS ADDRESS | | | | | |
| 227 8 \$: | CMP BLO CMP BHIS MOV BEQ CMP BE OVB MOV SECV BROV BRO | R1, #LINADR+LINSIZ 15\$ (R1), R4 R1, R2 10\$ R0, R4 12\$ #ADRERR, ERRTYP R0, R3 #INERR, PCSR1 25\$ R0, BAKPAT 12\$ | :INDEX INTO THIS 4K BANK :IS RESULT LESS THAN LINK MEM BASE? :YES, DON'T USE THIS ADDRESS :IS RESULT LARGER THAN LINK MEM TOP? :YES, DON'T USE THIS ADDRESS EITHER :READ DATA :IS 'READ FROM' AND 'WRITTEN TO' SAME? :YES, GO CHECK DATA :NO, DATA READ SHOULD BE SAME AS BAKPAT :IF SO CONTINUE WITH NEW INDEX :INDICATE ADDRESS ERROR :GET GOOD DATA :INDICATE THIS SUBTEST FAILED :LEAVE THIS SUBTEST :DOES RO CONTAIN SWAPPED DATA? :NO :YES :MAKE GOOD DATA LIKE SWAPPED BAKPAT | | | | | |
| 2 | ADDRESS THIS TE PATTER! THEN STOP THE! IT DOES MICC3D: 48: 28: 38: 78: | ADDRESS BIT SHE THIS TEST CHECK PATTERN THROUGH THEN STARTING OF THE BACKGROUTH SHIPTS IT DOES THIS FOR THE SHIPTS OF THE SHIPTS | ADDRESS BIT SHIFT #1 THIS TEST CHECKS FOR DUAL ADDRESS PROB PATTERN THROUGHOUT LINK MEMORY. THEN STARTING AT THE LOWEST LOCATION I OF THE BACKGROUND PATTERN. THEN READS IT THEN SHIFTS A '1' THROUGH THE ADDRE IT DOES THIS FOR EACH 4K BANK. MICC3D: MOV RO, - (SP) MOVB #4, SUBNUM MOV #377, BAKPAT 1\$: CLR R3 2\$: MOV #377, BAKPAT 1\$: CLR R3 2\$: MOV BAKPAT, (R0) + CMP RO, #LINADR, RO 3\$: MOV BAKPAT, RO 4\$: CLR R2 6\$: BIS R3, R2 CMP R2, #LINADR BLO 16\$ CMP R2, #LINADR BLO 16\$ CMP R2, #LINADR BLO 16\$ CMP R1, #LINADR BLO 12\$ CMP R1, R2 BEQ 12\$ BEQ 10\$ CMP R0, R4 BEQ 12\$ BEQ 12\$ BEQ 12\$ BR 11\$ 10\$: SWAB R0 CMP R0, R4 | | | | | |

| MICROC - MICROCODE MODULE C MICROC.MAC 10-JAN-83 17:53 | MACY11 30(1046) MODULE | 11-JAN-83 09:51 PAGE 15 C, MICROTEST #2, MICROSUBTEST D | |
|---|--------------------------------|--|---|
| 550 001726' 000300 551 001730' 040301 552 001732' 005701 553 001734' 001001 | 11 \$: 12 \$: | SWAB RO BIC R3,R1 TST R1 BNE 13\$ | RESTORE GOOD DATA TO BAKPAT REMOVE 4K BANK SELECT FROM "READ FROM" DID AN INDEX EXIST? |
| 550 001726' 000300 551 001730' 040301 552 001732' 005701 553 001734' 001001 554 001736' 005201 555 001740' 006101 556 001742' 020127 020000 557 001746' 103733 | 13\$:_ | INC R1 ROL R1 CMP R1,#SIZ4K BLO 7\$ | YES NO. MAKE ONE SHIFT INDEX OVER IS IT LESS THAN 4K YES. CONTINUE CHECKING FOR ROGUS DATA |
| 559 001750' 000312 560 001752' 040302 561 001754' 005703 | 15 \$: 16 \$: | SWAB (R2) BIC R3,R2 TST R2 BNE 18\$ | YES. CONTINUE CHECKING FOR BOGUS DATA IN THIS 4K BANK RESTORE CONTENTS OF 'WRITTEN TO' REMOVE BANK SELECT FROM 'WRITTEN TO' DOES 'WRITTEN TO' CONTAIN AN ADDRESS? |
| 562 001756' 001001 563 001760' 005202 564 001762' 006102 565 001764' 020227 020000 566 001770' 103711 567 001772' 060203 | 18\$: | INC R2 ROL R2 CMP R2,#S1Z4K BLO 6\$ | YES ;NO, MAKE ONE ;SHIFT 'WRITTEN TO' ADDRESS ;IS 'WRITTEN TO' LARGER THAN 4K? ;NO |
| 568 001774' 103403 569 001776' 020327 177774 570 002002' 103703 | | ADD R2,R3 BCS 20\$ CMP R3,#LINADR+LINSIZ BLO 4\$ | MAKE 'WRITTEN TO' POINT TO NEXT 4K IF IT HAS WRAPPED AROUND DO COMPLEMENTED IS RESULT LARGER THAN LINK MEMORY TOP? |
| 572 002010 001666 | 20\$: | SWAB BAKPAT BEQ 1\$ CLC | REPEAT TEST WITH COMPLEMENTED PATTERN |
| 574 002014 012600 | , 25 § : | MOV (SP)+,RO RTS PC | :INDICATE THIS SUBTEST SUCCESS :RESTORE RO |

| MICROC . | - MICROCOD MAC 10- | E MODUL | E C 17:53 | MACY11 | 30(1046) Module (| 11-JAN C, MICRO | -83 09:51 PAGE 16 TEST #3, MICROSUBTEST E | |
|---|--|--------------------------------------|--------------|--------|--|----------------------------------|--|--|
| 577 578 | | | | | .SBTTL | MODULE | C, MICROTEST #3, MICROS | JBTEST E |
| 580 581 | | | | | ADDRES | S BIT SH | IFT #2 | |
| 579 581 581 582 583 584 585 588 591 593 594 597 598 | | | | | THIS TI OF LINI IT THEI AS DATA | Α, | | PROBLEMS BY WRITING EACH LOCATION HEN VERIFYING EACH LOCATION. THE COMPLEMENT OF THE ADDRESS |
| 589 590 591 | 0020201 0 |)10046 12767 | 000005 | 177072 | MICC3E: | MOVB | RO,-(SP) #5,SUBNUM | :SAVE RO :TELL WHICH SUBTEST WE ARE IN |
| 592 593 594 595 596 | 002022* 1 002030* 0 002032* 0 002036* 0 002040* 0 | <i>J</i> U5/U5 | 100000 | | 1\$: | CLR MOV MOV TST BEQ | R3 #LINADR,R1 R1,R0 R3 2\$ | FLAG INDICATING ADDRESS IS COMPLEMENTED GET STARTING ADDRESS OF LINK MEMORY GET ADDRESS TO WORK WITH SHOULD WE COMPLEMENT THE DATA TO STORE? |
| 597 598 599 600 601 602 603 | 002044° 0 002046° 0 002050° 0 002054° 1 |)05100)10021)20127 | 177774 | | 2\$: | COM MOV CMP BLO | PO RO,(R1)+ R1,#LINADR+LINSIZ 1\$ | COMPLEMENT DATA WRITE DATA IS NEW ADDRESS LARGER THAN LINK MEM? NO, KEEP FILLING LINY MEMORY |
| 602 603 604 605 606 | 002056' 0 002060' 0 002062' 0 002064' 1 002072' 0 002076' 1 002106' 0 002110' 1 |)14104)20004)01411 12767 | 000001 | 177031 | 3\$: | MOV CMP BEQ MOVB MOV | -(R1),R4 R0,R4 4\$ #ADHERR,ERRTYP R0,R3 | ;READ DATA STORED :IS DATA READ SAME AS WRITTEN? :YES :INDICATE ADDRESS ERROR :GET GOOD DATA |
| 607 608 609 | 002074 ° 0 002076 ° 1 002104 ° 0 | 000261 | 000003 | 176422 | | SEC MOVB BR | #INERR,PCSR1 | INDICATE ADDRESS ERROR GET GOOD DATA INDICATE FAILURE TELL HOST THIS TEST FAILED LEAVE THIS SUBTEST |
| 609 610 611 612 613 | 002116 | 01401 | 000002 | | 4\$: | MOV SUB TST BEQ | R1,R0 #2,R0 R3 5\$ | CALC GOOD DATA FOR NEXT LOCATION |
| 614 615 616 617 | 002120' 0 002122' 0 002126' 1 | 005100 020127 101353 | 100000 | | 5\$: | COM CMP BHI COM | RO R1,#LINADR 3\$ R3 | :HAVE WE CHECKED ALL LOCATIONS :NOT YET :HAVE WE DONE IT COMPLEMENTED? |
| 618 619 620 621 622 | 002130 0 002132 0 002134 0 002136 0 | 001341 000241 012600 000207 | | | 10 \$: | BNE CLU MOV RTS | 1\$ (SP)+,RO PC | HAVE WE DONE IT COMPLEMENTED? NO. REPEAT WITH COMPLEMENT INDICATE SUCCESS RESTORE RO |

| 623 624 625 626 627 628 631 633 633 633 633 633 638 | - MICROCODE MODU MAC 10-JAN-83 | JLE C MAC 3 17:53 | .SBTTL ***** MARCH THIS | MODULE ****** TEST TEST WRI D EVERY ROCEED II D EVERY ION AND EAT 1 GO EAT 2 GO | LOCATION FOR CORRECT DAN MAX TO MIN DIRECTION LOCATION FOR SWAPPED DAPROCEEDS IN MIN TO MAXING IN MIN TO MAX DIRECTING IN MAX TO MIN DIRECTING IN MAX | |
|---|--|----------------------|----------------------------------|--|---|--|
| 639 640 641 642 643 644 645 646 648 | 002142' 010046 002144' 112767 002152' 005003 002154' 012701 002160' 012700 002164' 010021 002166' 020127 002172' 103774 | 100000 000377 | 750 MICC3F 10\$: 12\$: | : MOV MOVB CLR MOV MOV CMP BLO | R3 #LINADR,R1 #377,R0 F0,(R1)+ R1,#LINADR+LINSIZ 12\$ | ;FILL LINK MEMORY WITH BACKGROUND PATTERN;BACKGROUND PATTERN=LOW BYTE ALL 1'S |
| 649 649 651 653 653 655 657 658 661 663 664 | 002174' 014104 002176' 020004 002200' 001411 002202' 112767 002210' 010003 002212' 000261 002214' 112767 002222' 000462 002224' 000300 002226' 010011 002230' 011104 002232' 020400 002234' 001411 002236' 112767 002244' 010003 002246' 000261 | 000000 176 | 30 \$: | MOV CMP BEQ MOV SEV MOV CMP BEQ MOV CMP BEQ MOV SEC | -(R1),R4 RO,R4 30\$ #DATERR,ERRTYP RO,R3 #INERR,PCSR1 200\$ RO RO,(R1) (R1),R4 R4,R0 40\$ #DATERR,ERRTYP PO,R3 | STARTING FROM THE TOP, READ DATA RO = GOOD DATA, R4 = DATA READ IF SAME OK INDICATE DATA ERROR GET GOOD DATA INDICATE FAILURE TELL HOST THIS TEST FAILED LEAVE THIS SUBTEST NEW GOOD DATA PATTERN STORE AT SAME PLACE READ IT BACK RO=GOOD DATA, R4=DATA READ IF SAME OK INDICATE DATA ERROR GET GOOD DATA FAILURE |
| 665 666 667 668 669 670 671 | 002250' 112767 002256' 000444 002260' 000300 002262' 001032 | 000003 176 | 250 40 \$: | MOVB PR SWAB BNE | #INERR,PCSR1 200\$ RO 90\$ | FAILURE TELL HOST THIS TEST FAILED LEAVE THIS SUBTEST SWITCH GOOD DATA AGAIN IF ORIGINAL PATTERN THEN WE ARE READING THE MEMORY TO CONTAIN A BACKGROUND OF LOW BYTE = ALL T'S AND WRITING IT BACK SWAPPED AND |
| 672 673 674 675 676 677 678 | 002264° 005703 002266° 001032 002270° 062701 002274° 020127 002300° 103015 002302° 011104 | 000002 177774 | 50\$: 60\$: 70\$: | TST BNE ADD CMP BHIS MOV | R3 100\$ #2,R1 R1,#LINADR+LINSIZ 80\$ (R1),R4 | WE ARE GOING MIN->MAX SO ADJUST POINTER WE AT MAX? YES READ DATA |

| MICROC MICROC. | ICROC - MICROCODE MODULE C ICROC.MAC 10-JAN-83 17:53 | | | | 30(1046) 11-JAN-83 09:51 PAGE 18 MODULE C. MICROTEST #3, MICROSUBTEST F | | | | | | | | |
|--|---|--|--------|------------------|---|---|--|---|--|--|--|--|--|
| 679 681 683 683 683 685 686 689 691 693 693 693 | 002304' 002306' 002310' 002316' 002322' 002332' 002332' 002336' 002346' | 001746 112767 010003 000261 112767 000417 000734 000300 001716 005103 012701 | 000000 | 176605 176176 | 80\$: | CMP BEQB MOV SEC MOV BR BR AB BEQ MOV BR | RO,R4 30\$ #DATERR,ERRTYP RO,R3 #INERR,PCSR1 200\$ 30\$ RO 20\$ R3 #LINADR,R1 70\$ | :RO=GOOD DATA, R4=DATA READ :OK IF SAME :INDICATE DATA ERROR :GET GOOD DATA :INDICATE FAILURE :TELL HOST THIS TEST FAILED :LEAVE THIS SUBTEST :SWITCH GOOD DATA :IF LOW BYTE = ALL O'S GO IN MAX->MIN :ELSE GO IN MIN->MAX DIRECTION :SET ADDRESS POINTER TO MIN | | | | | |
| 693 694 | 002350' 002352' | | | | 90\$: | TST BNE | R3 50\$ | :ARE WE GOING MIN->MAX? | | | | | |
| 696 697 698 699 700 701 702 703 | 002354' 002360' 002362' 002364' 002370' 002372' | 000300 001746 000241 012600 | 100000 | | 100\$: | CMP BHI SWAB BEQ CLC MOV RTS | R1,#LINADR 20\$ R0 70\$ (SP)+,R0 PC | ;NO, CHECK TO SEE IF WE ARE AT MIN :NOT YET :WE ARE AT MIN SO SWITCH GOOD DATA :IF LOW BYTE = ALL O'S ELSE WE ARE DONE :INDICATE SUCCESS ;RESTORE RO | | | | | |

| MICROC MICROC. | - MICROCO | DDE MODU D-JAN-83 | LE C 17:53 | MACY17 | 30(1046) MODULE | 11-JAN C, MICRO | -83 09:51 PAGE 19 TEST #4 | |
|-------------------|------------------------------------|----------------------|------------------|------------------|--------------------|--------------------|--------------------------------------|---------------------------------------|
| 704 705 | | | | | .SBTTL | MODULE | C, MICROTEST #4 | |
| 706 707 | 002374° 002402° | 112767 016737 | 000002 176120 | 176124 021020 | MICC4: | MOVB MOV | WINTST, PCSR1 PCSR1, aWIPCSR1 | ; TELL HOST WE ARE TESTING |
| 708 709 | 0024101 | 016737 016737 | 176114 176110 | 021010 021012 | | MOV MOV | IPCSR2, a#MDMAO IPCSR2+2, a#MDMA1 | GET PCBB ADDRESS THROUGH HOST'S PCSR2 |
| 710 711 | | 013700 013701 | 021014 021014 | 021012 | | MOV MOV | a#MDMARO,RO a#MDMARO,R1 | RO HAS CONTENTS OF HOST'S PCSR2 |
| 712 713 | 0024341 | 010037 010137 | 021010 021012 | | | MOV MOV | RO, a#MDMAO R1, a#MDMA1 | SETUP TO READ PCBB+0 |
| 714 715 | 002444 | | 021014 | 021004 | | MOV | a#MDMARO, a#DMATO | GET DATA PATTERN AND WRITE IT TO |
| 716 717 | 0024521 | 013737 | 021004 | 021026 | | MOV | OWAMDM%6,OTAMD%6 | READ DATA PATTERN BACK AND WRITE |
| 718 719 | 002460 ' 002466 ' | 112767 016737 | 000004 176034 | 176041 021020 | | MOVB MOV | #4,PCSR1+1 PCSR1,a#IPCSR1 | TELL HOST WHAT TEST WE JUST FINISHED |
| 720 721 | 002502 | 012737 000241 | 004000 | 021000 | | MOV CLC | MDNI, aMIPCSRO | ; TELL HOST WE ARE DONE |
| 722 723 | 002504 | 000207 | | | | RTS | PC | |

| MICROC - MICROCODE MODULE C MICROC.MAC 10-JAN-83 17:53 | MACY11 30(1046) 11-JAN-8 MODULE C. MICROTE | 83 09:51 PAGE 20 EST #5 |
|--|---|--|
| 724 725 | .SBTTL MODULE C. | , MICROTEST #5 |
| 724 725 726 727 002506' 112767 000002 728 002514' 016737 176006 729 002522' 012700 100000 730 002526' 012701 037776 731 002532' 010010 732 002534' 005720 733 002536' 005301 734 002540' 001374 | 176012 MICC5: MOVB 021020 MOV MOV MOV 10\$: MOV | #INTST.PCSR1 ;TELL HOST WE ARE TESTING PCSR1,@#IPCSR1 #LINADR.RO ;BASE ADDRESS OF LINK MEMORY #LINSIZ/2,R1 ;NUMBER OF WORDS IN LINK MEMORY RO,(RO) ;FILL LINK MEMORY WITH THE ADDRESS (RO)+ |
| 726 727 002506' 112767 000007 728 002514' 016737 176006 729 002522' 012700 100000 730 002526' 012701 037776 731 002532' 010010 732 002534' 005720 733 002536' 005301 734 002540' 001374 735 002542' 016737 175756 736 002550' 016737 175756 737 002556' 013700 021014 738 002562' 013701 021014 739 002566' 010037 021014 739 002576' 013737 021016 740 002576' 013737 021016 | 021010 MOV 1 021012 MOV 1 021032 MOV 1 021032 MOV 1 021033 MOV 1 | RO,(RO) (RO)+ R1 (PO) CONTROL CONTR |
| 741 002576 013737 021014 742 743 002604' 062700 000002 744 002610' 005501 745 002612' 010037 021004 746 002616' 010137 021006 747 002622' 012737 000002 748 002630' 005067 175704 749 002634' 005237 021002 750 002640' 106427 000240 751 002644' 005767 175670 752 002650' 001775 753 002652' 106427 000340 754 002656' 112767 000005 755 002664' 016737 175636 756 002672' 012737 C04000 757 002700' 000241 758 002702' 000207 | ADD ADC MOV MOV MOV MOV CLR INC MTPS AT THE STATE OF THE | ###################################### |

| MICROC. | - MICROCODE MODUL MAC 10-JAN-83 | E (17:53 | MACY11 | 30(1046) MODULE | 11-JAN C, MICRO | 1-83 09:51 PAGE 21 DTEST #6 | |
|--|--|--------------------------------------|----------------------------|--------------------|----------------------------------|---|---|
| 759 760 | | | | .SBTTL | MODULE | C, MICROTEST #6 | |
| 761 762 | 002704 112767 | 000002 175610 | 175514 021020 | MICC6: | MOVB MOV | #INTST.PCSR1 PCSR1,@#IPCSR1 | :TELL HOST WE ARE TESTING |
| 763 764 765 766 767 | 002712' 016737 002720' 012700 002724' 012701 002730' 010010 002732' 005720 | 100000 | 021020 | 10\$: | MOV MOV MOV TST DEC | #LINADR,RO #LINSIZ/2,R1 RO,(RO) (RO)+ R1 | :GET BASE ADDRESS OF LINK MEMORY :SIZE OF LINK MEMORY IN WORDS :FILL LINK MEMORY WITH ADDRESS OF :EACH LOCATION |
| 768 769 770 | 002734 005301 002736 001374 002740 016737 | 175564 | 021010 | | BNE MOV | 10\$ IPCSR2.@#MDMA0 | GET CONTENTS OF HOST'S PCSR2 |
| 770 771 772 773 774 | 002746' 016737 002754' 013700 002760' 013701 002764' 010037 | 175560 021014 021014 021010 | ŎŹĬŎĬŹ | | MOV MOV MOV | IPCSR2+2,@#MDMA1 @#MDMARO,RO @#MDMARO,R1 RO,@#MDMAO | RO HAS CONTENTS OF HOST'S PCSR2 R1 HAS CONTENTS OF HOST'S PCSR3 SETUP TO READ CONTENTS OF PCBB+0 |
| 775 776 777 778 | 002770' 010137 002774' 013737 003002' 012737 003010' 012737 | 021012 021014 100000 003774 | 021004 021022 021024 | | MOV MOV MOV | R1, @#MDMA1 @#MDMAR0, @#DMAT0 #LINADR, @#DMAF #3774, @#DMAWC | SETUP DMA 'TO' REGISTER FROM PCBB+0 SETUP DMA 'FROM' WITH LINK MEM BASE SETUP MAXIMUM BYTE COUNT |
| 779 780 781 782 | 003026' 106427 003032' 005767 | 175516 021002 000240 175502 | | 20\$: | CLR INC MTPS TST BEQ | DMDONE a#DMACSR #PRIO5 DMDONE 20\$ | TURN ON DMA ENGINE ALLOW A DMA DONE INTERRUPT WAIT FOR THE INTERRUPT FROM THE DMA ENGINE |
| 783 794 785 786 787 788 | 003040' 112767 003046' 016737 003054' 012737 003062' 000241 | 000006 175454 004000 | 175461 021020 021000 | | MOVB MOV MOV CLC RTS | #6.PCSR1+1 PCSR1.a#IPCSR1 #CNI.a#IPCSR0 PC | TELL HOST WHAT TEST WE JUST FINISHED |

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MICROC - MICROCODE MODULE C
                                        MACY11 30(1046) 11-JAN-83 09:51 PAGE 22
                 10-JAN-83 17:53
MICROC.MAC
                                                  MODULE C. MICROTEST #6
   790
                                                   SBITL <DMA ''TO'' REGISTER RIPPLE TEST>
    791
   792
    793
          0030661 112767
                              000002 175432
                                                  MICC7:: MOVB
                                                                       #INTST, PCSR1
          003074' 016737
                              175426
                                        021020
                                                            MOV
                                                                       PCSR1, A#IPCSR1
    795
   796
797
         003102' 012700
003106' 012720
003112' 012710
                              100004
052525
031463
                                                                      #LINADR+4,RO
#052525,(RO)+
                                                            MOV
    798
                                                            MOV
    799
                                                                       #031463,(RO)
                                                            MOV
    800
   801
         003116' 016737
003124' 016737
003132' 013700
                                                                      IPCSR2,@#MDMA0
IPCSR2+2,@#MDMA1
                              175406
                                        021010
                                                            MOV
   802
                              175402 021014
    803
                                        021012
                                                            MOV
    804
                                                            MOV
                                                                       a/MDMARO.RO
          003136' 013701
   805
                              021014
                                                            MUV
                                                                       a/MDMARO_R1
   806
   807
         003142' 010037
003146' 012737
003154' 012737
   808
                              021004
                                                            MOV
                                                                       RO, a#DMATO
    809
                              100004
                                        021022
                                                            MOV
                                                                       #LINADR+4, @#DMAF
                                                                      #4, a MDMAWC
                              000004
                                        021024
                                                            MOV
   810
         003162 010700
003164 062700
003170 010037
                                                                      PC,RO
   811
                                                            MOV
                                                                       #DMAINT-.,RO
    812
                              175222
                                                             ADD
   813
                              000114
                                                            MOV
                                                                       RO. 2#DMAVEC
          0031741
                    012737
                              000300
                                        000116
                                                            MOV
                                                                       #PRIO6. a#DMAVEC+2
    814
   815
          0032021
                    005067
                              175332
                                                                      DMDONE
                                                            CLR
          0032061
                              221002
                    005237
                                                                       2#DMACSR
                                                            INC
   816
          0032121
                    106427
                              000240
                                                            MTPS
                                                                       #PRI05
   817
          003216' 005767
   818
                              175316
                                                  20$:
                                                                      DMDONE
                                                            TST
          0032221
   819
                   001775
                                                                       20$
                                                            BEQ
   820
   821
         003224' 112767
003232' 016737
                              000007
175270
                                        175275
021020
   822
                                                            MOVB
                                                                       #7,PCSR1+1
   823
                                                                       PCSR1, a#IPCSR1
                                                            MOV
   824
825
826
827
          003240' 012737
                              004000
                                        021000
                                                                       WDNI_aWIPCSRO
                                                            MOV
         003246' 000241
003250' 000207
                                                             CLC
                                                                      PC
   858
         003252' 003254
                                                                                                    :SIZE OF MICROCODE MODULE C
                                                  MICCSZ::MICCSZ-MICROC+2
   829
830
                    000001
                                                   .END
```

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| MICROC - MICR MICROC.MAC | OCODE MODUL 10-JAN-83 | LE C 17:53 | MACY11 | 30(1046) CROSS RE | 11-JAN- FERENCE | -83 09:5 TABLE | 1 PAGE USER SY | 24 MBOLS | | | | | | 36.0 | |
|--|--------------------------|------------------------------------|------------------------------|----------------------|----------------------|-------------------|-------------------|-------------|-------------|------------|------------|------------|------------|------------|--|
| ADDREG= 17777 ADRERR= 00000 BAKPAT 00054 BITO = 00000 BIT1 = 00000 | 1 2R 002 | 103# 101# 245# 51# 50# | 428 511* 81 82 | 538 514 | 605 517 | 543 | 571* | | | | | | | | |
| BIT10 = 00200 BIT11 = 00400 BIT12 = 01000 BIT13 = 02000 | 0 | 41# 40# 39# | 82 53 69 53 67 | 70 68 88 | 89 | | | | | | | | | | |
| BIT14 = 04000 BIT15 = 10000 BIT2 = 00000 | 0 | 38# 37# 36# 49# | 66 65 83 | 88 87 86 | 212 | 220 | | | | | | | | | |
| BIT3 = 00001 BIT4 = 00002 BIT5 = 00004 BIT6 = 00010 | 0 0 0 | 48# 47# 46# 45# | 84 85 | | | | | | | | | | | | |
| BIT7 = 00020 BIT8 = 00040 BIT9 = 00100 | 0 | 44# 43# 42# | 53 | 71 | | | | | | | | | | | |
| CLRC 00054 CLRFIF= 02103 CMDREG= 17777 | 6 | 230 22# 104# | 251# 125* | 100 | | | | | | | | | | | |
| CSRFLG= 00000 CSRVEC= 00006 CSRWRT 00035 C3STBL 00110 | 4 2R 002 | 81# 74# 149 305 | 173 150* 199# 335# | 199 151• | | | | | | | | | | | |
| DATERR= 00000 DMACSR= 02100 DMAF = 02102 | 0 | 100# 9# 17# | 378 211 741* | 435 220* 777* | 473 749* 809* | 652 780• | 662 816* | 681 | | | | | | | |
| DMAINT 00040 DMAT0 = 02100 DMAT1 = 02100 | 6R 002 4 6 | 144 10# 11# | 211# 714* 746* | 812 716 | 745* | 776* | 808* | | | | | | | | |
| DMAVEC= 00011 DMAWC = 02102 DMDONE 00054 | 4 Or 002 | 75# 18# 211* | 145 * 747 * 212 | 146* 778* 217 | 813* 810* 244# | 814* 748* | 751 | 779+ | 782 | 815* | 818 | | | | |
| DNI = 00400 ERRFLG= 00000 ERRINT 00036 ERRTYP 00112 | 2 2R 002 | 69# 82# 131 344# | 129 202 202# 378* | 283 428* | 332 435* | 720 473• | 756 538* | 786 605* | 824 652* | 662* | 681* | | | | |
| FAT1 = 00040 FLG3 00052 INERR = 00000 | 0 2R 002 | 71# 166* 80# | 169 191 | 173 377 | 193* 429 | 199+ 436 | 202* 475 | 225* 541 | 239# 608 | 372 655 | 665 | 684 | | | |
| INMON = 00000 INTST = 00000 IOADR = 02000 | 1 2 0 | 78# 79# 97# | 127 256 98 | 189 274 | 302 | 706 | 727 | 762 | 793 | | ••• | | | | |
| 10S12 = 02000 1PCSR0= 02100 | | 93# 8# 824* | 98 129+ | 178 | 203* | 214+ | 219* | 226• | 267* | 283* | 332* | 720• | 756• | 786* | |
| IPCSR1= 02102 | | 16# 785+ | 128 * 794 * | 192 823* | 257• | 275* | 282* | 303* | 331+ | 707• | 719* | 728* | 755• | 763• | |
| IPCSR2 00053 | 0 | 164 • 802 53# | 165 * 803 | 242# | 258 | 259 | 315 | 316 | 70R | 709 | 735 | 736 | 770 | 771 | |
| LFRBUF = 02103 LINADR = 10000 | 2 | 21# 99# 523 | 102 528 | 361 530 | 370 569 | 383 593 | 386 599 | 388 615 | 412 643 | 413 646 | 466 676 | 513 690 | 515 696 | 521 729 | |

| MICROC - MICROCODE MICROC.M/C 10-3 | MODULE C | 53 M | ACY11 | 30(1046) CROSS RE | 11-JAN- FERENCE | 83 09:5 TABLE | 1 PAGE USER SY | 25 MBOLS | | | | | | 25.0 | 2 |
|---|--|---|---|----------------------------|-----------------------------|-------------------|----------------------|---------------------|----------------------|--------------------|------------------------------|------------------------------|---------------------|-------------------------------------|---|
| L1NS1Z= 077774 | Ç | 64 95# 30 | 777 102 765 | 797 361 | 809 362 | 383 | 388 | 515 | 523 | 530 | 569 | 599 | 646 | 676 | |
| LRBUF = 021044 LTAC = 021030 MDMARO= 021014 | | 26# 20# 14# 73 | 260 776 | 261 804 | 267 805 | 317 | 318 | 710 | 711 | 714 | 737 | 738 | 741 | 772 | |
| MDMAR1= 021016 MDMAW0= 021026 | 1 | 15# 19# | 321+ | 323* | 324* | 325* | 716* | | | | | | | | |
| MDMAW1= 021036 MDMAO = 021010 MDMA1 = 021012 MDMSR = 021042 | | 23 <i>n</i> 12 <i>n</i> 13 <i>n</i> 25 <i>n</i> | 258* 259* | 262* 263* | 315* 316* | 319* 320* | 708* 709* | 712* 713* | 735* 736* | 739* 740* | 770 • 771 • | 774 * 775 * | 802* 803* | | |
| MICCSZ 003252RG MICC1 000554R MICC2 000644R MICC3 000732R MICC3A 001124R MICC3B 001266R MICC3C 001432R MICC3D 001550R MICC3C 002020R MICC3F 002020R MICC3F 002142R MICC4 002374R MICC5 002506R MICC5 002704R MICC5 002704R MICC6 002704R MICC7 003066RG MICCO 000000RG MMFLG= 000010 NXMFLG= 000010 PARERR= 010000 | 002 002 002 002 002 002 002 002 002 002 | 23333333333333333333333333333333333333 | 256# 274# 356# 469# 590# 7027# 763# 1019 214 226 | 104 | | | | | | | | | | | |
| PARFLG= 000004 PARINT 000464R | 002 13 | 83# 39 | 226 225 225# | 372 | | | | | | | | | | | |
| PARVEC = 000140 PCBADR 000534R | 002 2 | 76# 43# | 140+ | 141* | | | | | | | | | | | |
| PCEI = 040000 PCSRSW= 021040 PCSR1 000526R | 002 12 21 61 | 66# 24# 27* 82 84* 93* | 158 128 302* 706* 794 | 189* 303 707 822* | 191* 330* 718* 823 | 192 331 719 | 241# 377* 727* | 251* 429* 728 | 256* 436* 754* | 257 475* 755 | 268* 541* 762* | 274* 608* 763 | 275 655* 784* | 281 * 665 * 785 | |
| PHYADO= 021060 PHYAD1= 021062 PHYAD2= 021064 PHYAD3= 021066 PHYAD4= 021070 PHYAD5= 021072 PRIO0 = 000000 PRIO1 = 000040 PRIO2 = 000100 PRIO3 = 000140 PRIO4 = 000200 | | 27# 28# 29# 30# 31# 32# 60# 59# 57# | 167 * | 277• | | 04.7. | | | | | | | | | |
| PRIO5 - 000240 | • | 56# | 156 | 750• | 781 • | 817* | | | | | | | | | |

MICROC - MICROCODE MODULE C 371

| MICROC.MAC 10 | -JAN-83 | E (17:53 | MACY11 | 30(1046) CROSS RE | 11-JAN- FERENCE | -83 09:5 | 1 PAGE | 26 (MROLS | | | | | | SEQ |
|---|------------|--------------------------|--|------------------------------|--------------------|------------|------------|--------------|------------|------------|------------|------------|------------|------------|
| PRIO6 = 000300 PRIO7 = 000340 RCEI = 002000 | | 55# 54# 70# | 146 124* | 358* 134 | 814 141 | 172* | 280+ | 753* | | | | | | |
| ROMADR= 040000 ROMSIZ= 040000 RXI = 020000 | | 98# 94# 67# | 99 99 | | | | | | | | | | | |
| SANTIM 000524R SANVEC= 000134 SERI = 100000 | 002 | 208* 73# 65# | 240# 155* | 276 * 156 * | 278 | | | | | | | | | |
| SIZ4K = 020000 SIZ8K = 040000 STACK = 001000 | ••• | 90# 91# 77# | 91 94 126 | 92 95 | 93 | 489 | 556 | 565 | | | | | | |
| SUBNUM 001122R TBLC 000502R TIMINT 000400R TXI = 010000 | 002 002 | 321 183 154 68# | 343 <i>n</i> 230 <i>n</i> 208 <i>n</i> | 357* | 410* | 465* | 510+ | 591* | 641* | | | | | |
| UNIERR= 020000 WCSADR= 000000 WCSSIZ= 020000 . = 003254R | 002 | 88# 96# 92# | 203 97 97 | • | | | | | | | | | | |
| | 002 | 131 234 | 139 235 | 144 236 | 149 237 | 154 305 | 175 335 | 183 336 | 205 337 | 221 338 | 230 339 | 231 340 | 232 368 | 233 812 |

. ABS. 000000 000 001 002 000000 MICRO 003254

ERRORS DETECTED: 0
DEFAULT GLOBALS GENERATED: 0

MICROC.OBJ.MICROC.LST/CRF/DOC/NL:TOC/SOL=MICROC.MACRUN-TIME: 1 1 .3 SECONDS
RUN-TIME RATIO: 31/3=9.6
CORE USED: 8K (16 PAGES)

DOCUMENT PAGES: 25

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MICROD - MICROCODE MODULE D
MICROD.MAC 10-JAN-83 17:53
                                              MACY1"
                                                        30(1046) 11-JAN-83 09:52 PAGE 2
                                                           OTHER DEFINITIONS USED BY THE MICROCODE
                       000340
000300
000240
000200
000140
                                                                                 340
300
240
200
140
                                                          PR107
     PRIO6
                                                                     =
                                                          PR105
                                                          PRIO4
                                                                     Ξ
                                                          PR103
                                                                     =
                       000100
                                                          PRIO2
                                                                     =
                                                                                 100
                       000040
                                                          PRI01
                                                                     =
                                                                                 40
                       000000
                                                          PRI00
                                                                     =
                                                                                 0
                                                          PCSRO - PORT CONTROL STATUS REGISTER O
                       100000
040000
020000
010000
                                                          ŠERI
                                                                                 BIT15
                                                                     =
                                                          PCEI
                                                                     =
                                                                                 BIT14
                                                                                 BIT13
                                                          RXI
                                                          IXI
                                                                     =
                                                                                 BIT12
                       004000
                                                          DNI
                                                                     Ξ
                                                                                 BIT11
                                                          RCEI
                                                                     Ξ
                                                                                 BIT10
                       000400
                                                                                 BIT8
                                                          FATI
                                                          LINK COMMAND REGISTER
                       100000
                                                                                            :ENABLE LINK MODULE
:ENABLE MODE REGISTER
                                                          ENABLE
                                                                                 BIT15
                                                                    =
                                                          MODE
                                                                                 BIT7
                                                                     =
                       000100
                                                          ARAM
                                                                                 B116
                                                                                             ENABLE STATION ADDRESS RAM
                                                                     =
                                                          LINK MODE REGISTER
                       100000
                                                          PROM
                                                                                 BIT15
                                                                                             ; PROMISCUIOUS MODE
                                                                     =
                                                                                            :ENABLE MULTICAST
:ENABLE COLLISION TEST
:ENABLE ACLO
                                                          ENAL
                                                                     =
                                                                                 BIT14
                       004000
                                                          ENCR
                                                                     =
                                                                                 BIT11
                       002000
                                                          ACLO
                                                                     =
                                                                                 BIT10
                       000040
                                                                                            DISABLE RETRY LOGIC
                                                          DRTY
                                                                                 BIT5
                       000020
                                                                     =
                                                                                 BIT4
                                                                                             SIMULATE A COLLISION
                                                          COLL
                                                                                             DISABLE TRANSMIT CRC LOGIC
                       000010
                                                         DTCR
                                                                     =
                                                                                 BIT3
                       000004
                                                         LOOP
                                                                                 BIT2
                                                                                            ENABLE LOOPBACK
                                                                                            ; VECTOR ADDRESS FOR THE TRANSMITTER
; VECTOR ADDRESS FOR THE RECEIVER
; VECTOR ADDRESS FOR THE SANITY TIMER
; VECTOR ADDRESS FOR CSR WRITE INTERRUPT
; VECTOR ADDRESS FOR DMA DONE INTERRUPT
; VECTOR ADDRESS FOR LINK MEMORY PARITY ERROR
; STACK LOCATION
; IN MICROMONITOR STATE
; IN A TEST STATE
; IN ERROR STATE
; CSR WRITE INTERRUPT OCCURED
; UNEXPECTED ERROR OCCURED
                      000070
000120
000134
                                                         TRNVEC= 70
RCVVEC= 120
                                                          SANVEC= 134
                                                         CSRVEC= 64
DMAVEC= 114
                       000064
                       000114
                                                          PARVEC= 140
                       000140
                       001000
                                                          STACK=
                                                                     1000
    100
                       000001
                                                          INMON=
    101
                                                          INTST=
                       000002
    102
                       000003
                                                          INERR=
                                                         CSRFLG= BITO
ERRFLG= BIT1
PARFLG= BIT2
                       000001
                                                                                             UNEXPECTED ERROR OCCURED
    104
                       000002
                                                                                            :PARITY ERROR OCCURED
:NON-EXISTANT MEMORY ERROR OCCURRED
    105
                       000004
    106
                       000010
                                                          NXMFLG= BIT3
                                                         NPRFLG= BIT4
    107
                       000020
                                                                                             :NPR TIMEOUT OCCURRED
    108
                                                          TRNFLG= BITS
                                                                                             TRANSMITTER INTERRUPT OCCURRED
                       000040
    109
                                                          RCVFLG= BIT6
                                                                                             RECEIVER INTERRUPT OCCURRED
                       000100
    110
                       100000
                                                          NPRERR= BIT15
                                                                                             PCSRO FLAG INDICATING NPR ERROR ERROR OCCURRED
                       040000
                                                          NXMERR= BIT14
                                                                                             PCSRO FLAG INDICATING NON-EXISTANT MEMORY ERROR OCCURRED
    111
    112
                       020000
                                                         UNIERR= BIT13
                                                                                             PCSRO FLAG INDICATING UNEXPECTED INTERRUPT OCCURRED
```

| MICROD - MICROCODE MODULE D | MACY11 30(1046) 11-JAN-83 09 | :52 PAGE 3 |
|--|---|---|
| MICROD.MAC 10-JAN-83 17:53 | OTHER DEFINITIONS USE | D By the microcode |
| 113 010000 114 004000 115 010000 116 014000 117 020000 118 040000 120 020000 121 040000 122 077774 123 000000 124 020000 125 040000 127 002756 128 007777 129 007777 130 000004 131 000000 132 000001 133 000001 | PARERR BIT12 SIZ1K 4000 SIZ2K SIZ1K*2 SIZ3K SIZ1K*3 SIZ4K SIZ2K*2 SIZ8K SIZ4K*2 WCSSIZ SIZ4K IOS1Z SIZ4K ROMSIZ SIZ8K LINSIZ SIZ8K LINSIZ SIZ8K*2-4 WCSADR O IOADR WCSADR+WCSSIZ ROMADR IOADR+IOSIZ LINADR ROMADR+ROMSIZ LINADR ROMADR+ROMSIZ MAXBC 1518. MXMTBC 7777 CRCSIZ 4 DATERR O ADRER 1 | PCSRO FLAG INDICATING LINK MEMORY PARITY ERROR OCCURRED 1K WORDS 2K WORDS 3K WORDS 4K WORDS SIZE OF WRITEABLE CONTROL STORE SIZE OF I/O PAGE SIZE OF LINK MEMORY BASE ADDRESS OF WCS BASE ADDRESS OF WCS BASE ADDRESS OF LINK MEMORY MAXIMUM N OF BYTES IN A TRANSMIT BUFFER MAXIMUM COUNT IN LINK XMIT BYTE COUNT FIELD NUMBER OF BYTES IN THE CRC FLAG INDICATING DATA ERROR OCCURRED FLAG INDICATING ADDRESS ERROR OCCURRED |

| 136 137 000000' 106427 000340 MICROD::MTPS #PRIO7 ;DISABLE INTERRUPTS 138 000004' 012737 000000 177776 MOV #0.a#CMDREG ;TURN OFF THE LINK 139 000012' 012706 001000 MOV #STACK,SP ;SETUP STACK 140 000016' 112767 000001 000620 MOVB #INMON,PCSR1 ;TELL HOST WE ARE IN MICROMO 141 000024' 016737 000614 021020 MOV PCSR1,a#IPCSR1 | ONITOR |
|---|--------|
| 140 000016' 112767 000001 000620 MOVB WINMON, PCSR1 ;TELL HOST WE ARE IN MICROMON 141 000024' 016737 000614 021020 MOV PCSR1, awipcsr1 142 000032' 012737 004000 021000 MOV WDNI, awipcsr0 ;TELL HOST THE LOAD AND STAF 143 000040' 010700 MOV PC, RO ;GET ADDRESS OF UNEXPECTED EN 144 000042' 062700 000404 ADD WERRINT, RO ;HANDLER 145 000046' 005001 CLR R1 ;FILL ALL UNUSED VECTORS WIND 147 0000'2' 010021 10\$: MOV RO, (R1)+ ;HANDLER 147 0000'2' 012721 000340 MOV WPRIO7, (R1)+ ;HANDLER 148 0000'56' 020127 001000 CMP R1, W1000 BLT 10\$ | RROR |
| 151 000064' 010700 | |
| 156 000104° 010700 | |
| 160 161 000124' 010700 | |
| 165 166 000144' 010700 | |
| 171 000164' 010700 | |
| 175 176 000204' 010700 | |
| 180 181 000224' 013700 021040 MOV @MPCSRSW,RO ;GET SWITCH PACK BITS 182 000230' 052700 176000 BIS M176000,RO ;MAP THEM INTO HOST I/O PAGE 183 000234' 006300 ASL RO ;SHIFT OVER TO POSITION CORE 184 000236' 006300 ASL RO 185 000240' 006300 ASL RO | RECTLY |
| 185 000240' 006300 ASL RO 186 000242' 062700 000004 ADD #4,RO ;PCSR2 IS PCSR0+4 187 000246' 010067 000374 MOV RO, IPCSR2 ;SAVE PCSR2 ADDRESS 188 000252' 012767 000003 000370 MOV #3, IPCSR2+2 ;HIGH ORDER BITS 17:16 189 000260' 005067 000354 CLR FLG4 ;INITIALIZE FLAG WORD | |

| MICROD MICROD. | - MICROCO | DDE MODUI | LE D 17:53 | MACY11 | 30(1046) MICROCO | 11-JAN DE MODUL | -83 09:52 PAGE 5 | |
|--|---|--------------------------------------|--------------------------------------|----------------------------|-------------------------|--|--|--|
| 190 191 | 0002641 | 106427 | 000000 | | 15\$: | MTPS | #PRI00 | ; ALLOW INTERRUPTS |
| 192 193 194 | 000270' 000274' | 005767 001775 | 000344 | | 20\$: | TST REQ | FLG4 20\$ | ;WAIT FOR A COMMAND FROM HOST |
| 195 196 197 198 199 | 000276' 000302' 000310' 000312' | 106427 032767 001001 000777 | 000340 000001 | 000330 | | MTPS BIT BNE BR | WPRIO7 WCSRFLG,FLG4 30\$ | RAISE CPU PRIORITY TO SERVICE COMMAND DID HOST GIVE US A COMMAND? YES NO, ERROR SO JUST SIT HERE FOR LACK OF ANYTHING BETTER TO DO |
| 200 201 202 203 204 | 000314' 000320' 000324' 000326' 000336' | 113700 042700 001004 012737 | 021000 177760 000001 | 021020 | 30\$: | MOVB BIC BNE MOV BR | a#IPCSRO.RO #177760.RO 35\$ #INMON.a#IPCSR1 50\$ | GET WHAT HOST WROTE TO PCSRO; STRIP ALL BUT COMMAND BITS; WAS IT THE CLEAR FUNCTION? YES, CLEAR OUT THE TEST # BITS |
| 206 207 208 | 0003421 | 162700 | 000017 000001 | | 35\$: | CMP BEQ SUB | #17,R0 60\$ #1,R0 | ;START OPERATIONAL MICROCODE? |
| 209 210 211 | 000350' 000352' 000356' 000360' 000364' | 010701 062701 006300 | 00030 | | | MOV ADD ASI | PC,R1 | GET ADDRESS OF OUR COMMAND TABLE MAKE COMMAND A BYTE OFFSET |
| 212 213 214 215 216 217 | 000362' 000364' 000366' 000370' 000376' | 112767 | 000001 | 000246 | | ADD ADD JSR BCS MOVB BR | RO,R1 (R1),R1 PC,(R1) 40\$ #INMON,PCSR1 45\$ | :MAKE COMMAND A BYTE OFFSET ;USE IT TO INDEX INTO COMMAND TABLE ;R1 NOW HAS COMMAND ROUTINE ADDRESS ;EXECUTE AS COMMANDED FROM HOST ;ERROR OCCURRED ;INDICATE TO HOST WE ARE BACK IN ;MICROMONITR ;INDICATE TO HOST ERROR OCCURRED |
| 201 203 203 204 206 207 208 208 208 208 208 208 208 208 208 208 | 000400' 000406' 000414' 000422' 000426' | 112767 016737 012737 005067 | 000003 000232 004000 000212 | 000236 021020 021067 | 40\$: 45\$: 50\$: | MOVB MOV MOV CLR BR | WINERR, PCSR1 PCSR1, AWIPCSR0 WDNI, AWIPCSR0 FLG4 15\$ | ;INDICATE TO HOST ERROR OCCURRED ;TELL HOST THIS MICROTEST FINISHED ;RESET FLAG WORD ;GO WAIT FOR ANOTHER COMMAND |
| 225 | 000430° 000432° | 005000 000137 | 040006 | | 60\$: | CLR JMP | R0 a#40006 | ; FAKE SELF TEST RESULTS ; START OPERATIONAL MICROCODE |
| 226 227 228 229 230 231 233 233 235 237 238 239 | 000436° 000444° | 052767 000002 | 000001 | 000174 | CSAWRT: | BIS RTI | #CSRFLG,FLG4 | ; INDICATE A CSR WRITE INTERRUPT OCCURED |
| 230 231 | 000446° 000454° | 052767 012737 | 000002 | 000164 021000 | ERRINT: | BIS | #ERRFLG,FLG4 #UNIERR,@#IPCSRO | ; INDICATE A UNEXPECTED INTERRUPT OCCURED : TELL HOST AN UNEXPECTED INTERRUPT : HAPPENED |
| 233 234 235 | 000462' | 000777 | | | | BR | • | JUST SIT HERE AND SPIN WHEELS COUNT ON HOST TO TIME OUT |
| 236 237 | 000464' 000470' | | 000152 | | TIMINT: | INC RTI | SANTIM | COUNT TICKS AS THEY OCCUR |
| 240 | 000472' 000500' 000506' | 032767 | 021002 040000 | 000156 000150 | DMAINT: | MOV BIT BEQ | a#DMACSR,DMDONE #BIT14,DMDONE 1U\$ | GET DMA STATUS DID A NON-EXISTANT MEMORY INTERRUPT OCCUR? |
| 241 242 243 | 000510 | 012737 | 040000 | 021000 | | MOV | #NXMERR,@#1PCSRO | :YFS, TELL HOST A NON-EXISTANT MEMORY :LOCATION WAS ADDRESSED |
| 244 | 000516° 000520° | 000407 032767 | 100000 | 000130 | 10\$: | BR BIT | 20\$ #BIT15,DMDONE | ;DID A NPR TIMEOUT OCCUR? |

| MICROD MICROD | - MICROCO | DDE MODUL D-JAN-83 | E D 17:53 | MACY11 | 30(1046) MICROCOI | 11-JAN- DE MODULE | 83 09:52 PAGE 6 | |
|---|---|--|------------------|------------------|---|--|---------------------------------------|---|
| 246 247 248 249 250 251 | 000530 ' 000536 ' | 012737 012737 000777 | 100000 100000 | 021060 021002 | 20 \$: | BEQ MOV MOV BR RTI | 30\$ #NPRERR,@#IPCSRO #BIT15,@#DMACSR | :NO :TELL HOST NPR TIMEOUT HAPPENED :CLEAR THE INTERRUPT IN THE DMA ENGINE :SIT HERE AND SPIN WHEELS |
| 249 251 251 253 253 254 255 256 263 265 | 000550° 000556° 000564° | 052767 012737 000777 | 000004 010000 | 000062 021000 | PARINT: | BIS MOV BR | #PARFLG,FLG4 #PARERR,@#IPCSRO | SET PARITY ERROR OCCURRED TELL HOST A LINK MEMORY PARITY ERROR OCCURRED SIT HERE AND SPIN WHEELS |
| 257 258 | 000566 | 005737 | 021044 | | RCVINT: | TST | a#LRBUf | READ BUFFER DONE REGISTER |
| 260 261 | 000572° 000600° | 052767 000002 | 000100 | 000040 | | BIS | #RCVFLG,FLG4 | SET RECEIVER INTERRUPT OCCURRED |
| 264 264 | 000602 | 052767 000002 | G00040 | 000030 | TRNINT: | BIS RTI | #TRNFLG,FLG4 | ;SET TRANSMITTER INTERRUPT OCCURRED |
| 266 267 268 269 270 271 273 275 276 277 | 000612' 000614' 000616' 000620' 000622' 000624' 000630' 000634' 000636' | 000236 000432 000734 001244 001604 002046 002354 003014 003206 | | | TBLD: | WORD WORD WORD WORD WORD WORD WORD WORD | MICD6 | TRANSMITTER DONE TEST RECEIVER DONE TESTS DATA BYTE FRAMING TEST DATA WORD FRAMING TEST DATA PATH PATTERN STATUS MUX TEST LINK BYTE COUNT TEST LINK MEMORY ARBITRATION TEST LINK BYTE COUNTER MAXIMUM TEST FIFO TEST |
| 277 278 279 280 281 282 283 284 285 286 288 | 000642' 000646' 000652' 000656' 000660' 000662' 000664' | 000000 000000 000000 000000 000000 00000 | 000000 | | FLG4: SANTIM: PCSR1: IPCSR2: PCBADR: DMDONE: RBUFP: TBUFP: DBUFP: MBUFP: | .WORD .WORD .WORD | | :FLAG WORD :COUNT FOR SANITY TIMER :COPY OF WHAT GOES TO PCSR1 :ADDRESS IN HOST MEMORY FOR PCSR2 :ADDRESS IN HOST MEMORY FOR PCB :POINTER TO RECIEVE BUFFFR :POINTER TO XMIT BUFFER :POINTER TO DMA ENGINE BUFFER :POINTER TO MICROCPU DMA BUFFER |

| MICROD. | - MICROCO MAC 10 | 0-JAN-83 | 17:53 | MACY11 | 30(1046) MICROCOL | 11-JAN- MODULE | -83 09:52 PAGE 8 | |
|---|--|----------------------------|----------------------------|------------------|----------------------|--------------------|---|---|
| 322 323 | 001C52' 001060' | 112767 016737 | 000002 177560 | 177564 021020 | MICD2: | MOV | #INTST.PCSR1 PCSR1_a#IPCSR1 | ; TELL HOST WE ARE TESTING |
| 324 325 326 | 001066' 001072' 001076' | 012703 012700 010067 | 177777 100000 177556 | | | MOV MOV MOV | #177777,R3 #LINADR,RO RO,RBUFP R3 (RO)+ | FILL RECIEVE BUFFER WITH 1'S RECIEVE BUFFER STARTS HERE |
| 327 328 | 001102' | 010320 020027 | 104000 | | 10\$: | CMP | RO.#LINADR+SIZ1K | ;FILL ENTIRE BUFFER |
| 329 330 331 | 0011101 0011121 0011141 | 005003 010067 | 177542 | | | BLO CLR MOV | RO, TBUFP | FILE XMIT BUFFER WITH O'S :XMIT BUFFER STARTS 1K AWAY FROM RECIEVE |
| 332 333 334 | 001C52' 001060' 001066' 001072' 001102' 001104' 001110' 001112' 001122' 001126' | 010320 020027 103774 | 110000 | | 20\$: | MOV (MP BLO | R3,(R0)+ R0,#LINADR+S1Z2K 20\$ | |
| 3234567890123456789 333333333333333333333333333333333333 | 001130° 001136° | 012737 | 100200 100004 | 177776 177774 | | MOV MOV | #MODE!ENABLE, @#CMDREG #PROM!LOOP, @#MODREG | :ENABLE LINK MODULE AND SELECT MODE REG :SET PROMISCUIOUS MODE AND ENABLE LOOPBACK |
| 338 339 340 | 001144' 001150' | 016701 005021 | 177512 | | | MOV CLR | TBUFP,R1 (R1)+ | ;POINT TO XMIT BUFFER :CLEAR OUT STATUS WORD |
| 341 342 | 001152' 001156' 001162' | 012721 | 002752 | | | MÖV CLR | WMAXBC-CRCSIZ,(R1)+ awclrfif | SET BYTE COUNT TO MAXIMUM ALLOWED CLEAR THE FIFO |
| 340 341 342 343 344 346 | 001166' 001174' | 016737 | 177452 177466 177462 | 021032 021030 | | CLR MOV MOV | RBUFP, a#LFRBUF TBUFP, a#LTAC | POINT TO XMIT BUFFER CLEAR OUT STATUS WORD SET BYTE COUNT TO MAXIMUM ALLOWED CLEAR THE FIFO CLEAR THE INTERRUPT FLAG TELL LINK WHERE RECIEVE BUFF IS TELL LINK WHERE TRANSMIT BUFF IS WHICH WILL START A XMIT OPERATION |
| 346 347 348 349 | 001202' 001206' 001214' | 106427 032767 001774 | 000200 000100 | 177424 | 30\$: | MTPS BIT BEQ | ancirfif flg4 RBUFP, anlfrbuf TBUFP, anlfrc wprio4 wrcvflg, flg4 30\$ | ; WHICH WILL START A XMIT OPERATION ; ALLOW RECEIVER TO INTERRUPT ; WAIT FOR RECEIVE INTERRUPT |
| 347 348 349 350 351 352 | 001216' 001222' 001230' | 106427 032767 001774 | 000140 000040 | 177410 | 40\$: | MTPS BIT BEQ | #PRIO3 #TRNFLG,FLG4 40\$ | : ALLOW XMTR TO INTERRUPT ; WAIT FOR XMIT INTERRUPT |
| 354 355 356 | 001232' 001236' | 106427 112767 | 000340 000002 | 177401 | | MTPS MOVB | #PR107 #2,PCSR1+1 | ;DISABLE INTERRUPTS ;TELL HOST THIS IS TEST #2 |
| 357 358 | 0012441 | 000241 000207 | | | | CLC RTS | P(| |

MICROCODE MODULE D

MICROD - MICROCODE MODULE D

MICROD.MAC

10-JAN-83 17:53

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MICROD.MAC
              10-JAN-83 17:53
                                         MODULE D. MICROTEST #3
   465
   466
                                           DATA WORD FRAMING TEST
   467
   468
                                           THIS IS "MICROCODE" FOR DATA WORD FRAMING TEST. FILLS XMIT BUFFER
  469
470
471
472
473
476
477
478
479
                                           WITH PATTERN 000000000000000111111111111111 (BINARY) AND TRANSMITS
                                           OVER THE LOOPBACK.
                                           CHECKS RECEIVE BUFFER FOR SAME PATTERN. REPORTS ERRENT PATTERN,
                                           OFFSET FROM FRONT OF BUFFER, AND RECEIVE BUFFER STATUS WORD TO
                                         SBITL MODULE D_MICROTEST #4
                                           **** TELL HOST WE ARE BUSY ****
   480
   481
   482
       001554' 112767
                        000002 177062
                                         MICD4: MOVB
                                                         #INTST_PCSR1
                                                                                  : TELL HOST WE ARE TESTING
   483
       001562 016737 177056 021020
                                                 MOV
                                                         PCSR1.a#IPCSR1
  484
  485
  486
487
                                         ; ****************************
                                           **** FILL RECEIVE BUFFER WITH BACKGROUND PATTERN *****
  488
   489
  490
       001570' 012700
                        100000
                                                         #LINADR,RO
                                                                                  : RECEIVE BUFFER STARTS HIRE
       0015741 010067
   491
                                                         RO.RBUFP
                        177060
                                                 MOV
  492
       001600' 005020
                                         105:
                                                 CLR
                                                         (RO)+
                                                                                  ; FILL RECEIVE BUFFER WITH ZEROS
       493
                        104000
                                                 CMP
                                                         RO,#LINADR+SIZ1K
                                                                                  ; FILL ENTIRE BUFFER
  494
                                                 BLO
  496
497
  498
                                           **** FILL XMIT BUFFER WITH TEST PATTERN ****
  499
   500
   501
       001610 012703 177777
                                                 MOV
                                                         #177777,R3
                                                                                  ; WORST CASE FOR CLOCKING
   502
       001614 010067
                        177042
                                                 MOV
                                                         RO, TBUFP
                                                                                   SAVE COPY OF ADDRESS
   503
       001620' 010320
                                                         R3,(R0)+
                                                                                  : FILL XMIT BUFFER WITH PATTERN
                                         205:
                                                 MOV
       001622' 005103
001624' 020027 110000
   504
                                                 CGM
                                                                                  : FLIP IT OVER
   505
                                                 CMP
                                                         RO, #LINADR+SIZ2K
                                                                                          : STOP AT TOP
       0014301 103773
   506
                                                 BL0
   507
  508
   509
   510
                                           **** SET UP LINK FOR DATAGRAM LOOPBACK *****
   511
  512
   513
       001632' 012737 100200 177776
                                                 MOV
                                                         #MODE!ENABLE.a#CMDREG
                                                                                 : ENABLE LINK, SELECT MODE REG
       001640' 012737
   514
                        100004 177774
                                                 MOV
                                                         #PROM!LOOP, a MODREG
                                                                                  : PROM MODE AND LOOPBACK
   515
   516
       001646' 016701
                        177010
                                                         TBUFP,R1
                                                                                  : POINT AT XMIT BUFFER
       0016521 005021
   517
                                                 CLR
                                                         (R1)+
                                                                                    CLEAR OUT STATUS WORD
       001654' 012721
                        002752
   > '8
                                                 MOV
                                                         #MAXBC-CRCSIZ,(R1)+
                                                                                    SET BYTE COUNT TO MAX ALLOWED
        001660' 005037
                        021034
                                                 CLR
                                                                                    CLEAR THE FIFO
                                                         a#CLRFIF
       0016641 005067 176750
                                                 CLR
                                                         FLG4
                                                                                  : CLEAR INTERRUPT FLAG
```

MICROD - MICROCODE MODULE D

| | | | | | | | 1 14 | | | | |
|--|--|--|--------------------------------------|------------------|---|---------------------------------|--|---|--|--|--|
| MICROD - N MICROD.MAC | IICROCO 10 | DE MODUI | LE D 17:53 | MACY11 | 30(1046) MODULE | 11-JAN D,MICROT | 1-83 09:52 PAGE 12 EST #4 | | | | |
| 521 00 522 00 |)1670 ')1676 ' | 016737 016737 | 176764 176760 | 021032 021030 | | MOV MOV | RBUFP, @#LFRBUF TBUFP, @#LTAC | : TELL UNA WHERE RECEIVE BUFF IS : TELL UNA WHERE XMIT BUFF IS | | | |
| 524 00 525 00 526 00 | 1710' | 106427 032767 001774 | 000140 000100 | 176722 | 30\$: | MTPS BIT BEQ | #PRIO3 #RCVFLG,FLG4 30\$ | ; ALLOW XMITTER AND RECEIVER TO INTERRUPT ; WAIT FOR RECEIVER INTERRUPT | | | |
| 528 00 529 00 |)1720')1726' | 032767 001774 | 000040 | 176712 | 35\$: | BIT BEQ | #TRNFLG,FLG4 35\$ | ;WAIT FOR XMIT INTERRUPT TOO | | | |
| 530 531 00 532 | 1730' | 106427 | 000340 | | | MTPS | #PR107 | ; DISABLE INTERRUPTS | | | |
| 533 534 535 536 | | | | | **** VERIFY THE CONTENTS OF RECEIVE BUFFER **** | | | | | | |
| 538 00 539 00 540 00 |)1740')1742' | 012700 012005 005004 062700 | 100000 | | | MOV MOV CLR ADD | #LINADR,RO (RO)+,R5 R4 #2,RO | : VERIFY RECEIVE BUFFER CONTENT : SAVE STATUS IN CASE ERROR : TRACK OFFSET IN CASE ERROR : DON'T NEED 'LENGTH' IN BUFFER | | | |
| 542 543 00 544 00 545 00 546 00 |)1750°)1752°)1754°)1756° | 005003 005103 011001 020103 | 000002 | | 40\$: | CLR COM MOV CMP | R3 R3 (R0),R1 R1,R3 | : NEED A ZERO : FLIP IT OVER : READ DATA BACK | | | |
| 547 00 548 00 549 00 550 00 551 00 |)1760')1762')1764')1766')1772' | 001012 005200 005204 022704 103767 | 002752 | | | BNE INC INC CMP BLO | 70\$ R0 R4 #MAXBC-CRCSIZ,R4 40\$ | GO TO ERROR EXIT NEW ADDRESS AFTER TESTING NEXT OFFSET END OF LOOP | | | |
| 552 00 553 554 |)1774' | 000241 | | | : **** | CLC | ************ | :TELL MICROMONITOR SUCCESS | | | |
| 555 556 | | | | | | | OUGH EXIT IF NO ERROR | | | | |
| 557 558 00 559 00 560 |)1776 ')2004 ' | 112767 000207 | 000004 | 176641 | 50\$: | MOVB RTS | #4,PCSR1+1 PC | ; TELL HIM TEST FINISHED ; RETURN TO SENDER | | | |
| 561 562 563 564 565 00 566 00 | | | | | ***** | | XIT **** | | | | |
| 565 00 566 00 | 2014 | 016737 016737 | 176634 176630 | 021010 021012 | 70\$: | MOV MOV MOV | IPCSR2,@#MDMAO IPCSR2+2,@#MDMA1 | : PICK UP ADDRESS OF PCBB : RO=CONTENTS OF PCSR2 | | | |
| 568 00 569 00 570 00 |)2026 ')2032 ' | 013700 013702 010037 010237 | 021014 021014 021010 021012 | | | MOV MOV MOV | a#MDMARO,RO a#MDMARO,R2 RO,a#MDMAO R2,a#MDMA1 | R2=CONTENTS OF PCSR3 POINT TO PCBB+0 | | | |
| 573 00 574 00 575 00 | 02046 ' 02052' | 010537 010337 010137 010437 | 021026 021026 021026 021026 | | | MOV MOV MOV MOV | R5,@#MDMAWO R3,@#MDMAWO R1,@#MDMAWO R4,@#MDMAWO | : WRITE STATUS WORD TO HOST : WRITE ORIGNAL TO HOST : WRITE ERRENT PATTERN TO HOST : WRITE ERROR OFFSET TO HOST | | | |
| 576 | | | | | | | | | | | |

MICROD - MICROCODE MO LE D MACY11 30(1046) 11-JAN-83 09:52 PAGE 13 MICROD.MAC 10-JAN- 17:53 MODULE D.MICROTEST #4

577 002062 000261 578 002064 000744 579

SEC BR 50\$;TELL MICROMONITOR ERROR OCCURRED ; GO EXIT THROUGH NORMA_

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10-JAN-83 17:53
MICROD MAC
                                             MODULE D.MICROTEST #4
   : DATA PATH PATTERN TEST
                                               THIS IS 'MICROCODE' FOR DATA PATH PATTERN TEST. RETRIEVES DATA PATTERN FROM HOST MEMORY. FILLS XMIT BUFFER WITH PATTERN AND SENDS DATAGRAM
                                               OVER THE LOOPBACK.
                                               CHECKS RECEIVE BUFFER FOR SAME PATTERN. REPORTS ERRENT PATTERN,
                                               OFFSET FROM FRONT OF BUFFER. AND RECEIVE BUFFER STATUS WORD TO
                                             : HOST
                                             .SBTTL MODULE D.MICROTEST #5
                                               **** TELL HOST WE ARE BUSY ****
   595
   596
   597
         0020661 112767
                           000002 176550
                                             MICD5: MOVB
                                                               WINTST, PCSR1
                                                                                          : TELL HOST WE ARE TESTING
   598
         002074' 016737 176544 021020
                                                               PCSR1, a#IPCSR1
                                                      MOV
   599
   600
                                               **** RETRIEVE PATTERN FROM HOST MEMORY ****
   601
   602
   603
                                                               IPCSR2,a#MDMA0
IPCSR2+2,a#MDMA1
         002102' 016737 176540 021010
                                                                                          ; SET TO GE : HOST PCBB ADDRESS
   604
                                                      MOV
         002110 016737
   605
                          176534
                                    021012
                                                      MOV
         002116' 013700
                                                               a#MDMARO,RO
                           021014
                                                      MOV
                                                                                          ; RO NOW CONTAINS PCBB LOW
   606
        002122' 013701
002126' 010037
002132' 010137
                                                                                          ; R1 NOW CONTAINS PCBB HIGH
                           021014
   607
                                                               a#MDMARO_R1
                                                      MOV
                           021010
                                                               RO.a/MDMAO
                                                                                           : POINT AT PCBB
   608
                                                      MOV
                           021012
                                                               R1_a/MDMA1
   609
                                                      MOV
        002136 013703
                                                                                          : R3 NOW HOLDS DATA PATTERN
                           021014
                                                      MOV
                                                               a#MDMARO.R3
   610
   611
   612
                                               *****************************
                                               **** FILL RECEIVE BUFFER WITH BACKGROUND PATTERN ****
   614
   615
   616
         002142' 012700
002146' 010067
                                                               #LINADR_RO
                                                                                          : RECEIVE BUFFER STAFTS HERE
   617
                           100000
                                                               RO, RBUFP
                                                      MOV
   618
                           176506
         0021521 005020
                                             105:
                                                               (RO)+
                                                                                          : FILL RECEIVE BUFFER WITH ZEROS
   619
                                                      CLR
         002154 020027
                                                               RO, #LINADR+SIZ1K
   620
621
623
624
625
626
627
                                                                                          : FILL ENTIRE BUFFER
                           104000
                                                      CMP
         002160' 103774
                                                                10$
                                                      BLO
                                               **** FILL XMIT BUFFER WITH TEST PATTERN ****
        002162' 010067 176474
002166' 010320
002170' 020027 110000
   628
629
630
                                                                                          : SAVE COPY OF ADDRESS
                                                               RO, TBUFP
R3, (RO) +
                                                                                          : FILL XMIT BUFFER WITH PATTERN
                                             205:
                                                      MOV
                                                               RO,#LINADR+S172K
                                                      CMP
                                                                                                   ; STOP AT TOP
   631
632
633
         002174' 103774
                                                                20$
                                                      BLO
   634
   635
                                             : **** SET UP LINK FOR DATAGRAM LOOPBACK *****
```

MICROD - MICROCODE MODULE D

| MICROD MICROD. | - MICROC MAC 1 | ODE MODU 0-JAN-83 | JLE D 3 17:53 | MACY11 | 30(1046) MODULE | 11-JAN D,MICROT | 1-83 09:52 PAGE 15 EST #5 | | | | | |
|--|--|--|--|------------------|--|--|--|---|--|--|--|--|
| 636 637 638 | | | | | ; **** | ****** | ************ | **** | | | | |
| 638 639 640 | | 012737 012737 | 100200 100004 | 177776 177774 | | MOV MOV | #MODE!ENABLE,@#CMDREG #PROM!LOOP,@#MODREG | ; ENABLE LINK, SELECT MODE REG ; PROM MODE AND LOOPBACK | | | | |
| 641 642 643 644 645 646 647 | 002212' 002216' 002220' 002224' 002230' 002234' | 005021 012721 005037 005067 016737 | 176444 002752 021034 176404 176420 176414 | 021032 021030 | | MOV CLR MOV CLR CLR MOV | 7 L U 4 | POINT AT XMIT BUFFER CLEAR OUT STATUS WORD SET BYTE COUNT TO MAX ALLOWED CLEAR THE FIFO CLEAR INTERRUPT FLAG TELL UNA WHERE RECEIVE BUFF IS TELL UNA WHERE XMIT BUFF IS | | | | |
| 649 650 651 652 653 654 | 002250' 002254' 002262' | 032767 | 000140 000100 | 176356 | 30\$: | MTPS BIT BEQ | #PRIO3 #RCVFLG,FLG4 30\$ | ; ALLOW XMITTER AND RECEIVER TO INTERRUPT ; WAIT FOR RECEIVER INTERRUPT | | | | |
| 653 654 | 002264' 002272' | 032767 001774 | 000040 | 176346 | 35\$: | BIT BEQ | #TRNFLG,FLG4 | ; WAIT FOR XMIT INTERRUPT TOO | | | | |
| 655 656 657 | 002274' | 106427 | 000340 | | | MTPS | #PRI07 | ; DISABLE INTERRUPTS | | | | |
| 658 659 660 661 662 | | | | | ; ***** VERIFY THE CONTENTS OF RECEIVE BUFFER **** | | | | | | | |
| 663 664 665 666 667 | 002300' 002304' 002306' 002310' | 012002 005004 | 100000 | | | MOV MOV CLR ADD | #LINADR,RO (RO)+,R2 R4 #2,RO | : VERIFY RECEIVE BUFFER CONTENT : SAVE STATUS IN CASE ERROR : TRACK OFFSET IN CASE ERROR : DON'T NEED 'LENGTH' IN BUFFER | | | | |
| 668 669 670 671 673 674 675 676 | 002314' 002316' 002320' 002322' 002324' 002326' 002332' 002334' | 020503 001012 005200 005204 022704 103770 | 002752 | | 40\$: | MOV CMP BNE INC INC CMP BLO CLC | (RO),R5 R5,R3 70\$ R0 R4 #MAXBC-CRCSIZ,R4 40\$ | READ DATA BACK R3 HOLDS ORIGINAL PATTERN GO TO ERROR EXIT NEW ADDRESS AFTER TESTING NEXT OFFSET END OF LOOP TELL MICROMONITOP SUCCESS | | | | |
| 677 678 679 | | | | | **** | FALL THR | OUGH EXIT IF NO ERROR ** | * * * * * * * * * | | | | |
| 680 681 682 683 | 002336° 002344° | | 000005 | 176301 | 50\$: | MOVB RTS | #5,PCSR1+1 PC | : EXIT HERE IF NO FRROR ; RETURN TO SENDER | | | | |
| 684 685 686 687 688 | | | • | | ***** ERROR EXIT ***** | | | | | | | |
| 689 690 691 | 002346° 002354° 002362° | 016737 | 176274 176270 021014 | 021010 021012 | 70\$: | MOV MOV MOV | IPCSR2,@#MDMAO IPCSR2+2,@#MDMA1 @#MDMAR0,RO | ; SET TO GET HOST PCBB ADDRESS ; RO NOW CONTAINS PCBB LOW | | | | |

| MICROD. | - MICROCO | DE MODUL | E D 17:53 | MACY11 30(1046) 11-JAI MODULE D,MICRO | N-83 09:52 PAGE 16 TEST #5 | |
|--|--------------------|------------------|----------------------------|--|---|---|
| 692 | 002366 | 013701 | 021014 | MOV | a#MDMARO,R1 | : R1 NOW CONTAINS PCBB HIGH |
| 693 694 695 696 697 698 699 700 | 002372° 002376° | 062700 005501 | 000002 | ADD ADC | #2,R0 R1 | : INDEX DOWN TO PCBB+2 |
| 697 698 | 002400° 002404° | | 021010 021012 | MOV MOV | RO,@#MDMAO R1,@#MDMA1 | ; POINT TO PCBB+0 |
| 700 701 702 703 704 705 | | 010537 | 021026 021026 021026 | MOV MOV - MOV | R2,@#MDMAWO R5,@#MDMAWO R4,@#MDMAWO | WRITE STATUS WORD TO HOST WRITE ERRENT PATTERN TO HOST WRITE ERROR OFFSET TO HOST |
| 703 704 705 706 | 002424° 002426° | 000261 000743 | | SEC BR | 50\$ | :TELL MICROMONITOR ERROR OCCURRED : GO EXIT THROUGH NORMAL |

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MICROD_MAC
                10-JAN-83 17:53
                                              MODULE D.MICROTEST #5
   708
                                               : STATUS MUX VERIFICATION TEST
   709
   710
                                                 THIS TEST INSURES THAT THE STATUS MULTIPLEXER WRITES INTO THE FIRST TWO LOCATIONS TO THE LINK TRANSMIT BUFFER. THE DEUNA PROCESSOR WILL
                                                 FILL A TRANSMIT BUFFER AND A RECEIVE BUFFER AND WILL TRANSMIT A DATAGRAM OVER THE LOOPBACK. THE F RST TWO WORDS THE RECEIVE B
                                                                                                          THE RECEIVE BUFFER
   714
                                                 WILL BE COPIED TO HOST MEMORY FOR VERIFICATION.
   716
717
                                                 HOST WILL VERIFY . HAT PREDETERMINED BITS OF THE STATUS WORD ARE ZERO.
   **** TELL HOST WE ARE BUSY ****
                           000002 176206
176202 021020
         002430' 112767
                                                        MOVB
                                              MICD6:
                                                                 #INTST,PCSR1
                                                                                    : TELL HOST WE ARE TESTING
         002436' 016737
                                                        MOV
                                                                 PCSR1.a#IPCSR1
                                                 **** FILL RECEIVE BUFFER ****
         002444 012703 177777
                                                                 #177777,R3
                                                        MOV
                                                                                    ; FILL RECEIVE BUFFLR WITH ONES
         002450' 012700
                           100000
                                                        MOV
                                                                 #LINADR.RO
                                                                                    : RECEIVE BUFFER STARTS HERE
         002454' 010067
                           176200
                                                                 RO, RBUFP
                                                        MOV
                                                                                    : SAVE A COPY
        002460' 010320
002462' 020027
002466' 103774
                                               105:
                                                        MOV
                                                                 R3.(R0)+
                                                                                    : FILL THE BUFFER
                           104000
                                                        CMP
                                                                 RO, #LINADR+SIZ1K
                                                        BLO
                                                                 10$
                                                 **** FILL TRANSMIT BUFFER WITH ZERO ****
         002470' 010067 0024'4' 005003
                                                                 RQ, TBUFP
R3
R3, (R0)+
                            176166
                                                                                      SAVE A COPY OF TRANSMIT ADDRESS
                                                        CLR
                                                                                      NEED A ZERO
         002476' 010320
                                               20$:
                                                        MOV
                                                                                      XMIT BUFFER STARTS 1K FROM RECEIVE
         002500' 020027
                           110000
                                                                 RO, #LINADR+SIZ2K
                                                        CMP
         002504' 103774
                                                        BL<sub>0</sub>
                                                 **** FILL DATAGRAM FOR DATAGRAM LOOPBACK ****
         002506 012737 100200 177776
                                                                 #MODE!ENABLE, @#CMDREG
                                                                                             ; ENABLE LINK MODE, SEL MODE REG
         002514' 012737
                           100004
                                     177774
                                                                 #PROM!LOOP, @#MODREG
                                                        MOV
                                                                                             : PROMIS. ENABLE LOOPBACK
         002522' 016701
002526' 005103
                           176134
                                                                 TBUFP,R1
                                                                                                POINT TO XMIT BUFFER
                                                                                                NEED SOME 1'S
                                                        COM
         002530 010321
                                                                 R3, (71)+
                                                                                                BACKGROUND- SHOW STATUS OVRLAY
                                                        MOV
        002532' 012721
002536' 005037
                            002752
                                                                 #MAXBC-CRCSIZ,(R1)+
                                                                                                SET BYTE COUNT TO MAX ALLOWED
                                                        MOV
                                                                                                CLEAR THE INTERRUPT FLAG
   761
                            021034
                                                                 a#CLRFIF
                                                        CLR
         002542 005067
                           176072
                                                                                                CLEAR THE INTERRUPT FLAG
                                                        CLR
                                                                 FLG4
```

MICROD - MICROCODE MODULE_D

| MICROD MICROD. | - MICROCOD MAC 10- | E MODUL | .E D 17:53 | MACY11 | 30(1046) MODULE [| 11-JAN- MICROTE | 83 09:52 PAGE 18 | |
|---|--|--------------------------------------|--|--------------------------------------|----------------------------------|---------------------------------|--|---|
| 763 764 765 766 767 768 769 770 771 | 002546' 0 002554' 0 002562' 1 002566' 0 002574' 0 002576' 0 | 332767 301774 | 176106 176102 000140 000040 000100 | 021032 021030 176044 176034 | 30 \$: 35 \$: | MOV MTPS | RBUFP, @#LFRBUF TBUFP, @#LTAC #PRIO3 #TRNFLG, FLG4 30\$ #RCVFLG, FLG4 35\$ | : TELL LINK WHERE RECEIVE IS : TELL LINK WHERE XMIT IS : WAIT FOR AN INTERRUPT : WAIT FOR XMIT INTERRUPT : WAIT FOR RECEIVER BEFORE GOING ANY FURTHER |
| 772 773 774 775 | | | | | ***** | GET STAT | US WORDS FROM TRANS | ************************************** |
| 776 777 778 779 780 781 | 002606' 0 002612' 0 002614' 0 | 012003 | 176050 | | | MOV MOV MOV | TBUFP,RO (RO)+,R3 (RO),R4 | ; POINT AT XMIT BUFFER ; R5 NOW HOLDS TXO STATUS WORD ; R6 NOW HOLDS TX1 STATUS WORD |
| 782 783 784 | | | | | • | | | WRITE STATUS WORDS **** |
| 785 786 787 788 789 790 791 | 002616' 0 002624' 0 002632' 0 002636' 0 002642' 0 | 016737 013700 013702 010037 | 176024 176020 021014 021014 021016 021012 | 021010 021012 | | MOV MOV MOV MOV MOV | IPCSR2,&#MDMA0 IPCSR2+2,@#MDMA1 @#MDMARO,R0 @#MDMARO,R2 RO,@#MDMAO R2,@#MDMA1</td><td></td></tr><tr><td>792 793 794 795</td><td>002652° 0</td><td>)10337)10437</td><td>021026 021026</td><td></td><td></td><td>MOV MOV</td><td>R3,@#MDM'WO R4,@#MDMAWO</td><td>: WRITE TXO TO HOST MEMORY : WRITE TX1 TO HOST MEMORY</td></tr><tr><td>796 797 798 799 800</td><td>002662° 1 002670° 0 002672° 0</td><td>000241</td><td>000006</td><td>175755</td><td></td><td>MOVB CLC RTS</td><td>#6,PCSR1+1 PC</td><td></td></tr></tbody></table> | |

MICROD · MICROCODE MODULE D

| MICROD MICROD | - MICROCO MAC 10 | DE MODUI D-JAN-83 | E D 17:53 | MACY11 | 30(1046) LINK BY | 11-JAN- TE COUNTE | -83 09:52 PAGE 20 ER TEST | |
|---|--|--|--|------------------|---------------------|---|---|---|
| 857 858 859 860 861 862 | 002764' 002770' 002774' 003000' 003004' | 013700 013701 010037 010137 013703 | 021014 021014 021010 021012 021014 | | | MOV MOV MOV MOV | a#MDMARO,RO a#MDMARO,R1 RG,a#MDMAO R1,a#MDMA1 a#MDMARO,R3 | RO NOW CONTAINS PCBB LO RI NOW CONTAINS PCBB HI POINT AT PCBB RI NOW CONTAINS BYTE COUNT |
| 863 864 865 866 | | | | | • | | INK FOR DATAGRAM LOOPBA | |
| 865 866 867 868 869 870 | 003010' 003016' | 012737 012737 | 100200 100014 | 177776 177774 | | MOV MOV | #MODE!ENABLE, a#CMDREG #PROM!LOOP!DTCR, a#MODREG | : ENABLE LINK, SELECT MODE REG : PROM MODE AND LOOPBACK |
| 870 871 872 874 875 876 877 878 | 003024' 003030' 003032' 003034' 003040' 003044' | 005024 010324 005037 005067 016737 | 175632 021034 175574 175610 175604 | 021032 021030 | | MOV CLR MOV CLR CLR MOV MOV | TBUFP,R4 (R4)+ R3,(R4)+ a#CLRFIF FLG4 RBUFP,a#LFRBUF TBUFP,a#LTAC | POINT AT XMIT BUFFER CLEAR OUT STATUS WORD WRITE PASSED BYTE COUNT CLEAR THE FIFO CLEAR INTERRUPT FLAG TELL UNA WHERE RECIEVE BUFF IS TELL UNA WHERE XMIT BUFF IS |
| 878 879 880 881 882 883 884 885 886 | 0030601 | 032767 001774 032767 | 000140 000040 000100 | 175546 175536 | 30\$: 35\$: | MTPS BIT BEQ BIT BEQ | #PRIO3 #TRNFLG,FLG4 30\$ #RCVFLG,FLG4 35\$ | : ALLOW XMITTER TO INTERRUPT ; WAIT FOR INTERRUPT ; WAIT FOR RECEIVER INTERRUPT TOO |
| 885 886 887 888 | 003104 | 106427 | 000340 | | | MTPS | #PR107 | : DISABLE INTERRUPTS |
| 889 890 891 | | | | | **** | COUNT Z | EROS IN RECEIVE BUFFER * | * * * * * * * * * * * * |
| 892 893 894 895 896 897 898 899 | 003110' 003114' 003120' 003122' | 062704 | 175544 000002 | | | MOV ADD MOV CLR | RBUFP,R4 #2,R4 (R4)+,R2 R5 | : VERIFY RECEIVE BUFFER CONTENTS : && COULD REPORT STATUS && : SAVE "MLEN" BUFFER LENGTH : COUNT DATA WORDS TRANSFERRED |
| 898 899 900 901 902 903 | 003124' 003126' 003132' 003134' 003136' | 122703 001004 005205 | 000000 002756 | | 40\$: | MOVB CMPB BNE INC CMP | (R4)+,R3 #0,R3 45\$ R5 R5,#MAXBC | READ DATA BACK IS IT ZERO? EXIT IF AT THE EDGE BUMP THE TALLY DONE YET? |
| 903 904 905 906 907 | | 103770 062700 | 000002 | | 45\$: | ADD ADC | 40\$ #2,R0 R1 | : IF NOT, KEEP GOING : INDEX DOWN TO PCBB+2 |
| 908 909 | 003152' 003156' | 010037 010137 | 021010 021012 | | | MOV MOV | RO, a#MDMAO R1, a#MDMA1 | ; POINT TO PCBB+2 |
| 910 911 912 | 003162* | 010237 010537 | 021026 021026 | | | MOV MOV | R2,3#MDMAWO R5,3#MDMAWO | : WRITE RECEIVE BYTE COUNT : WRITE BUFFER BYTE COUNT |

MICROD - MICROCODE MODULE D MACY11 30(1046) 11-JAN-83 09:52 PAGE 21 MICROD.MAC 10-JAN-83 17:53 LINK BYTE COUNTER TEST

913 914 003172' 112767 000007 175445 MOVB #7,PCSR1+1 915 003200' 000241 916 003202' 000207 RTS PC

; TELL HIM WHAT TEST IT IS

```
10-JAN-83 17:53
MICROD.MAC
                                              LINK BYTE COUNTER TEST
   917
   918
   : LINK MEMORY ARBITRATION TEST
                                              .SBTTL LINK MEMORY ARBITRATION TEST
                                               THIS IS MICROCODE FOR THE LINK ARBITRATION TEST.
THIS MICROCODE WILL HAVE THE DMA ENGINE, THE T-11, AND BOTH STATE MACHINES ATTEMPTING TO ACCESS LINK MEMORY AT THE SAME TIME.
                                                EACH PROCESS OPERATES ON DATA THAT IS 'IN!QUE FOR IDENTIFICATION.
                                                **** TELL HOST WE ARE TESTING ****
                                                ------
   935
         003204 112737 000002 021020
                                                                WINTST, aWIPCSR1
PCSR1, aWIPCSR1
                                              MICD8: MOVB
                                                                                            : TELL HOST WE ARE TESTING
         003212' 016737 175426 021020
                                                       MOV
   937
938
939
940
941
                                                **** RETRIEVE HOST MEMORY FRC PCBB ****
                                                *********************
                                                                                      ******
        003220' 016737
003226' 016737
003234' 013704
003240' 013705
                           175422
175416
021014
                                                                IPCSR2,a#MDMAO
IPCSR2+2,a#MDMA1
a#MDMARQ,R4
                                    021010
                                                       MOV
                                                                                            : SET TO GET HOST PCBB ADDRESS
                                    021012
                                                       MOV
   945
946
                                                                                            ; R4 NOW HOLDS PCBB LOW
                                                       MOV
                           021014
                                                                                            : R5 NOW HOLDS PCBB HIGH
                                                       MOV
                                                                a#MDMARO.R5
   947
948
949
950
                                                **** FILL RECEIVE BUFFER WITH ZEROS *****
   951
                                                                                            ; FILL RECEIVE BUFFER
   953
         003244' 012700
                           100000
                                                       MOV
                                                                #LINADR,RO
         003250' 010067
   954
                           175404
                                                       MOV
                                                                RO, RBUFP
                                                                                            ; SAVE A COPY OF POINTER
         003254' 005020
   955
                                              105:
                                                       CLR
                                                                (RO)+
                                                                                            : CLEAR IT OUT
   956
                                                                RO, #LINADR+SIZ1K
         003256' 020027
                                                       CMP
                           104000
   957
958
959
960
961
962
963
         0032621 103774
                                                                10$
                                                       BLO
                                               **** FILL TRANSMIT BUFFER WITH 33 HEX **
                                              ; **** THATS 31463 OCTAL *********
   964
                                                                RO, TBUFP #31463, (RO)+
                                                                                            : FILL TRANSMIT BUFFER
: 31463 = 3333 HEX (THE REAL THING)
   965
         003264  010067
                           175372
                                                       MOV
   966
         003270' 012720
                           031463
                                              20$:
                                                       MOV
    967
         CMP
                                                                RO,#LINADR+S1Z2K
                           110000
   968
         003300' 103773
                                                                20$
                                                       BLO
   969
   970
                                              ; **************************
   971
   972
                                              : **** FILL DMA BUFFER WITH OF HEX ***
```

MICROD - MICROCODE MODULE D

| MICROD MICROD. | - MICROC MAC 1 | ODE MODU 0-JAN-83 | LE D 17:53 | MACY11 | 30(1046) LINK ME | 11-JAN MORY ARB | -83 09:52 PAGE 23 | |
|--|--|--|--|------------------|---------------------|---|---|---|
| 973 974 | | | | | • | _ | 417 OCTAL ********** | |
| 975 976 977 978 979 980 | 003302' 003306' 003312' 003316' | 012720 020027 | 175356 007417 114000 | | 30\$: | MOV MOV (MP BLO | RO,DBUFP #7417,(RO)+ RO,#LINADR+SIZ3K 30\$ | ; SAVE COPY OF POINTER |
| 981 982 983 984 985 986 | | | | | **** | FILL BU | FFER WITH FF HEX *** 77777 OCTAL ****** | |
| 987 988 989 990 991 992 | 003320° 003324° 003330° 003334° | 012720 020027 | 175342 177777 120000 | | 40\$: | MOV MOV CMP BLO | RO,MBUFP #177777,(RO)+ RO,#LINADR+SIZ4K 40\$ | ; T-11 BUFFER POINTER |
| 992 993 994 995 996 | | | | | **** | GET DMA | ENGINE READY TO GO **** | † † ± |
| 997 9 98 | 003336' 003340' | | | | | MOV MOV | R4,R2 R5,R3 | ; GET HOST ADDRESS OF PCBB |
| 999 1000 1001 | 003342' 005346' | 062702 005503 | 000006 | | | ADD ADC | #6,R2 R3 | ; DUMP BUFFER AFTER ERROR CODES |
| 1002 1003 1004 | 003350° 003354° | 010337 | 021004 021006 | | | MOV MOV | R2,a#DMATO R3,a#DMAT1 | ; "TO" REGISTERS INCREMENTS |
| 1005 1006 1007 | 003360' 003366' | 016737 012737 | 175300 003774 | 021022 021024 | | MOV MOV | DBUFP,@#DMAF #3774,@#DMAWC | : WHERE "FROM" REG IS LOCATED : WILL XFER 1K-2 WORDS |
| 1008 1009 1010 | 003374' 003376' 003402' | 062700 | 175074 000114 | | | MOV ADD MOV | PC.RO #DMAINTRO RO.@#DMAVÉC | : CALCULATE THE INTERRUPT VECTOR : THROW IN THE OFFSET |
| 1011 1012 | 003406° 003414° | 012737 | 0003C0 175236 | 000116 | | MOV CLR | MPRIO6, aMDMAVEC+2 DMDONE | :PRIORITY OF INTERRUPT SERVICE ROUTINE : FLAG |
| 1013 1014 1015 1016 | | | | | • | SET UP | THE STATE MACHINES **** | |
| 1017 1018 1019 | 003420' 003426' | 012737 012737 | 100200 100004 | 177776 177774 | | MOV MOV | #MODE!ENABLE,@#CMDREG #PROM!LOOP,@#MODREG | |
| 1020 1021 1022 1023 1024 1025 1026 1027 1028 | 003444° 003450° 003454° 003460° | 016701 062701 012721 005037 005067 016737 016700 012702 | 175222 000002 002752 021034 175160 175174 175174 002000 | 021032 | | MOV ADD MOV CLR CLR MOV MOV | TBUFP,R1 #2,R1 #MAXBC-CRCSIZ,(R1)+ a#CLRF1F "FLG4 RBUFP,a#LFRBUF MBUFP,R0 #SIZ1K/2,R2 | GET ADDRESS OF XMIT PUFFER SKIP TO BYTE COUNT SET BYTE COUNT TO MAX ALLOWED CLEAR INTERRUPT FLAG CLEAR INTERRUPT FLAG TELL LINK WHERE RECEIVE BUF IS POINT TO MICROCPU BUFFER WORD COUNT FOR MICROCPU LOOP |

| MICROD MICROD | - MICROC | ODE MODU 0-JAN-83 | LE D 17:53 | MACY11 30(1046) 11-JAN-83 09:52 PAGE 24 LINK MEMORY ARBITRATION TEST | | | | | | |
|--|---|--|--|---|--------|---------------------------------|---|---|--|--|
| 1029 1030 | 003476 | 012701 | 125252 | | | MOV | #125252,R1 | ;DATA FOR MICROCPU LOOP | | |
| 1031 1032 1033 1034 1035 1036 1037 1038 1039 | | | | | | | HE MACHINES **** | | | |
| 1034 | | | | | • | | | : IS EVERYBODY READY? | | |
| 1036 | 003502' | 016737 | 175154 | 021030 | | MCV | TBUFP, a#LTAC | ; THIS STARTS THE STATE MACHINES | | |
| 1038 | 003510 | 005237 | 021002 | | | INC | a#DMACSR | ; THIS STARTS DMA ENGINE | | |
| 1040 | 0035141 | 106427 | 000140 | | | MTPS | #PRI03 | ; ALLOW INTERRUPTS | | |
| 1041 1042 1043 | 003520° 003522° | 010120 077202 | | | 50\$: | MOV SOB | R1,(R0)+ R2,50\$ | ;START FILLING LINK MEMORY;WITH MICROCPU | | |
| 1044 1045 1046 | | | | | | | | ; THE MICROCPU IS DONE | | |
| 1047 1048 | 003524 | 032767 001774 | 000100 | 175106 | 60\$: | BIT BEQ | #RCVFLG,FLG4 60\$ | ; IS THE RECEIVE DONE? ; NOT YET | | |
| 1049 1050 1051 1052 1053 1054 1056 1057 1058 | 003534' 003542' | 032767 001774 | 000040 | 175076 | 70\$: | BIT BEQ | #TRNFLG,FLG4 70\$ | :IS THE TRANSMIT DONE? :NOT YET | | |
| 1053 1054 | 003544' 003550' | 005767 001775 | 175106 | | 80\$: | TST BEQ | DMDONE 80\$ | :IS THE DMA ENGINE DONE? :NOT YET | | |
| 1056 1057 | | | | | | | | ; EVERYBODY IS DONE, SO NOW CHECK THE; DATA | | |
| 1059 1060 1061 1062 1063 | 003556' 003562' 003566' | 016700 062700 012702 022710 001005 | 175102 000004 001365 031463 | | 90\$: | MOV ADD MOV CMP BNE | RBUFP,RO #4,RO # <maxbc-crcsiz>/2,R2 #31463,(RO) 100\$</maxbc-crcsiz> | POINT TO RECEIVE BUFFER INDEX DOWN TO DATA PART AMOUNT OF DATA TO CHECK IS THE DATA CORRECT? | | |
| 1064 1065 1066 1067 1068 | 003574 003600' 003602' 003604' | 077206 000241 | 000002 | | | ADD SOB CLC BR | #2,R0 R2,90\$ 110\$ | YES, POINT TO NEXT WORD OF DATA CONTINUE CHECKING DATA UNTIL DONE TELL HOST THIS TEST SUCCESS | | |
| 1069 1070 1071 1072 1073 1074 1075 | በበኛልበል፣ | 010537 012737 011037 010037 | 021010 021012 031463 021026 021026 | 021026 | 100\$: | MOV MOV MOV MOV SEC | R4,@#MDMAO R5,@#MDMA1 #31463,@#MDMAWO (R0),@#MDMAWO R0,@#MDMAWO | ;POINT TO HOST PCBB :GIVE HOST EXPECTED PATTERN IN PCBB ;GIVE HOST ACTUAL PATTERN IN PCBB+2 ;GIVE HOST LINK MEMORY ADDRESS ;TELL MICROMONITOR ERROR OCCURRED | | |
| 1076 1076 1077 1078 | 003636° 003644° | 112767 000207 | 000010 | 175001 | 110\$: | MOVB RTS | #8.,PCSR1+1 PC | :TELL HOST WHAT TEST THIS IS ;RETURN TO MICROMONITOR | | |

| | - MICROCODE MODULE D MAC 10-JAN-83 17: | MACY11 30(1046 :53 LINK M |) 11-JA EMORY AR | N-83 09:52 PAGE 25 BITRATION TEST | |
|--|--|--|--|--|----------------------------|
| 1079 1080 1081 | | SBTTL | LINK B | YTE COUNTER MAXIMUM TEST | |
| 1082 1083 1084 | | • | | HE HOST WE ARE TESTING ** | * * * * * * * * * |
| 1085 1086 1087 1088 | 003646' 012767 000 003654' 016737 174 | 0002 174770 MICD9: 4764 021020 : | MOV MOV | #INTST,PCSR1 PCSR1,@#IPCSR1 | ; TELL HOST WE ARE TESTING |
| 1089 1090 1091 1092 | | **** **** **** | ******* * CALCUL | ATE BUFFER ADDRESS POINTE | ****** RS **** ***** |
| 1093 1094 1095 1096 1097 1098 | 003666' 010067 174 003672' 062700 004 | ; 4766 4000 4760 | MGV MOV ADD MOV | #LINADR,RO RO,RBUFP #SIZ1K,RO RO,TBUFP | ; RELATIVE TO LINK MEMORY |
| 1099 1100 1101 1102 | | **** | ****** * SET UP | LINK FOR A LOOPBACK **** | * * |
| 1103 1104 1105 | 003702' 012737 100 003710' 012737 100 | 0200 177776 0004 177774 | MOV MOV | #MODE!ENABLE, @#CMDREG #PROM!LOOP, @#MODREG | |
| 1106 1107 1108 1109 1110 1111 1112 | 003722' 005024 003724' 012724 007 003730' 005037 021 003734' 005067 174 003740' 016737 174 | 4740 7777 1034 4700 4714 021032 4710 021030 | MOV CLR MOV CLR MOV MOV | TBUFP,R4 (R4)+ #MxMTBC,(R4)+ a#CLRFIF FLG4 RBUFP,a#LFRBUF TBUFP,a#LTAC | ; SET UP XMIT BUFFER |
| 1114 1115 1116 1117 1118 | | **** | ****** † TIAW * | OR INTERRUPTS **** | |
| 1119 1120 1121 1122 1123 | | 0100 0040 174652 10 \$: | MIPS BIT BEQ | #PRIO2 #TRNFLG,FLG4 10\$ | |
| 1123 1124 1125 1126 | 003770° 032767 000 003776° 001774 | 0100 174642 20\$: | BIT BEQ | #RCVFLG,FLG4 20\$ | |
| 1127 | 0040001 106427 000 | 0340 | MTPS | #PR107 | |
| 1128 1129 1130 1131 1132 | | **** | • CHECK | RECEIVE BUFFER BYTE COUNT | ***** **** |
| 1133 1134 | 004004 016704 174 | 4650 | MOV | RBUFP,R4 | |

| MICROD MICROD. | - MICROC MAC 1 | ODE MODU 0-JAN-83 | LE D 17:53 | MACY11 | 30(1046) LINK BY | 11-JAN TE COUNT | -83 09:52 PAGE ER MAXIMUM TEST | 26 | |
|--------------------------------------|---|--|---------------|--------|---------------------|--------------------------|---|---------|---------|
| 1135 1136 1137 1138 1139 | 004010' 004014' 004016' 004022' 004024' | 062704 012402 022702 001005 000241 | 000002 | | | ADD MOV CMP BNE | #2,R4 (R4)+,R2 #MRECBC,R2 40\$ | : POINT | AT MLEN |
| 1140 1141 1142 | 004026° 004034° | 112767 | 000011 | 174611 | 30\$: | CLC MOVB RTS | #9.,PCSR1+1 PC | | |
| 114 3 1144 | 004036° 004040° | 000261 000772 | | | 405: | SEC BR | 30\$ | : ERROR | EXIT |

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MICROD - MICROCODE MODULE D
MICROD.MAC 10-JAN-03 17:53
                                     MACY11 30(1046) 11-JAN-83 09:52 PAGE 27
                                              MODULE D. MICROTEST #10 - FIFO TEST
  1145
                                               .SBTTL MODULE D. MICROTEST #10 - FIFO TEST
  1146
  1147
  1148
                                               THIS IS THE MICROCODE FOR THE FIFO TEST.
IT TRANSMITS A PACKET FROM BUFFER O, SETS UP THE RECEIVER TO RECEIVE TO
THE BUFFER SPECIFIED BY THE HOST IN PCBB+O. AFTER THE INTERRUPT THE BUFFER
  1149
1150
  1151
1152
1153
                                                DONE FIFO CONTENTS ARE READ AND PASSED TO THE HOST IN PCBB+2.
  1154
  1155
  1156
         004042' 112767
                           000002 174574
                                               MICD10: MOVB
                                                                 #INTST,PCSR1
                                                                                             :TELL HOST WE ARE TESTING
         004050 016737 174570
  1157
                                     021020
                                                        MOV
                                                                 PCSR1_å#IPCSR1
  1158
  1159
                                               :GET RECEIVE BUFFER ADDRESS FROM FOST MEMORY
  1160
         004056' 016737
004064' 016737
004072' 013700
                                     021010
                                                                  IPCSR2, @#MDMA0
IPCSR2+2, @#MDMA1
  1161
                            174564
                                                                                             GET CONTENTS OF HOST'S PCSR2+3
                                                        MOV
                            174560
  1162
                                                        MOV
                                                                                             :R0 = CONTENTS OF HOST'S PCSR2
:R1 = CONTENTS OF HOST'S PCSR3
                            021014
                                                                  a#MDMARO,RO
  1163
                                                        MOV
         004076' 013701
004102' 010037
                            021014
  1164
                                                        MOV
                                                                 a#MDMARO_R1
                            021010
  1165
                                                        MOV
                                                                 RO, a/MDMAO
                                                                                             :POINT TO PCBB+0
         004106' 010137
                            021012
                                                        MOV
                                                                 R1.a/MDMA1
  1166
         004112' 013767
  1167
                            021014
                                    174540
                                                        MOV
                                                                 a/MDMARO_RBUFP
                                                                                             GET RECEIVE BUFFER ADDRESS
  1168
  1169
                                               CLEAR ALL OF LINK MEMORY
  1170
         004120' 012702
004124' 005022
004126' 020227
  1171
                            100000
                                                        MOV
                                                                 #LINADR,R2
  1172
1173
                                               105:
                                                                 (R2)+
                                                        CLR
                            177774
                                                        CMP
                                                                  R2,#LINADR+LINSIZ
         004132' 103774
  1174
                                                                  10$
                                                        BL<sub>0</sub>
  1175
                                               FILL THE TRANSMIT BUFFER WITH 1'S
  1176
  1177
                                                                                             :USE BUFFER O FOR TRANSMIT
         004134 012702
                            100000
  1178
                                                        MOV
                                                                 #LINADR_R2
         004140' 010267
                                                                 R2, TBUFP
  1179
                            174516
                                                        MOV
                                                                                             :SAVE IT
         004144 012722 004150 020227
                                               20$:
                                                                 #177777.(R2)+
  1180
                            177777
                                                        MOV
  1181
                                                                  R2.#LINADR+SIZ1k
                            104000
                                                        CMP
         0041541 103773
  1182
                                                        BLO
  1183
  1184
1185
                                               SET UP LINK FOR PROMISCUOUS MODE AND INTERNAL LOOPBACK. TRANSMIT THE MAX
                                               SIZE PACKET. CLEAR THE FIFO AND GIVE THE LINK A RECEIVER BUFFER AND A TRANSMIT
                                               BUFFER TO START THE OPERATION.
  1186
  1187
                                                                                             :TURN ON THE LINK AND SELECT MODE REG
         004156' 012737
                            100200 177776
                                                                 #MODE!ENABLE, @#CMDREG
  1188
                                                        MOV
         004164' 012737
                                                                                              SET PROMISCUOUS MODE AND LOOPBACK
  1189
                            100004
                                     177774
                                                        MOV
                                                                  #PROM!LOOP, @#MODREG
         004172' 016702
                                                                                              GET TRANSMIT BUFFER
  1190
                            174464
                                                        MOV
                                                                  TBUFP, R2
         0041761 005022
  1191
                                                                  (R2)+
                                                                                              :CLEAR THE STATUS WORD
                                                        CLR
         004200' 012712
  1192
                            002752
                                                        MOV
                                                                  #MAXBC-CRCSIZ,(R2)
                                                                                              SET TO MAX BYTE COUNT
         004204' 005037
  1193
                            021034
                                                                  a#CLRFIF
                                                                                              :CLEAR THE FIFO
                                                        CLR
                                                                                              CLEAR THE INTERRUPT FLAG
         004210' 005067
                            174424
  1194
                                                        CLR
                                                                  FLG4
         004214' 016737
                                                                  RBUFP, a#LFRBUF
                                                                                             :LOAD THE FIFO WITH A RECEIVE BUFFER
  1195
                            174440
                                     021032
                                                        MOV
                                                                                              GIVE TRANSMIT BUFFER TO START TRANSMIT
         0042221 016737
                            174434
                                     021030
                                                                  TBUFP, a/LTAC
  1196
                                                        MOV
  1197
                                               LOWER THE PROCESSOR PRIORITY AND WAIT FOR THE INTERRUPTS
  1198
  1199
                                                        MTPS
                                                                  #PR103
                                                                                             :ALLOW BOTH TRANSMIT AND RECEIVER INTERRUPT
  1200
         0042301 106427
                            000140
```

| MICROD MICROD. | - MICROCO MAC 10 | DDE MODUL D-JAN-83 | E D 17:53 | MACY11 | 30(1046 MODULE | | -83 09:52 PAGE 28 TEST #10 - FIFO TEST | |
|--|--|--------------------------------------|----------------------------|--------|-------------------|--------------------------|--|--|
| 1201 1202 | 004234' 004242' | 032767 001774 | 000100 | 174376 | 30\$: | BIT BEQ | #RCVFLG,FLG4 | ;WAIT FOR RECEIVER FIRST |
| 1202 1203 1204 1205 | 004244' 004252' | 032767 001774 | 000040 | 174366 | 40\$: | BIT BEQ | #TRNFLG,FLG4 | ; THEN THE TRANSMITTER |
| 1206 1207 1208 | 0042541 | 106427 | 000340 | | DEAD | MTPS | #PR107 | ;DISABLE FURTHER INTERRUPTS |
| 1208 1209 1210 1211 | | 062700 | 000002 | | ; READ | ADD | #2,R0 | PASS BACK TO HOST IN PCEB+2 ;POINT TO PCBB+2 |
| 1212 1213 1214 | 004264' 004266' 004272' 004276' | 005501 010037 010137 013737 | 021010 021012 021044 | 021026 | | ADC MOV MOV MOV | R1 R0,@#MDMA0 R1,@#MDMA1 @#LRBUF,@#MDMAW0 | ;PASS BUFFER DONE DATA TO HOST |
| 1215 1216 1217 1218 1219 1220 | 004304' 004312' 004314' | 000241 | 000012 | 174333 | | MOVB CLC RTS | #10.,PCSR1+1 PC | :INDICATE WHAT TEST WE JUST FINISHED :INDICATE SUCCESS |

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| MICROD. 1221 1222 | - MICROCO | ODE MODU O-JAN-83 | ILE D 17:53 | MACY11 | MODULE | D, MICR | N-83 09:52 PAGE 29 OTEST #11 - LINK ADDRES D, MICROTEST #11 - LIN | K ADDRESS TEST |
|--|--|----------------------------|--------------------------------------|------------------|--------------------------------------|--|---|--|
| 1223 1224 1225 1226 1227 1228 1229 1230 1231 1233 | | | | | TRANSM ALL LI TO SEE ADDRES | MITTED WITTED WINK MEMO E IF AND SS IS PA AD DATA | ER OBTAINED FROM THE HOUITH LOOPBACK ENABLED IN ORY OUTSIDE OF THE TRANS DEATH TO AN ASSED BACK TO THE HOST IN PCBB+10. | AND TRANSMITTER LINK MEMORY ADDRESS TESTS. THEN FILLS THE TRANSMIT BUFFER OBTAINED SETS UP THE RECEIVER TO RECEIVE A PACKET ST'S PCBB+O. THE PACKET OF 1'S IS PROMISCUIOUS MODE. AFTER THE INTERRUPT MIT AND RECEIVE BUFFERS IS CHECKED INTORRECT ADDRESS. IF SO THE FAULTY N PCBB+4 AND THE GOOD DATA IN PCBB+6 AND |
| 1234 1235 1236 1237 1238 1239 | 004316' 004324' | | 000002 174314 | 174320 021023 | MICD11: | MOVB MOV | | ; TELL HOST WE ARE TESTING |
| 1240 1241 1242 1243 | | | | | GET THE HO | HE RECEI | VER BUFFER FROM THE HOS | T'S PCBB+0 AND THE TRANSMIT BUFFER FROM |
| 1244 | 0043321 | 016737 | 174310 | | ; | MOV | IPCSR2,@#MDMAO | GET CONTENTS OF HOST'S PCSR2+3 |
| 1245 1246 1247 1248 | 004340' 004346' 004352' 004356' | 013700 013701 010037 | 174304 021014 021014 021010 | 021012 | | MOV MOV MOV | KU,@#MDMAU | GET CONTENTS OF HOST'S PCSR2+3 RO = CONTENTS OF HOST'S PCSR2 R1 = CONTENTS OF HOST'S PCSR3 POINT TO PCBB+0 |
| 1249 1250 1251 1252 | 004362° 004366° 004374° | 013767 | 021012 021014 021014 | 174264 174260 | | MOV MOV MOV | R1,a#MDMA1 a#MDMARO,RBUFP a#MDMARO,TBUFP | :GET RECEIVER BUFFER FROM PCBB+0 :GET TRANSMIT BUFFER FROM PCBB+2 |
| 1253 1254 | | | | | FILL A | ALL OF L | INK MEMORY WITH 0'S | |
| 1255 1256 | 004402' | 012702 | 100000 | | 10 \$: | MOV CLR | #LINADR,R2 (R2)+ | |
| 1257 1258 | 004410' | 020227 | 177774 | | 104. | CMP BLO | R2,#LINADR+LINSIZ 10\$ | 4 , |
| 1259 1260 | 004416' | | 174240 | | | MOV CLR | TBUFP,R2 (R2)+ | :POINT TO BASE OF TRANSMIT BUFFER :CLEAR STATUS WORD |
| 1261 1262 | 004424 | 012722 | 002756 | | • | MOV | #MAXBC,(R2)+ | PUT IN BYTE COUNT |
| 1263 1264 | | | | | FILL | TRANSMI 1 | BUFFER WITH 1'S | |
| 1265 1266 1267 1268 1269 1270 1271 | 004430° 004434° 004436° 004442° | 006201 012722 005301 | 002756 177777 | | 20\$: | MOV ASR MOV DEC BNE | #MAXBC,R1 R1 #177777,(R2)+ R1 20\$ | |
| 1272 1273 | | | | | SET UI | P LINK F | OR PROMISCIOUS MODE AND | INTERNAL LOOPBACK. TRANSMIT THE PACKET |
| 1274 1275 1276 | 004446' | | 000200 100014 | 177776 177774 | ; | MOV MOV | | ;SELECT THE MODE REGISTER REG :ENABLE PROMISCULOUS MODE AND LOCPBACK |

| MICROD . | - MICROCODE M MAC 10-JAN | ODULE D -83 17:53 | MACY11 3(| 0(1046) Module D | 11-JAN MICRO | -83 09:52 PAGE 30 TEST #11 - LINK ADDRESS | TEST |
|--|--|--|----------------------------|---------------------------------------|--|---|--|
| 1277 1278 1279 1280 1281 1282 1283 | 004462' 0127 004470' 0050 004474' 0050 004500' 0167 004506' 0167 | 37 100000 37 021034 67 174140 37 174154 37 174150 | 177776 021032 021030 | | MOV CLF CLR MOV MOV | WENABLE, a WCMDREG a WCLRFIF FLG4 RBUFP, a WLFRBUF TBUFP, a WLTAC | AND DISABLE TRANSMIT CRC TURN ON THE LINK C!EAR THE FIFO CLEAR THE INTERRUPT WORD GIVE THE LINK A RECEIVE BUFFER GIVE THE LINK A TRANSMIT BUFFER TO START THE OPERATION |
| 1285 | | | | LOWER 1 | HE PROC | ESSOR PRIORITY AND WAIT | FOR THE INTERRUPT |
| 1287 1288 1289 1290 1291 | 004514' 1064 004520' 0327 004526' 0017 004530' 0327 004536' 0017 | 67 000100 | | ; 30 \$: 40 \$: | MTPS BIT BEQ BIT BEQ | #PRIO3 #RCVFLG,FLG4 30\$ #TRNFLG,FLG4 40\$ | :ALLOW BOTH TRANSMIT AND RECEIVE INTERRUPT ;WAIT FOR THE RECEIVE INTERRUPT |
| 1292 1293 | 004540' 1064 | | | | MTPS | #PRI07 | ;DISABLE FURTHER INTERRUPTS |
| 1294 1295 | | | | : | _ | BUFFER TO MAKE SURE IT I | |
| 1278 1279 1281 1282 1283 1284 1286 1286 1287 1288 1289 1299 1299 1301 1303 1307 1308 1309 | 004544' 0127 004550' 0167 004554' 0627 004560' 0127 004566' 0057 004566' 0057 004570' 0014 004576' 0053 004600' 0013 | 02 174104 02 000004 01 002756 01 12 32 02 600002 | : | : 45 \$: | MOV MOV ADD MOV ASR TST BEQ ADD DEC BNE | #177777,R3 RBUFP,R2 #4,R2 #MAXBC,R1 R1 (R2) 90\$ #2,R2 R1 45\$ | :PASS THIS NON-ZERO DATA IF FAILURE :GET FOINTER TO RECEIVER BUFFER :SKIP STATUS AND BYTE COUNT :NUMBER OF BYTES WE SENT :MAKE IT WORDS :IS THERE NON-ZERO DATA HERE? :NO, ERROR! :POINT TO NEXT WORD IN RECEIVER BUFFER |
| 1308 1309 | | | | CHECK A | LL LINK | MEMORY EXCEPT THE TRANS | SMIT AND RECEIVE BUFFERS FOR ANY NON-ZERO |
| 1310 1311 1312 1313 1314 1315 | 004602' C050 004604' 0127 004610' 0202 004614' 0010 004616' 0627 | 02 100000 67 174046 02 | 5 | ; 50 \$: | CLR MOV CMP BNE ADD | R3 WLINADR,R2 R2,TBUFP 60\$ WMAXBC+4,R2 | PASS THIS ZERO DATA IF FAILURE START AT BASE OF LINK MEMORY ARE WE AT THE TRANSMIT BUFFER? NO YES, SKIP OVER THE HEADER AND THE DATA |
| 1316 | 004522° 0202 004626° 0010 | 67 174032 | 6 | 60\$: | CMP BNE | R2_RBUFP 70\$ | ARE WE AT THE RECEIVE BUFFER? |
| 1317 1318 1319 1320 1321 1322 1323 1324 1325 1326 1327 | 004630' 0627 004634' 0057 004636' 0010 004640' 0627 004644' 0202 004650' 1037 | 02 002762 12 07 02 000002 27 177774 | i | 70 \$: | ADD TST BNE ADD (MP BLO | #MAXBC+4,R2 (R2) 90\$ #2,R2 R2,#LINADR+LINSIZ 50\$ | YES, SKIP OVER THE HEADER AND THE DATA IS ANY NON-ZERO DATA IN HERE? YES, ERROR! POINT TO NEXT WORD IN LINK MEMORY HAVE WE CHECKED ALL OF LINK MEMORY? NOT YET |
| 1324 1325 | | | | TEST WA | S SUCES | SFULL | |
| 1328 1329 | 004652° 0002 004654° 0004 | | • | • | CLC BR | 100\$ | :INDICATE SUCCESS :LEAVE |
| 1330 1331 | | | | PASS IN | IE ADDRE | SS BACK TO THE HOST IN F | PCBB+4 AND THE DATA IN PCBB+6 |
| 1332 | 004656* 0102 | 37 021026 | ξ. | 90\$: | MOV | R2,@#MDMALO | :PASS ADDRESS TO PCBB+4 |

MICROD - MICROCODE MODULE D MICROD.MAC 10-JAN-83 17:53 MACY11 30(1046) 11-JAN-83 09:52 PAGE 31
MODULE D. MICROTEST #11 - LINK ADDRESS TEST 1333 004662' 010337 021026 1334 004666' 011237 021026 1335 004672' 000261. 1336 1337 004674' 112767 000013 1338 004702' 000207 1339 1340 1341 004704' 004706 1342 000001 MOV R3,0#MDMAWO (R2),0#MDMAWO :PASS GOOD DATA TO PCBB+6 :PASS DATA TO PCBB+10 MOV SEC INDICATE FAILURE 004674' 112767 000013 173743 100\$: MOVB RTS #11.,PCSR1+1 :TELL HOST WHAT TEST JUST FINISHED 004704° 004706 000001 MICDSZ::MICDSZ-MICROD+2 .END

| MICROD - MICRUCODE MODULE D MICROD.MAC 10-JAN-83 17:53 | MACY11 | 30(1046) CROSS R | 11-JAN- EFERFNCE | -83 09:5 | 52 PAGE - USER SY | 33 MBOLS | | | | | | SEQ 4 |
|---|--|--|------------------------------|----------------------|--------------------------------------|------------------------------|----------------------|----------------------|---------------------|--------------------------------|--------------------------------|---------------------|
| ACLO = 002000 87% ADRER= 000001 132% ADRREG= 177774 34% ARAM = 000100 80% BITO = 000001 54% BIT1 = 000002 53% BIT11 = 002000 44% BIT11 = 004000 43% BIT12 = 010000 42% BIT13 = 020000 41% BIT14 = 040000 40% BIT15 = 100000 39% BIT2 = 000004 52% BIT3 = 000010 51% BIT4 = 000020 50% BIT5 = 000040 49% BIT6 = 000100 46% BIT7 = 000200 46% BIT9 = 001000 46% | 103 104 562 570 68 79 68 88 88 79 56 | 73 86 71 112 85 78 105 106 107 108 109 | 87 113 111 84 | 240 110 | 245 | 248 | | | | | | |
| CLRFIF = 021034 22# CMDREG = 177776 35# 1278* | 309* 138* | 342* 303* | 405 * 336 * | 519* 399* | 644* 513* | 761 * 638 * | 874* 754* | 1024* 868* | 1110* 1018* | 1193 * 1104 * | 1279 * 1188 * | 1275• |
| COLL = 000020 89% CRCSIZ= 000004 130% CSRFLG= 000001 103% CSRVEC= 000064 96% CSRWRT 000436R 002 162 DATERR= 000000 131% | 303 196 163* 227# | 341 227 164* | 404 | 434 | 518 | 550 | 643 | 673 | 760 | 1023 | 1061 | 1192 |
| DBUFP 000664R 002 286W DMACSR= 021002 9W DMAF = 021022 17W DMAINT 000472R 002 157 | 976* 239 1005* 239# | 1005 248* 1009 | 1038* | | | | | | | | | |
| DMATO = 021004 10# DMAT1 = 021006 11# DMAVEC= 000114 97# DMAWC = 021024 18# | 1003* 1004* 158* 1006* | 159* | 1010* | 1011* | | | | | | | | |
| DMDONE 000656R 002 239* DNI = 004000 72# | 240 142 | 245 220 | 283# | 1012* | 1053 | | | | | | | |
| DRTY = 000040 88# DTCR = 000010 90# ENABLE = 130000 78# ENAL = 040000 85# ENCR = 004000 86# | 869 303 | 1276 336 | 399 | 513 | 638 | 754 | 868 | 1018 | 1104 | 1188 | 1278 | |
| ERRFLG= 000002 104# ERRINT 000446R 002 144 FATI = 000400 74# | 230 230# | | | | | | | | | | | |
| FLG4 000640R 002 189* 348 768 1280* | 192 352 ٤'5* 1288 | 196 406* 880 1290 | 221 * 411 882 | 227° 414 1025° | 230 * 520 * 1047 | 253* 525 1050 | 260* 528 1111* | 263* 645* 1121 | 278# 650 1124 | 310* 653 1194* | 315 762* 1201 | 343• 766 1204 |
| INERR = 000003 102M INMON = 000001 100M INTST = 000002 101M IOADR = 020000 124M IOSIZ = 020000 120M | 218 140 289 125 125 | 204 322 | 216 370 | 482 | 597 | 723 | 824 | 935 | 1086 | 1156 | 1237 | |

| MICROD - MICROCODE MICROD.MAC 10-J | MODULE D AN-83 17:53 | MACY11 | | 11-JAN EFERENCE | -83 09: | 52 PAGE - USER S | | | | | | | SE |
|--|---|---|---------------------|-----------------------------------|------------------------------------|-------------------------------|-------------------------------|------------------------------|-------------------------------|-----------------------------|-----------------------------|------------------------------|--------------------|
| IPCSR0= 021000 IPCSR1= 021020 | 8 16 1087 | | 204* | 220* 219* | 231 * 290 * | 242* 323* | 247* 371* | 254 * 483 * | 598* | 724* | 825* | 935* | 936• |
| 1PCSR2 000646R | 002 187 855 | * 188* 856 | | 450 944 | 451 1161 | 565 1162 | 566 1244 | 504 1245 | 605 | 689 | 690 | 786 | 787 |
| LASFTP= 012400 LFRBUF= 021032 LINADR= 100000 | 56 21 126 505 956 | # 311* # 292 538 967 | 295 617 978 | 407* 300 620 989 1322 | 521 * 325 630 1094 | 646* 328 663 1171 | 763* 333 732 1173 | 876* 377 736 1178 | 1026* 380 746 1181 | 1112* 391 832 1255 | 1195* 424 837 1257 | 1281 * 490 847 1312 | 493 953 1322 |
| LINSIZ= 077774 LOOP = 000004 LRBUF = 021044 | 122 91 26 | # 304 | 1257 337 1215 | 1322 400 | 514 | 639 | 755 | 869 | 1019 | 1105 | 1189 | 1276 | |
| LTAC = 021030 MAXBC = 002756 | 20 127 1192 | # 312* # 308 1262 | 341 1266 | 408* 404 1300 | 522* 434 1315 | 647* 518 1318 | 764* 550 | 877* 643 | 1036* 673 | 1113* 760 | 1196* 902 | 1282* 1023 | 1061 |
| MBUFP 000666R MDMARO= 021014 | 002 287 14 858 | # 987• # 452 861 | 1027 453 945 | 567 946 | 568 1163 | 606 1164 | 607 1167 | 610 1246 | 691 1247 | 692 1250 | 788 1251 | 739 | 857 |
| MDMAR1= 021016 MDMAW0= 021026 | 15 19 794 | # 457* * 911* | | 459* 1071* | 460 * 1072 * | 572* 1073* | 573* 1215* | 574* 1332* | 575 * 1333 * | 700* 1334* | 701* | 702* | 793• |
| MDMAW1= 021036 MDMAO = 021010 | 23 12 908 | # 450* | | 565* 1161* | 569* 1165* | 604 * 1213 * | 608 * 1244 * | 689* 1248* | 697* | 786* | 790* | 855* | 859* |
| MDMA1 = 021012 | 13 909 | # 451* * 944* | 455* | 566* 1162* | 570* 1166* | 605* | 609* 1245* | 690* 1249* | 698* | 787* | 791 * | 856* | 860• |
| MDMSR = 021042 MICDSZ 004704RG MICD1 000670R MICD10 004042R MICD11 004316R MICD2 001052R MICD3 001250R MICD4 001554R MICD5 002066R MICD6 002430R MICD6 002430R MICD7 002674R MICD8 003204R MICD9 003646R MICD9 003646R MICD9 003646R MICROD 000000RG MODE = 000200 MODREG= 177774 MRECBC= 007777 NPRERR= 100000 NPRFLG= 000020 | 002 1341 002 266 002 276 002 267 002 267 002 268 002 271 002 271 002 273 002 274 002 137 002 137 | # 289A 1156A 1237A 322A 370A 482A 597A 723A 935A 1086A 1341 8 1137 8 1109 8 1247 | 336 | 399 400∗ | 513 514* | 638 639* | 754 755* | 868 869* | 1018 1019* | 1104 1105* | 1188 1189• | 1275 1276• | |
| NXMERR= 040000 NXMFLG= 000010 PARERR= 010000 PARFLG= 000004 PARINT 000550R PARVEC= 000140 PCBADR 000652R PCEI = 040000 PCSRSW= 021040 | 111 106 113 109 002 152 98 002 282 | N 242 N 254 N 253 N 253 N 153 | 154* | | | | | | | | | • | |

| MICROD MICROD | - MICROCOL MAC 10 | DE MODU -JAN-83 | LE D 17:53 | MACY11 | | 11-JAN EFERENCE | -83 09: TABLE - | 52 PAGE - USER S | 35 YMBOLS | | | | | | SEQ | 405 |
|--|--|--------------------|--|-------------------------------------|-----------------------|-----------------------|----------------------|-----------------------|---------------------|----------------------|---------------------|-----------------------|---------------------|-----------------------|---------------------|-----|
| PCSR1 | 000644R | 002 | 140+ 371 914+ | 141 442* 936 | 216* 482* 1076* | 218* 483 1086* | 219 558* 1087 | 280# 597* 1140* | 289* 598 | 290 681* | 318* 723* | 322* 724 | 323 796* | 356 • 824 • | 370 • 825 | |
| PHYAD1: PHYAD3: PHYAD4: PHYAD5: PRIO0: PRIO1: | = 021060 = 021062 = 021064 = 021066 = 021070 = 021072 = 000000 | | 27# 28# 30# 31# 32# 64# 63# | 190* | 1070 | 1000- | 1007 | 1140* | 1156* | 1157 | 1217* | 1237• | 1238 | 1337• | | |
| PR103 = PR104 = PR105 = PR106 = | = 000100 = 000140 = 000200 = 000240 = 000300 | | 62N 61N 60N 59N 58N | 1120* 314* 164 169 1011 | 351* 174 179 | 410* 347* | 524* | 649* | 765* | 879* | 1040* | 1200+ | 1287• | | | |
| | = 000340 | | 57# 1207* | 137* 1293* | 147 | 154 | 159 | 195* | 317* | 355* | 417* | 531+ | 656* | 886* | 1127+ | |
| PROM = RBUFP | = 100000 000660R | 002 | 84# 284# 834* 1298 | 304 293* 876 1316 | 337 311 893 | 400 326* • 954* | 514 344 1026 | 639 378* 1059 | 755 407 1095* | 869 491* 1112 | 1019 521 1134 | 1105 618* 1167* | 1189 646 1195 | 1276 733* 1250* | 763 1281 | |
| RCVFLG= RCVINT RCVVEC= ROMADR= ROMSIZ= | = 002000 = 000100 = 000566R = 000120 = 040000 = 040000 | 002 | 73# 109# 177 94# 125# 121# 70# | 260 258# 178* 126 126 | 348 179* | 411 | 525 | 650 | 768 | 882 | 1047 | 1124 | 1201 | 1288 | | |
| SANTIM SANVEC= SERI = | 000642R 000134 100000 | 002 | 236* 95# 68# | 279# 168* | 169+ | | | | | | | | | | | |
| | 004000 | | 114# 1181 | 115 | 116 | 295 | 328 | 380 | 493 | 620 | 736 | 83/ | 956 | 1028 | 1096 | |
| S123K = | 010000 014000 | | 115# 116# | 117 978 | 300 | 333 | 391 | 505 | 630 | 746 | 847 | 967 | | | | |
| SIZ4K = SIZ8K = STACK = | 020000 040000 001000 000612R | 002 | 117# 118# 99# 210 | 118 121 139 266# | 119 122 | 120 | 989 | | | | | | | | | |
| TBLD TBUFP | 000662R 000464R | 002 | 285# 628* 1097* | 298 * 641 1107 | 306 647 1113 | 312 743* 1179* | 331 * 757 1190 | 339 764 1196 | 345 777 1251* | 389* 845* 1260 | 402 871 1282 | 408 877 1313 | 502* 965* | 516 1021 | 522 1036 | |
| TRNFLG= TRNINT TRNVEC= | 00040 000602R 000070 010000 | 002 002 | 167 108# 172 93# 71# | 236# 263 263# 173* | 315 174* | 352 | 414 | 528 | 653 | 766 | 880 | 1050 | 1121 | 1204 | 1290 | |
| UNIERR= WCSADR= WCSSIZ= | 020000 000000 020000 02000 004706R | 002 | 112# 123# 119# 144 267 | 231 124 124 152 268 | 157 269 | 162 270 | 167 271 | 172 272 | 177 273 | 198 274 | 210 275 | 233 276 | 249 1009 | 256 | 266 | |
| . ABS. | 000000 | 000 | | | | | | | | | | | | | | |

MACY11 30(1046) 11-JAN-83 09:52 PAGE 36 CROSS REFERENCE TABLE -- USER SYMBOLS MICROD - MICROCODE MODULE D MICROD.MAC 10-JAN-83 17:53

000000 MICRD 004706 001 002

ERRORS DETECTED: 0
DEFAULT GLOBALS GENERATED: 0

MICROD.OBJ.MICROD.LST/CRF/DOC/NL:TOC/SOL=MICROD.MAC RUN-TIME: 1 2 .4 SECONDS RUN-TIME RATIO: 35/4=7.7 CORE USED: 9K (18 PAGE.)

DOCUMENT PAGES: 35

| I CROE . MAC | 10-JAN-85 17:55 | |
|---|--|--|
| 1 2 3 | 000000 | .TILE MICROE - MICROCODE MODULE E : 88 DEDICATED THE CRC CIRCUITRY TO THE RECEIVE SIDE OF THE LINK CSECT MICRE |
| 5 | 000000 | .CSECT MICRE .SBTTL REGISTER DEFINITIONS USED BY THE T11 |
| 7 89011234567890123456789012333333333333333333333333333333333333 | 021000 021002 021004 021006 021010 021012 021014 021020 021022 021024 021030 021032 021034 021036 021040 021042 021060 021062 021064 021060 021072 177774 177776 | IPCSRO = 21000 :INTERNAL PCSRO ADDRESS DMALSR = 21002 :DMA ENGINE CONTROL STATUS REGISTER DMATO = 2'004 :DMA ENGINE TO ADDRESS REGISTER #0 DMAT1 = 2006 :DMA ENGINE TO ADDRESS REGISTER #0 MDMA1 = 2'010 :MICROCPU DMA TO ADDRESS REGISTER #0 MDMA1 = 21012 :MICROCPU DMA TO ADDRESS REGISTER #1 MDMACO = 2'010 :MICROCPU DMA DATA REGISTER - AUTO INCREMENT R/O MDMAR1 = 21016 :MICROCPU DMA DATA REGISTER - AUTO DECREMENT R/O IPCSR1 = 21020 :INTERNAL PCSR1 ADDRESS DMAF = 21022 :DMA ENGINE WORD COUNT REGISTER DMAWC = 21024 :DMA ENGINE WORD COUNT REGISTER MDMAWO :DMA DATA REGISTER - AUTO INCREMENT W/O LTAC = 21030 :LINK TRANSMIT ADDRESS COUNTER PEGISTER LFRBUF = 21032 :LINK RECIEVE BUFFER ADDRESS FIFO CLRFIF = 21034 :CLEAR FIFO MDMAW1 = 21036 :MICROCPU DMA DATA REGISTER - AUTO DECREMENT W/O PCSRSW = 21040 :SWITCH PACK REGISTER MDMSR = 21042 :MICROCPU DMA STATUS REGISTER LRBUF = 21044 :LINK RECIEVE BUFFER COMPLETED PHYAD0 = 21060 :PHYSICAL ADDRESS ROM BYTE 0 PHYAD1 = 21062 :PHYSICAL ADDRESS ROM BYTE 1 PHYAD2 = 21064 :PHYSICAL ADDRESS ROM BYTE 1 PHYAD3 = 21066 :PHYSICAL ADDRESS ROM BYTE 3 PHYAD4 = 21070 :PHYSICAL ADDRESS ROM BYTE 5 MODREG = 177774 :LINK MODE REGISTER CMDREG = 177774 :LINK MODE REGISTER CMDREG = 1777776 :LINK COMMAND REGISTER CMDREG = 177776 :LINK COMMAND REGISTER |
| 37 | | .SBTTL OTHER DEFINITIONS USED BY THE MICROCODE |
| 38901234567890123456555555556 | 100000 040000 020000 010000 004000 002000 001000 000400 000200 000100 000040 000020 000010 000002 | BIT15 = 100000 BIT14 = 40000 BIT13 = 20000 BIT11 = 4000 BIT11 = 4000 BIT10 = 2000 BIT9 = 10000 BIT8 = 400 BIT7 = 200 BIT6 = 100 BIT6 = 100 BIT5 = 40 BIT5 = 40 BIT5 = 40 BIT1 = 20 BIT1 = 20 BIT1 = 20 BIT1 = 20 BIT2 = 4 BIT1 = 20 BIT1 = 10 BIT2 = 4 BIT1 = 10 BIT3 = 10 BIT4 = 10 BIT5 = 10 BI |
| 56 | 012400 | EASFTP = BIT8:BIT10:BIT12 ; LOAD AND START FUNCTION TEST PATTERN |

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MACY11 30(1046) 11-JAN-83 09:53 PAGE 2
MICROE - MICROCODE MODULE E
                     10-JAN-83 17:53
                                                              OTHER DEFINITIONS USED BY THE MICROCODE
MICROE.MAC
                                                                                     340
300
240
200
140
                        000340
    000300
                                                            PRIO6
                                                            PRIO5
                        000240
                                                                        =
                                                            PRIO4
                        000200
                                                                        =
                                                            PRIO3
                        000140
                                                                        =
                                                            PRIQ2
                                                                                    100
                        000100
                                                                        =
                                                            PRI01
                                                                                     40
                        000040
                                                                        =
                                                            PRI00
                        000000
                                                             PCSRO - PORT CONTROL STATUS REGISTER O
                        100000
                                                             SERI
                                                                                     BIT15
                                                                                    BIT14
BIT13
                        040000
                                                            PCEI
                                                                        =
                        020000
                                                            RXI
                                                                         =
                        010000
                                                            TXI
                                                                                     BIT12
                                                                         =
                        004000
                                                            DNI
                                                                                     BIT11
                                                                         =
                        002000
                                                            RCEI
                                                                                     BIT10
                                                                         =
                        000400
                                                            FATI
                                                                         =
                                                                                     BIT8
                                                             LINK COMMAND REGISTER
                                                                                                 ;ENABLE LINK MODULE
;ENABLE MODE REGISTER
;ENABLE STATION ADDRESS RAM
                                                                                     BIT15
                        100000
                                                             ÉNABLE
                                                                        =
                        000200
                                                                                     BIT7
                                                             MODE
                                                                        =
                                                             ARAM
                                                                                     BIT6
                                                             LINK MODE REGISTER
                        100000
040000
004000
                                                                                                 :PROMISCUIOUS MODE
                                                             PROM
                                                                                     BIT15
                                                                         =
                                                                                                 ENABLE MULTICAST
ENABLE COLLISION TEST
ENABLE ACLO
DISABLE RETRY LOGIC
SIMULATE A COLLISION
DISABLE TRANSMIT CRC LOGIC
                                                                                     BIT14
                                                             ENAL
                                                                        =
                                                                                     BIT11
                                                             ENCR
                                                                        =
                        002000
                                                             ACLO
                                                                         =
                                                                                     BIT10
                        000040
000020
                                                                                     BIT5
                                                            DRTY
                                                                         =
                                                                                     BIT4
                                                             COLL
                                                                         =
                                                                                     BIT3
                        000010
                                                            DTCR
                                                                         =
                                                                                                 ENABLE LOOPBACK
                                                                                     BIT2
                        000004
                                                             LOOP
                                                                                                VECTOR ADDRESS FOR THE TRANSMITTER
VECTOR ADDRESS FOR THE RECEIVER
VECTOR ADDRESS FOR THE SANITY TIMER
VECTOR ADDRESS FOR CSR WRITE INTERRUPT
VECTOR ADDRESS FOR DMA DONE INTERRUPT
VECTOR ADDRESS FOR LINK MEMORY PARITY ERROR
STACK LOCATION
IN MICROMONITOR STATE
IN A TEST STATE
IN ERROR STATE
CSR WRITE INTERRUPT OCCURED
UNEYPECTED ERROR OCCURED
PARITY ERROR OCCURED
NON-EXISTANT MEMORY ERROR OCCURRED
                        000070
000120
                                                            TRNVEC= 70
RCVVEC= 120
                                                             SANVEC= 134
                        000134
                        000064
                                                             CSRVEC= 64
                        001114
                                                             DMAVEC= 114
                        000140
                                                             PARVEC= 140
                        001000
                                                             STACK= 1000
                                                             INMON=
                        000001
                                                             INTST=
                        000002
                                                             INERR=
                        000003
                                                             CSRFLG= BITO
                         000001
                         000002
                                                             ERRFLG= BIT1
                        000002
000004
000010
000020
000040
                                                             PARFLG= BIT2
                                                                                                 NON-EXISTANT MEMORY ERROR OCCURRED NPR TIMEOUT OCCURRED
                                                             NXMFLG= BIT3
     106
107
                                                             NPRFLG= BIT4
                                                                                                  TRANSMITTER INTERRUPT OCCURRED
     108
                                                             TRNFLG= BITS
                                                                                                  RECEIVER INTERRUPT OCCURRED
                                                             RCVFLG= BIT6
                                                                                                  PCSRO FLAG INDICATING NPR ERROR OCCURRED
                                                             NPRERR= BIT15
                         100000
     110
                                                                                                  PCSRO FLAG INDICATING NON-EXISTANT MEMORY ERROR OCCURRED
                                                             NXMERR= BIT14
                         040000
     1 1
                                                                                                  PCSRO FLAG INDICATING UNEXPECTED INTERRUPT OCCURRED
                                                             UNIERR= BIT13
     1 2
                         020000
```

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MACY11 30(1046) 11-JAN-83 09:53 PAGE 3
OTHER DEFINITIONS USED BY THE MICROCODE
MICROE - MICROCODE MODULE E
MICROE.MAC 10-JAN-83 17:53
                                                                                                                  :PCSRO FLAG INDICATING LINK MEMORY PARITY ERROR OCCURRED
:MATCH BIT
.1K WORDS
:2K WORDS
:4K WORDS
:5IZE OF WRITEABLE CONTROL STORE
:SIZE OF I/O PAGE
:SIZE OF I/O PAGE
:SIZE OF LINK MEMORY
:BASE ADDRESS OF WCS
:BASE ADDRESS OF I/O PAGE
:BASE ADDRESS OF I/O PAGE
:BASE ADDRESS OF LINK MEMORY
                                                                        PARERR= BIT12
MTCH= BIT13
     113
                             010000
                             020000
     114
                                                                       MICH= BIT13

SIZ1K= 4000

SIZ2K= SIZ1K*2

SIZ4K= SIZ2K*2

SIZ8K= SIZ4K*2

WCSSIZ= SIZ4K

IOSIZ= SIZ4K

ROMSIZ= SIZ8K

LINSIZ= SIZ8K*2-4
     115
                             004000
     116
                             010000
                             020000
     117
                             040000
     118
                             020000
     119
     120
121
122
123
124
125
126
127
128
129
130
                             020000
                             040000
                                                                        WCSADR= 0
                             000000
                                                                        IOADR = WCSADR+WCSSIZ
                             020000
                                                                        ROMADR = IOADR + IOSIZ
                             040000
                                                                                                                    BASE ADDRESS OF LINK MEMORY
                                                                        LINADR = ROMADR+ROMSIZ
                             100000
                                                                        MINBC= 64.
                                                                                                                    : 64 BYTES
                             000100
                                                                        MAXBC= 1518.-4.
                                                                                                                    MAXIMUM # OF BYTES IN A TRANSMIT BUFFER
                             002752
                                                                        DATERR= 0
                                                                                                                    :FLAG INDICATING DATA FRROR OCCURRED
                             000000
                                                                                                                    FLAG INDICATING ADDRESS ERROR OCCURRED
                                                                        ADRERR= 1
                             000001
```

MICROE - MICROCODE MODULE E MACY11 30(1046) 11-JAN-83 09:53 PAGE 4 OTHER DEFINITIONS USED BY THE MICROCODE

| 132 133 | | | | | .SBTTL | MICROCO | DE MODULE E | |
|---|---|--|--|--------------------------------------|---------|--|--|--|
| 132 1334 1336 1337 1339 1442 1445 1447 | 000000' 106 000004' 012 000012' 012 000016' 112 000024' 016 000032' 012 000040' 010 000042' 062 000046' 005 000050' 010 000052' 012 000056' 020 000062' 002 | 2737 2706 2767 2737 2737 2700 2700 2701 2721 2721 | 000340 000000 001000 000001 000576 004000 000404 | 177776 000602 021020 021000 | MICROE: | :MTPS MOV MOVB MOV MOV ADD CLR MOV CMP BLT | WPRIO7 WO, aw. MDREG WSTACK, SP WINMON, PCSR1 PCSR1, awIPCSR0 PC, RO WERRINT, RO R1 R0, (R1)+ WPRIO7, (R1)+ R1, W1000 10\$ | DISABLE INTERRUPTS TURN OFF THE LINK SETUP STACK TELL HOST WE ARE IN MICROMONITOR TELL HOST THE LOAD AND START FINISHED GET ADDRESS OF UNEXPECTED ERROR HANDLER FILL ALL UNUSED VECTORS WITH TRAP HANDLER |
| 148 149 150 151 152 153 154 | 000064' 010 000066' 062 000072' 010 000076' 012 | 2700 0037 | 000462 000140 000340 | 000142 | | MOV ADD MOV MOV | PC.RO #PARINT,RO RO,@#PARVEC #PRIO7,@#PARVEC+2 | ;SETUP PARITY TRAP VECTOR |
| 155 | 000104' 010 000106' 062 000112' 010 000116' 012 | 0700 2700 0037 2737 | 000364 000114 000340 | 000116 | | MOV ADD MOV MOV | PC,RO #DMAINT,RO RO,@#DMAVEC #PRIO7,@#DMAVEC+2 | ;SETUP DMA INTERRUPT VFCTOR |
| 156 157 158 159 160 161 162 163 | 000124 010 000126 062 000132 010 000136 012 | 2700 0037 | 000310 000064 000200 | 000066 | | MOV ADD MOV MOV | PC,RO #CSRWRT,RO RO,@#CSRVEC #PRIO4,@#CSRVEC+2 | ;SETUP CSR WRITE VECTOR |
| 165 166 167 | 000144' 010 000146' 062 000152' 010 000156' 012 | 2700 0037 | 000316 000134 000240 | 000136 | | MOV ADD MOV MOV | PC.RO #TIMINTRO RO.@#SANVEC #PRIO5.@#SANVEC+2 | ;SETUP SANTITY TIMER VECTOR |
| 168 169 170 171 172 | 000164' 010 000166' 062 000172' 010 000176' 012 | 2700 0037 | 000414 000J70 000200 | 000072 | | MOV ADD MOV MOV | PC,RO #TRNINT,RO RO,W#TRNVEC #PR!04,@#TRNVEC+2 | ;SETUP TRANSMITTER VECTOR |
| 173 174 175 176 177 | 000204' 010 000206' 062 000212' 010 000216' 012 | 0700 2700 0037 2737 | 000360 000120 000240 | 000122 | | MOV ADD MOV MOV | PC.RO #RCVINTRO RO.@#RCVVEC #PRIO5.@#RCVVEC+2 | ;SETUP RECEIVER VECTOR |
| 178 179 180 181 182 | 000224° 013 000230° 053 000234° 000 000236° 000 | 3700 2700 6300 6300 | 021040 176000 | | | MOV BIS ASL ASL | a#PCSRSW,RO #176000,RO RO RO | GET SWITCH PACK BITS MAP THEM INTO HOST I/O PAGE SHIFT OVER TO POSITION CORRECTLY |
| 183 184 185 186 187 | 000240 000 000242 060 000246 010 000252 010 000260 000 | 6300 2700 0067 2767 | 000004 000356 000003 000336 | 000352 | | ASL ADD MOV MOV CLR | RO #4,RO RO,IPCSR2 #3,IPCSR2+2 FLG5 | :PCSR2 IS PCSR0+4 :SAVE PCSR2 ADDRESS :HIGH ORDER BITS 17:16 :INITI/LIZE FLAG WORD |

| | | | | | | | K 16 | |
|---|--|-----------------------------------|------------------|------------------|----------------------------------|--|---|--|
| MICROE. | - MICROC MAC 1 | ODE MODU O-JAN-83 | LE E 17:53 | MACYTT | 30(1046) MICROCO | 11-JAN DE MODUL | -83 09:53 PAGE 5 | |
| 188 189 | 0002641 | 106427 | 000000 | | 15\$: | MTPS | #PRI00 | ;ALLOW INTERRUPTS |
| 190 191 192 193 | 000270° 000274° | 005767 001775 | 000326 | | 20\$: | TST BEQ | r LG5 20\$ | ;WAIT FOR A COMMAND FROM HOST |
| 193 194 195 196 197 | 000276' 000302' 000310' 000312' | 106427 032767 001001 | 000340 000001 | 000312 | | MTPS BIT BNE | #PRIO7 #CSRFLG,FLu5 30\$ | :RAISE CPU PRIORITY TO SERVICE COMMAND :DID HOST GIVE US A COMMAND? :YES |
| 197 198 | 000312 | 000777 | | | | BR | • | :NO, ERROR SO JUST SIT HERE :FOR LACK OF ANYTHING BETTER TO DO |
| 198 199 200 201 | 000314' 000320' 000324' | 113700 042700 001004 | 021000 177760 | | 30\$: | MOVB BIC | a#IPCSRO,RO #177760,RO 35\$ | GET WHAT HOST WROTE TO PCSRO |
| 202 203 | 000326' 000334' | 012737 | 000001 | 021020 | | BNE MOV | #INMON, @#IPCSR1 | ; WAS IT THE CLEAR FUNCTION? ; YES, CLEAR OUT THE TEST # BITS |
| 204 205 206 | 000336 000342 000344 | 022700 001432 | 000017 000001 | | 35\$: | BR (MP BEQ | 50\$ #17,R0 60\$ | :RESTART OPERATIONAL MICROCODE? |
| 207 | 000350 | 010701 | | | | SUB MOV | #1,R0 PC,R1 | GET ADDRESS OF OUR COMMAND TABLE |
| 200 201 202 203 204 205 206 207 208 210 211 213 214 215 216 | 000352' 000356' 000360' 000362' 000366' 000370' | በበፉኝበበ | 000240 | | | ADD ASL ADD ADD JSR BCS | #TBLD,R1 RO RO,R1 (R1),R1 PC,(R1) 40\$ #INMON,PCSR1 | :MAKE COMMAND A BYTE OFFSET :USE IT TO INDEX INTO COMMAND TABLE :R1 NOW HAS COMMAND ROUTINE ADDRESS :EXECUTE AS COMMANDED FROM HOST :ERROR OCCURRED :INDICATE TO HOST WE ARE BACK IN |
| 215 | מוכטטט | UUU4U3 | 000001 | 000230 | 4.0.0 | MOVB BR | 45\$ | ; MICROMONITR |
| 217 218 | 000400' | 016737 | 000003 | 000220 021020 | 40 \$: 45 \$: | MOVB MOV | WINERR, PCSR1 PCSR1, awipcsr1 | ; INDICATE TO HOST ERROR OCCURRED |
| 219 220 221 | 000414' 000422' 000426' | 012737 005067 000716 | 004000 000174 | 021000 | 50\$: | MOV CLR BR | #DNI, A#IPCSRO FLG5 15\$ | :TELL HOST THIS MICROTEST FINISHED :RESET FLAG WORD :GO WAIT FOR ANOTHER COMMAND |
| 222 223 224 | 000430° 000432° | 005000 000137 | 040006 | | 60\$: | CLR JMP | R0 a#40006 | :FAKE SUCCESSFUL SELF TEST RESULTS :START OPERATIONAL MICROCODE |
| 225 226 227 | 0004361 | 052767 000002 | 00000; | 000156 | CSRWRT: | BIS RTI | #CSRFLG,FLG5 | ; INDICATE A CSR WRITE INTERRUPT OCCURED |
| 228 229 230 | 000446° 000454° | 052 767 012 73 7 | 000002 | 000146 021000 | ERRINT: | BIS MOV | WERRFLG, FLG5 WUNIERR, OWIPCSRO | ; INDICATE A UNEXPECTED INTERRUPT OCCURED ; TELL HOST AN UNEXPECTED INTERRUPT ; HAPPENED |
| 231 232 233 | 0004621 | 000777 | | | | BR | • | JUST SIT HERE AND SPIN WHEELS COUNT ON HOST TO TIMEOUT |
| 234 235 236 | 000464° 000470° | 005267 000002 | 000134 | | TIMINT: | INC RTI | SANTIM | COUNT TICKS AS THEY OCCUR |
| 2245 2228 2228 2238 2233 2233 2336 2336 2336 | 000472' 000500' 000506' | 032767 | 021002 040000 | 000140 000132 | DMAINT: | MOV BIT BEQ | @#DMACSR,DMDONE #BIT14,DMDONE 10\$ | GET DMA STATUS DID A NON-EXISTANT MEMORY INTERRUPT OCCUR? |
| 240 241 | 000510 | 012737 | 040000 | 021000 | | MOV | WNXMERR, @WIPCSRO | ; NO ; YES, TELL HOST A NON-EXISTANT MEMORY |
| 242 | 000516° 000520° | 000407 032757 | 100000 | 000112 | 10\$: | BR BIT | 20% WBIT15, DMDONE | ; LOCATION WAS ADDRESSED ; DID A NPR TIMEOUT OCCUR? |
| | | | | | | | | |

| MICROE MICROE. | - MICROCI | ODE MODU 0-JAN-83 | LE E 17:53 | MACY11 | 30(1046) MICROCOL | 11-JAN | -83 09:53 PAGE 6 | |
|--|--|--|------------------|------------------|---|----------------------------------|---|---|
| 244 245 246 247 248 | 000526' 000530' 000536' 000544' | 000777 | 100000 100000 | 021000 021002 | 20 \$: | BEQ MOV MOV BR RT1 | 30\$ #NPRERR, @#IPCSRO #BIT15, @#DMACSR | :NO :TELL HOST NPR TIMEOUT HAPPENED :CLEAR THE INTERRUPT IN THE DMA ENGINE :SIT HERE AND SPIN WHEELS |
| 247 248 250 251 253 253 254 257 258 259 | 000550° 000556° 000564° | 012737 | 000004 010000 | 000044 021000 | PARINT: | BIS MOV BR | #PARFLG,FLG5 #PARERR,@#IPCSRO | SET PARITY ERROR OCCURRED TELL HOST A LINK MEMORY PARITY ERROR OCCURRED SIT HERE AND SPIN WHEELS |
| 255 256 257 258 | | 005737 052767 000002 | 021044 000100 | 000022 | RCVINT: | TST BIS RTI | a#LRBUF #RCVFLG,FLG5 | READ BUFFER DONE REGISTER WHICH CLEARS THE INTERRUPT SET RECEIVER INTERRUPT OCCURRED |
| 259 260 261 262 263 264 | | 052767 | 000040 | 000012 | TRNINT: | | #TRNFLG,FLG5 | ;SET TRANSMITTER INTERRUPT OCCURRED |
| 765 | 000612' 000614' 000616' 000620' | 000 514 001 064 | | | TBLD: | .WORD .WORD .WORD .WORD | MICE1 MICE2 MICE3 MICE4 | : STATION ADDRESS PATTERN : STATION ADDRESS REJECTION : STATION ADDRESS POSITION : MULTICAST ADDRESS TEST |
| 266 267 268 269 270 271 272 273 275 276 | 000622' 000624' 000626' 000630' 000640' 000642' | 000000 000000 000000 000000 000000 | 000000 | | FLG5: SANTIM: PCSR1: IPCSR2: PCBADR: DMDONE: RBUFP: TBUFP: | .WORD | | :FLAG WORD :COUNT FOR SANITY TIMER :COPY OF WHAT GOES TO POSR1 :ADDRESS IN HOST MEMORY FOR POSR2 :ADDRESS IN HOST MEMORY FOR POB :POINTER TO RECIEVE BUFFER :POINTER TO XMIT BUFFER |

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SBITL STATION ADDRESS FATTERN "EST
                                                 MICROCODE FOR STATION ADDRESS PATTERN TEST. SETS A "PATTERN" TO BE USED AS A STATION ADDRESS FOR TESTING THE STATION ADDRESS RAM AND DETECTION CIRCULTRY. FILLS THE STATION ADDRESS RAM. LOOPS A DATAGRAM WITH A STATION ADDRESS IDENTICAL TO THE ADDRESS FILLING STATION ADDRESS RAM. IF ALL IS MITRING. DATAGRAM SHOULD BE RECEIVED OK.
                                                  *******
                                                  **** TELL HIM WE ARE TESTING ****
                                                                                                   . TELL MOST WE ARE TESTING
                          550002 177752
177746 021020
                                                                     BINTST, PCSRT
                                                MICE1: MOVB
                                                                    PCSA: BOIPCSA!
                                                          MOV
                                                   *****************************
                                                  **** PICK UP HOST ADDRESS OF P(80 ****
 .
      100e- 16737
100e-11016/37
100e-11013700
100-102-013701
                                                                                                   . PICK UP ADDRESS OF PCBB
                                                                     Ib(285.5"90mouv.
                          177742 021010
177736 021012
                                                          MOV
                                                          VOM
                                                                     SAL DRANGME
                                                                                                     RO=CONTENTS OF PCSR2
1
                           021014
                                                          MOV
                                                                     S CRAMCHES
                                                                                                   A1=(ONTENTS OF PCSR3
•
                           021014
                                                          MOV
1.1
                                                                                                   . PCINT TO HOST PCBB
                                                                    CAPCHAG. OR
      000706* 010037
0007*2* 010137
6.0
                          021010
                                                          MOV
                                                                     RI AMORA'
021012
                                                          MOV
                                                                                                   . R2 NOW HOLDS LS ADDRESS WORD
                                                                     SELCHARDARS.
      DDC716* 013702 021014
                                                          MOV
                                                                                                    . INDEX TO MEXT HOST WORD
                                                                     02.80
      390722' 062700 330726' 005501
                           000002
                                                          ADD
                                                          ADC
                                                                                                    . RS NOW HOLDS MIDDLE PATTERN
                                                                     ASMOMABO. 83
      000730 013703 021014
                                                          MOV
                                                                                                    . INDEX TO MEXT HOST WORD
314
                                                                     WZ.AO
      2007341 062700
                                                          ADD
                           000002
      000740 005501
315
                                                           ADC
316
                                                                                                    . R4 NOW HOLDS MS PATTERN WORD
                                                                     JE CEARGREE
317
      000742 013704 021014
                                                          MOV
318
                                                                                                    . SAVE THEM FOR LATER
      900746' 010446
000750' 010346
                                                                     R4.-(SP,
319
                                                           MOV
                                                                     R3 -(SP)
320
                                                          MOV
321
323
323
324
325
327
                                                                     R2 - (SP)
      0007521 010246
                                                           MOV
                                                  **** MAKE A STATION ADDRESS FILE FROM THE PASSED PATTERN ****
                                                                                                    . POINT AT SA FILE
328
329
330
                                                                     P( .80
                                                           MOV
      000754' 010700
                                                                     ADD
       000756* 062700
                           000342
                                                                                                    . WEED TOTAL OF 12 ENTRIES
                                                                     #12...
331
       000762 012705
                                                           MOV
                           000014
                                                                                                    . . S WORD OF PATTERN
                                                                     #2 ·
       000766' 010220
                                                105:
                                                           MOV
332
```

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MACY11 30(1046) 11-JAN-83 C9:53 PAGE 8
STATION ADDRESS PATTERN "ES"
MICROE - MICROCODE MODULE E MICROE. MICROE - 10-JAN-83 17:53
         000770' 010320
000772' 010420
000774' 005305
000776' 001373
                                                                 83.18.
                                                                                              ; MIDDLE WORD OF PATTERN
                                                        MOV
   334
335
                                                        MOV
                                                                                               MS WORD OF PATTERN
                                                                 •5
                                                        DEC
                                                                                              : END OF LOOP
                                                        BNE
    337
   338
339
340
341
                                                 **** LOAD THE STATION ADDRESS RAM *****
   342
343
         001000: 012737
                                     177776
                            000200
                                                        VCH
                                                                  SHOOF, BOCHORE G
                                                                                              : SET LOOPBACK BEFORE LOADING
                            000004
                                                                  PLOOP . SEMOCRES
                                     177774
                                                        MOV
   346
347
                                                                  P(_R1
         001014' 010701
                                                                                              : FORM POS/IND POINTER
                                                        HOV
         0010161 062701
                            000302
                                                                  DAFILE - .. A"
                                                        ADD
   349
         001022' 005000
                                                        CLR
                                                                  80
                                                                                              : THIS WILL CLEAR HIGH BITS
   350
         0010241 012746
                                                                  BARAM+27,- (SP)
                                                                                              : SA RAM STARTS AT +20 LOCATIONS
                                                        MOY
                            000120
                                                                                              ; 3 WORDS PER ADDRESS/PATTERN
         001030° 012702
001034° 012704
                                                                  #3.R2
    353
                            000003
                                                        MOV
                                                                  #15. R4
                                                                                              : SIXTEEN BITS PER WORD
    354
                                               205:
                            000020
                                                        MOV
         001040' 012705
                                                                  #12. PS
    355
                                               30$:
                                                                                              : 12 POSITIONS IN SA RAM
                            000014
                                                        MOV
    356
   357
         001044' 010103
                                                                  R1_R3
                                                                                              : COPY THE POINTER
                                                        MOV
   358
                                               405:
                                                        RCR
                                                                  (R3)
                                                                                              ; GET LSB OF ALL 12 ADDRESSES
   359
         001046 006013
         0010501 006100
                                                                                              : RO WILL HOLD ORTHOGONAL WORD
    360
                                                                  RO
                                                        RJL
         0010521 062703
                                                                                              : 6 BYTES PER ADDRES/PATTERN
                                                                  86.R3
    361
                                                        ADD
                            000006
         001056' 077505
    362
                                                        S08
                                                                  R5,40$
                                                                                              : GO TILL DONE
    363
                                                                                              ; SET MODE TO WRITE SA RAM
         001060' 011637
                                                                  (SP) . ar CMDREG
   364
                            177776
                                                        MOV
         001064' 010037
    365
                            177774
                                                        MOV
                                                                  RO_BBADRREG
                                                                                                ORTHOGONAL WORD TO SA RAM
         001070' 005216
    366
                                                        INC
                                                                  (SP)
                                                                                                BUMP STATION ADDRESS
    367
         001072' 077416
                                                                  R4.305
                                                                                                DO ANOTHER ONE
                                                        508
    368
                                                                                              : ADVANCE TO NEXT WORD
    369
         001074' 062701
                                                        ADD
                                                                  #2,R1
                            000002
         001100' 077223
    370
                                                                  R2.20$
                                                                                              : LOOP TILL DONE
                                                        SO8
    371
   372
373
374
375
376
377
         001102' 012600
                                                        MOV
                                                                  (SP) + RO
                                                                                              ; RO IS A JUNK REGISTER
                                                 **** FILL THE RECEIVE BUFFER WITH BACKGROUND ****
    378
    379
         001104' 012700
                                                                                              : RECEIVE BUFFER STARTS HERE
                            100000
                                                         MOV
                                                                  #LINADR.RO
         001110' 010067
                                                                  RO, RBUFP
                                                         MOV
    380
381
382
383
384
385
386
                            177526
         001114' 005020
001116' 020027
001122' 103774
                                                                  (R0)+
                                                                                              : FILL RECEIVE BUFFER WITH ZEROS
                                               501:
                                                         CLR
                                                                                              ; FILL THE BUFFER
                                                                  RO.#LINADR+SIZ1K
                                                         (MP
                            104000
                                                                                               FILL ENTIRE BUFFER
                                                         BLO
                                                 **** FILL TRANSMIT BUFFER WITH TEST PATTERN ****
    387
    388
```

| MICROE MICROE | - MICROCO MAC 10 | DE MODUL D-JAN-83 | E E 17:53 | MACY11 | 30(1046) STATION | 11-JAN- ADDRESS | -83 09:53 PAGE PATTERN TEST | 9 | |
|---|---|--|--|---|---------------------|---|--|--------|--|
| 389 390 391 392 393 394 396 397 398 | 001124' 001130' 001134' 001136' 001142' | 010067 010320 020027 | 000377 177510 110000 | | : 60\$: : | MOV MOV MOV (MP BLO | #0377,R3 R0,TBUFP R3,(R0)+ R0,#LINADR+SIZ2K | | : WORST CASE FOR CLOCKING : FILL XMIT BUFFER WITH PATTERN : STOP AT TOP |
| 397 398 399 400 | | | | | **** | SET UP L | INK FOR DATAGRAM | LOOPBA | ARRAMANA ********************************** |
| 401 402 | 001144' | 012737 | 100020 | 177776 | • | MOV | #ENABLE+20,@#CMD | REG | ; LEAVE 20 IN COMMAND REGISTER |
| 403 404 405 | 001152' 001156' 001160' | 005021 | 177466 000100 | | • | MOV CLR MOV | TBUFP,R1 (R1)+ #MINBC,(R1)+ | | POINT AT XMIT BUFFER CLEAR OUT STATUS WORD SET BYTE COUNT TO MIN ALLOWED |
| 401 402 403 404 405 407 408 409 | 001164' 001166' 001170' | 012621 | | | • | MOV MOV MOV | (SP)+,(R1)+ (SP)+,(R1)+ (SP)+,(R1)+ | | : GET BACK HIGH ADDRESS PATTERN : GET BACK LOW ADDRESS PATTERN |
| 411 412 413 414 415 | 001172' 001176' 001202' 001210' | 005067 | 021034 177420 177434 177430 | 021032 021030 | • | CLR CLR MOV MOV | a#CLRFIF FLG5 RBUFP,a#LFRBUF TBUFP,a#LTAC | | CLEAR THE FIFO CLEAR INTERRUPT FLAG TELL UNA WHERE RECEIVE BUF IS TELL UNA WHERE XMIT BUF IS |
| 416 417 418 | 001216' 001222' 001230' | 112767 | 000140 000003 177372 | 177376 021020 | • | MTPS MOVB MOV | #PRIO3 #INERR,PCSR1 PCSR1,@#IPCSR1 | | : ALLOW XMIT AND REC TO INTER : TELL HOST IN CASE OF FAILURE |
| 419 420 421 422 423 | 001236' 001242' 001244' 001250' | 011102 032702 | 177402 020000 | | 65\$: | MOV MOV BIT BEQ | TBUFP,R1 (R1),R2 #MTCH,R2 65\$ | | ; WAIT FOR MATCH BIT FIRST |
| 424 425 426 | 001252 ' 001260 ' | 112767 016737 | U00002 177342 | 177346 021020 | • | MOVB MOV | #INTST,PCSR1 PCSR1,@#IPCSR1 | | ; TELL HOST WE GOT BY IT |
| 428 429 | 001266° 001274° | 032767 001774 | 000100 | 177326 | 70 s : | BEQ | #RCVFLG,FLG5 70\$ | | : WAIT FOR RECEIVE INTER |
| 431 432 | 001276' 001304' | 032767 001774 | 000040 | 177316 | 805: | BIT BEQ | #TRNFLG,FLG5 80\$ | | ; WAIT FOR XMIT INT TOO! |
| 434 | 001306' 001314' | 112767 | 000001 | 177313 | • | MOVB | #1,PCSR1+1 | | ; TELL HOST WE ARE DONE |
| 436 437 | 001316 | 000207 | | | • | CLC RTS | אָר | | |
| 425 427 428 428 433 433 433 433 433 434 444 444 444 44 | 001334' 001342' 001350' | 000000 000000 000000 000000 000000 | 000000 000000 000000 000000 000000 | 000000 000000 000000 000000 000000 00000 | AFILE: | .WORD .WORD .WORD .WORD .WORD | 0.0.0 0.0.0 0.0.0 0.0.0 0.0.0 | ; WORD | #1 |

| MICROE MICROE | - MICROC | ODE MODU 0-JAN-83 | LE E 17:53 | MACY11 | 11-JAN | -83 09:53 PAGE PATTERN TEST | 10 |
|---------------------------------|--|--|--|--|---|---|----|
| 445 446 447 448 450 | 001372' 001400' 001406' 001414' | 000000 000000 000000 000000 000000 | 000000 000000 000000 000000 000000 | 000000 000000 000000 000000 000000 | .WORD .WORD .WORD .WORD .WORD | 0.0.0 0.0.0 0.0.0 0.0.0 0.0.0 | |

| MICROE | - MICROCODE MODU MAC 10-JAN-83 | JLE E MACY 3 17:53 | 11 30(1046 STATIO |) 11-JA IN ADDRES | N-83 09:53 PAGE 11 S PATTERN TEST | |
|---|--|----------------------------|----------------------------|---------------------------------|---|---|
| 452 453 | | | SBTTL | STATIO | N ADDRESS REJECTION TE | ST |
| 454 455 456 457 458 459 | | | | ACCEPT IN THE WITH A | A STATION ADDRESS IF STATION ADDRESS RAM. IN ADDRESS. DIFFERENT A | THE STATION ADDRESS LOGIC WILL NOT THAT STATION ADDRESS IS NOT PRESENT STATION ADDRESS RAM WILL BE FILLED ADDRESS WILL BE PUT IN DATAGRAM FIELD NOT RECOGNIZE THE DATAGRAM. |
| 460 461 462 | | | *** | | IIM WE ARE TESTING *** | |
| 463 464 465 466 | 001430' 112767 001436' 016737 | 000002 1771 177164 0210 | | MOVB MOV | WINTST,PCSR1 PCSR1,@WIPCSR1 | ; TELL HOST WE ARE TESTING |
| 467 468 | 001444' 005067 | 177154 | • | CLR | SANTIM | : CLEAR FLAG FOR TIMER |
| 469 470 471 472 | | | | | | H KNOWN (PHONEY) ADDRESS **** |
| 473 474 475 476 | 001450' 012737 001456' 012737 | 000200 1777 000004 1777 | | MOV MOV | #MODE, @#CMDREG #LOOP, @#MODREG | ; SET LOOP TO LOAD SA RAM |
| 477 478 479 | 001464' 012704 001470' 005000 | 000060 | • | MOV CLR | #48.,R4 R0 | ; COUNTER |
| 480 481 482 483 484 485 | 001472' 012701 001476' 010137 001502' 010037 001506' 005201 001510' 077406 | 000120 177776 177774 | 10\$: | MOV MOV INC SOB | #ARAM+20,R1 R1,a#CMDREG R0,a#ADRREG R1 R4,10\$ | : STATION ADDRESS STARTS AT +20 : SELECT STATION ADDRESS RAM : PARK IN RAM : NEXT LOCATION : DO THEM ALL |
| 486 487 488 489 | | | *** | ******** * fill T | HE RECEIVE BUFFER WITH | BACKGROUND **** |
| 490 491 492 493 494 495 496 | 001512' 012700 001516' 010067 001522' 005020 001524' 020027 001530' 103774 | 100000 177120 104000 | <i>:</i> 20 \$: | MOV MOV CLR CMP BLO | #LINADR,RO RO,RBUFP (RO)+ RO,#LINADR+SIZ1K 20\$ | : RECEIVE BUFFER STARTS HERE : FILL RECEIVE BUFFER WITH ZEROS : FILL THE BUFFER : FILL ENTIRE BUFFER |
| 498 499 500 501 | | | **** | | RANSMIT BUFFER WITH TE | |
| 501 502 503 504 505 506 | 001532' 012703 001536' 010067 001542' 010320 001544' 020027 001550' 103774 | 000377 177102 110000 | ; 30 \$: | MOV MOV MOV (MP BLO | #0377,R3 R0,TBUFP R3,(R0)+ R0,#LINADR+S1Z2K 30\$ | : WORST CASE FOR CLOCKING : FILL XMIT BUFFER WITH PATTERN : STOP AT TOP |

| MICROE - MICROCODE MODULE E | MACY11 | 30(1046) | 11-JAN-8 | 3 09:53 | PAGE | 12 |
|-----------------------------|--------|----------|------------|----------|------|----|
| MICROE.MAC 10-JAN-83 17:53 | | STATION | ADDRESS RE | EJECTION | TEST | |

| 507 508 | | | | | ; ; | | | |
|---|---|--------------------------------------|--------------------------------------|------------------|----------------|----------------------------------|---|--|
| 509 510 511 | | | | | **** | SET UP | LINK FOR DATAGRAM LOOPE | BACK OPERATION ***** |
| 512 513 | 001552 | 012737 | 100020 | 177776 | | MOV | #ENABLE+20,@#CMDREG | ; POINTER TO FRONT OF RAM |
| 514 515 516 517 518 | 001560' 001564' 001566' | 005021 | 177060 000100 | | • | MOV CLR MOV | TBUFP,R1 (R1)+ #MINBC,(R1)+ | ; POINT AT XMIT BUFFER ; CLEAR OUT STATUS WORD ; SET BYTE COUNT TO MIN ALLOWED |
| 519 520 521 522 | | | | | **** | ******* * GET PH | YSICAL ADDRESS INTO DATA | ************************************** |
| 5190 52123 5225 5227 5227 5227 5233 5335 5335 53 | 001572' 001576' 001600' 001602' | 010021 010021 | 177777 | | : | MOV MOV MOV MOV | #177777,RO RO,(R1)+ RO,(R1)+ RO,(R1)+ | ; && STAND-IN FOR PHYSICAL ADDR |
| 529 530 531 532 533 | 001604' 001610' 001614' 001622' | 005037 (05067 016737 016737 | 021034 177006 177022 177016 | 021032 021030 | | CLR CLR MOV MOV | a#CLRFIF FLG5 RBUFP,a#LFRBUF TBUFP,a#LTAC | CLEAR THE FIFO CLEAR INTERRUPT FLAG TELL UNA WHERE RECEIVE BUF IS TELL UNA WHERE XMIT BUF IS |
| 535 536 537 538 539 541 | 001630' 001634' 001642' 001644' 001652' | 026727 002012 032767 | 000140 176764 000100 | 000002 176750 | 40\$: | MTPS CMP BGE BIT BEQ | #PRIO3 SANTIM,#2 50\$ #RCVFLG,FLG5 40\$ | ALLOW XMIT AND REC TO INTER WAIT FOR 2 SECONDS EXIT NORMALLY IF TIMER DONE WAIT FOR RECEIVER INTERRUPT IF NONE, WE'RE OK |
| 542 543 544 | | | | | **** | ****** * ERROR | FALLTHROUGH **** | |
| 545 546 547 | 001654' 001662' | 032767 001774 | 000040 | 176740 | 45\$: | BIT BEQ | #TRNFLG,FLG5 | ; WAIT FOR XMIT INT TOO! |
| 548 549 550 551 | 001664 ° 001666 ° | 000261 000401 | | | <i>:</i> | SEC BR | 60\$ | ; INDICATE ERROR |
| 553 554 555 | | | | | **** | EXIT F | OR NO ERROR **** | |
| 5467 5489 5551 5555 5557 5557 5560 561 | 001670° 001672° 001700° | 112767 | 000002 | 176727 | 50\$: 60\$: | CLC MOVB RTS | #2,PCSR1+1 PC | ; INDICATE SUCESS ; TELL HOST WE ARE DONE |

| MICROE . | - MICROCODE MODU MAC 10-JAN-8 | JLE E 3 17:53 | MACY11 3 | 80(1046) STATION | 11-JAI ADDRESS | N-83 09:53 PAGE 13 S REJECTION TEST | |
|--|--|--------------------------------------|------------------|---------------------|---|--|--|
| 562 563 | | | | SBTTL | STATIO | N ADDRESS RAM POSITIO | N TEST |
| 564 565 566 567 568 569 570 | | | | | REGARDI RESIDES STATION FILLED | LESS OF WHICH OF THE S. THE PHYSICAL ADDRE N ADDRESS RAM POSITIO WITH KNOWN DATA. A D E LOOPED AROUND. THE | STATION ADDRESS IS RECOGNIZED 12 RAM POSITIONS THE ADDRESS SS WILL BE WRITTEN TO EACH OF THE 12 NS WITH THE REST OF THE POSITIONS ATAGRAM WITH THE PHSYICAL ADDRESS TEST WILL VERIFY THE DATAGRAM IS |
| 572 573 574 575 576 577 | | | | **** | TELL H | IM WE ARE TESTING *** | ** ** |
| 5/8 | 001702' 112767 001710' 016737 | 000002 176712 | 176716 021020 | MICE3: | MOVB MOV | #INTST,PCSR1 PCSR1,@#IPCSR1 | ; TELL HOST WE ARE TESTING |
| 579 580 581 | 001716' 005067 | 176702 | | : | CLR | SANTIM | ; CLEAR THE FLAG |
| 581 582 583 584 585 586 587 588 | | | | **** | PICK U | P HOST ADDRESS OF PCB | ***** B **** ***** |
| 589 590 | 001722' 016737 001730' 016737 001736' 013700 001742' 013701 | 176702 176676 021014 021014 | 021010 021012 | ; | MOV MOV MOV | IPCSR2,@#MDMA0 IPCSR2+2,@#MDMA1 @#MDMAR0,R0 @#MDMAR0,R1 | : PICK UP ADDRESS OF PCBB : RO=CONTENTS OF PCSR2 : R1=CONTENTS OF PCSR3 |
| 591 592 593 594 | 001746' 010037 001752' 010137 | 021010 021012 | | : | MOV MOV | RO,@#MDMAO R1,@#MDMA1 | ; POINT TO HOST PCBB |
| 595 596 | 001756' 013702 | 021014 | | : : | MOV | a#MDMARO,R2 | ; R2 NOW HOLDS SA RAM POSITION |
| 597 598 599 600 | | | | **** | FILL TO | HE BUFFER WITH PHONEY | STATION ADDRESSES **** |
| 601 602 603 | 001762' 010700 001764' 062700 | | | • | MOV ADD | PC,RO #BFILE,RO | ; CALCULATE POS/IND ADDRESS |
| 604 605 606 607 608 609 610 | 001770' 012705 001774' 005020 001776' 005305 002000' 001375 | | | : 10 \$: | MOV CLR DEC BNE | #36R5 (RO)+ R5 10\$ | : THERE ARE 12 ADDRESSES : FILL WITH ZERO (ADDRESS) |
| 611 612 613 | | | | ***** | PUT PH | YSICAL ADDRESS IN RAM | POSITION **** |
| 614 615 616 617 | 002002° 010700 002004° 062700 | | | : | MOV ADD | PC.RO #BFILERO | ; CALCULATE POS/IND ADDRESS |

| MICROE MICROE | - MICROCO | DDE MODUI 0-JAN-83 | LE E 17:53 | MACY11 | 30(1046) STATION | 11-JA | N-83 09:53 PAGE 14 S RAM POSITION TEST | | |
|---|--|----------------------------|----------------------------|------------------|---------------------|--------------------------|---|-----------------|---|
| 618 619 620 621 622 | 002010' 002012' 002014' 002020' | 001403 062700 | 000006 | | 20\$: | DEC BEQ ADD BR | R2 30\$ #6,R0 20\$ | ; | PARAMTER IS NEVER > 1 GO TO WORK GO ROUND |
| 618 6123 6223 6226 6227 6227 6227 633 633 633 643 643 643 643 643 643 643 | 002022' 002026' 002030' 002032' | 010120 010120 | 177777 | | 30\$: | MOV MOV MOV | #177777,R1 R1,(R0)+ R1,(R0)+ R1,(R0)+ | ; | && STAND-IN FOR PHSICAL ADDR |
| 630 631 632 | | | | | **** | LOAD T | HE STATION ADDRESS RAM | ***** **** | |
| 633 635 | 002034' 002042' | | 000200 000004 | 177776 177774 | ; | MOV MOV | #MODE, a#CMDREG #LOOP, a#MODREG | ; | SET LOOP TO LOAD SA RAM |
| 636 637 638 | 002050° 002052° | 010701 062701 | 000256 | | ; | MOV ADD | PC,R1 #BFILE,R1 | ; | FORM A POS/IND ADDRES ADD THE OFFSET |
| 639 640 | 002056 | იე5000 | | | ; | CLR | RO | ; | THIS CLEARS HIGH BITS |
| 641 642 | 002060 | 012746 | 000120 | | ; | MOV | #ARAM+20,-(SP) | ; | FOR MODE REG/NEED A REGISTER |
| 641 642 643 644 645 647 648 | 002064' 002070' 002074' | 012704 | 000003 000020 000014 | | ; 40\$: 50\$: | MOV MOV MOV | #3,R2 #16R4 #12.,R5 | ; | 3 WORDS PER ADDRESS/PATTERN SIXTEEN BITS PER WORD 12 POSITIONS IN SA RAM |
| 648 | 002100 | 010103 | | | : | MOV | R1,R3 | ; | COPY THE POINTER |
| 649 650 651 652 653 | 002112' | 006100 062703 | 000006 | | 60\$: | ROR ROL ADD SOB | (R3) R0 #6,R3 R5,60\$ | : | GET LSB OF ALL 12 ADDRESSES RO WILL HOLD ORTHOGONAL WORD 6 BYTES PER ADDRES/PATTERN GO TILL DONE |
| 654 655 656 657 658 660 661 662 663 | 002114' 002120' 002124' 002126' | 010037 005216 | 177776 177774 | | : | MOV MOV INC SOB | (SP),@#CMDREG RO,@#ADRREG (SP) R4,50\$ | • | SET MODE TO WRITE SA RAM ORTHOGONAL WORD TO SA RAM BUMP STATION ADDRESS DO ANOTHER ONE |
| 659 660 661 | 002130' C02134' | 062701 077223 | 000002 | | ; | ADD SOB | #2,R1 R2,40\$ | | ADVANCE TO NEXT WORD LOOP TILL DONE |
| 662 663 664 | 0021361 | 012600 | | | : | MOV | (SP)+,RO | ; | POP TO BYTE BUCKET |
| 665 666 667 668 | | | | | **** | FILL T | HE RECEIVE BUFFER WITH | BACK | ************************************** |
| 669 670 | 002140 | 012700 | 100000 | | • | MOV MOV | #LINADR,RO | ; | RECEIVE BUFFER STARTS HERE |
| 671 672 673 | 0021501 | 010067 005020 020027 | 176472 104000 | | 705: | CLR (MP | RO,RBUFP (RO)+ RO,#LINADR+SIZ1K | ; | FILL RECEIVE BUFFER WITH ZEROS FILL THE BUFFER |

| MICROE MICROE. | - MICROCO | DDE MODUI D-JAN-83 | LE E 17:53 | MACY11 | 30(1046) STATION | 11-JAN ADDRESS | -83 09:53 PAGE 15 RAM POSITION TEST | |
|---|--|--------------------------------------|--------------------------------------|--------------------------------------|---------------------|----------------------------------|--|--|
| 674 675 | 0021561 | 103774 | | | : | BL0 | 70\$ | ; FILL ENTIRE BUFFER |
| 676 677 678 679 | | | | | **** | FILL TR | ANSMIT BUFFER WITH TES | T PATTERN **** |
| 680 681 | 0021601 | 012703 | 000377 176454 | | ; | MOV MOV | #0377,R3 | ; WORST CASE FOR CLOCKING |
| 680 681 682 683 685 686 687 688 689 | 002164° 002170° 002172° 002176° | 010320 020027 103774 | 110000 | | 80\$: | MOV (MP BLO | R3,(R0)+ R0,#LINADR+SIZ2K 80\$ | ; FILL XMIT BUFFER WITH PATTERN ; STOP AT TOP |
| 687 688 | | | | | **** | | *********** | **** |
| 689 690 | | | | | **** | SET UP | LINK FOR DATAGRAM LOOF | PBACK OPERATION ***** |
| 691 692 693 | 002200 | 012737 | 100020 | 177776 | | MCV | #ENABLE+20,@#CMDREG | ; ENABLE LINK |
| 694 695 696 697 | 002206' 002212' 002214' | 016701 005021 012721 | 176432 000100 | | • | MOV CLR MOV | TBUFP,R1 (R1)+ #MINBC,(R1)+ | POINT AT XMIT BUFFER CLEAR OUT STATUS WORD SET BYTE COUNT TO MIN ALLOWED |
| 698 699 700 701 | 002220' 002224' 002226' 002230' | 010021 010021 | 177777 | | ; | MOV MOV MOV | #177777,RO RO,(R1)+ RO,(R1)+ RO,(R1)+ | : && STAND IN PHYSICAL ADDRESS |
| 702 703 704 705 706 707 | 002232' 002236' 002242' 002250' | 005067 016737 | 021034 176360 176374 176370 | 021032 021030 | | CLR CLR MOV MOV | a#CLRFIF FLG5 RBUFP,a#LFRBUF TBUFP,a#LTAC | CLEAR THE FIFO CLEAR INTERRUPT FLAG TELL UNA WHERE RECEIVE BUF IS TELL UNA WHERE XMIT BUF IS |
| 708 709 | 002256' | 106427 026727 | 000140 176336 | 000002 | 90\$: | MTPS CMP | #PRIO3 SANTIM,#2 | ; ALLOW XMIT AND REC TO INTER ; WAIT FOR COUNTS TO ACCUMULATE |
| 710 711 712 713 | 002270' 002272' 002300' | 002015 | | 176322 | _ | BGE BIT BEQ | 120\$ #RCVFLG,FLG5 90\$ | : THIS SETS IF DATAGRAM LOOPS |
| 714 715 716 | 002302' 002310' | 032767 001774 | 000040 | 176312 | 100\$: | BIT | #TRNFLG,FLG5 100\$ | ; WAIT FOR XMIT TOO |
| 717 718 | 002312' 002314' 002322' | 112767 | 000003 | 176305 | 110 \$: | CLC MOVB RTS | #3.PCSR1+1 PC | ; TELL HIM WHAT TEST WE'RE IN |
| 719 720 721 722 723 724 725 726 727 | 002324° 002326° | | | | 120\$: | SEC BR | 110\$ | :INDICATE ERROR : GO BACK TO MICROMONITOR |
| 725 726 727 728 729 | 002330' 002336' 002344' 002352' | 000000 000000 000000 000000 | 000000 000000 000000 000000 | 000000 000000 000000 000000 | BFILE:: | .WORD .WORD .WORD .WORD | 0.0.0 0.0.0 0.0.0 0.0.0 | |

| | | K 1 |
|--|---|--|
| MICROE - MICROCODE MODULE E MICROE.MAC 10-JAN-83 17:53 | MACY11 30(1046) STATION | 11-JAN-83 09:53 PAGE 16 ADDRESS RAM POSITION TEST |
| 730 002360' 000000 000000 731 002366' 000000 000000 732 002374' 000000 000000 733 002402' 000000 000000 734 002410' 000000 000000 735 002416' 000000 000000 736 002424' 000000 000000 737 002432' 000000 000000 | 00000 000000 000000 000000 000000 | .WORD 0.0.0 .WORD 0.0.0 .WORD 0.0.0 .WORD 0.0.0 .WORD 0.0.0 .WORD 0.0.0 |

| MICROE MICROE. | - MICROC MAC 1 | ODE MODU 0-JAN-83 | ILE E 17:53 | MACY11 | 30(1046) STATION | 11-JA N ADDRES | N-83 09:53 PAGE 17 S RAM POSITION TEST | |
|--|---|----------------------------|----------------------------|------------------|---------------------|---------------------------------|--|--|
| 738 739 740 | | | | | SBTTL | MULTIC | AST ADDRESS TEST | |
| 741 742 743 744 | | | | | **** | TELL H | IM WE ARE TESTING **** | |
| 745 746 | 002440' 002446' | 112767 016737 | 000002 176154 | 176160 021020 | MICE4: | MOVB MOV | WINTST,PCSR1 PCSR1,aWIPCSR1 | ; TELL HOST WE ARE TESTING |
| 747 748 749 | 0024541 | 005067 | 176144 | | ; ; | CLR | SANTIM | ; CLEAR FLAG FOR TIMER |
| 750 751 752 753 | | | | | **** | FILL S | TATION ADDRESS RAM W'TH | KNOWN (PHONEY) ADDRESS **** |
| 754 755 756 757 | 002460' 002466' | 012737 012737 | 000200 000004 | 177776 177774 | • | MOV MOV | #MODE,@#CMDREG #LOOP,@#MODREG | ; SET LOOP TO LOAD SA RAM |
| 758 759 | 002474' 002500' | 012704 005000 | 000060 | | ; | MOV CLR | #48.,R4 R0 | ; COUNTER |
| 760 761 762 763 764 765 766 | 002502° 002506° 002512° 002516° 002520° | 010137 010037 005201 | 000120 177776 177774 | | : 10\$: | MOV MOV MOV INC SOB | #ARAM+20,R1 R1,@#CMDREG R0,@#ADRREG R1 R4,10\$ | : STATION ADDRESS STARTS AT +20 : SELECT STATION ADDRESS RAM : PARK IN RAM : NEXT LOCATION : DO THEM ALL |
| 767 768 769 770 | | | | | **** | FILL T | ************************************** | ************************************** |
| 771 772 773 774 775 776 777 778 | 002522' 002526' 002532' 002534' 002540' | 010067 005020 020027 | 100000 176110 104000 | | 20\$: | MOV MOV CLR CMP BLO | #LINADR,RO RO,RBUFP (RO)+ RO,#LINADR+SIZ1K 20\$ | ; RECEIVE BUFFER STARTS HERE ; FILL RECEIVE BUFFER WITH ZEROS ; FILL THE BUFFER ; FILL ENTIRE BUFFER |
| 779 780 | | | | | **** | FILL T | RANSMIT BUFFER WITH TEST | ************************************** |
| 781 782 733 784 785 786 787 788 | 002542' 002546' 002552' 002554' 002560' | 010067 010320 020027 | 000377 176072 110000 | | 30 \$: | MOV MOV MOV CMP BLO | #0377,R3 R0,TBUFP R3,(R0)+ R0,#LINADR+S1Z2K 30\$ | ; WORST CASE FOR CLOCKING ; FILL XMIT BUFFER WITH PATTERN ; STOP AT TOP |
| 789 790 791 792 793 | | | | | **** | SET UP | LINK FOR DATAGRAM LOOPB | ACK OPERATION **** |

| MICROE MICROE. | - MiCROC MAC 1 | ODE MODU 0-JAN-83 | ILE E 17:53 | MACY11 | 30(1046) MULTICA | 11-JAN ST ADDRE | N-83 09:53 PAGE 18 | | | | | | | | |
|---|---|--|--------------------------------------|----------------------------|---------------------|---|--|---|--|--|--|--|--|--|--|
| 794 795 796 797 | 002562' 002570' 002576' | 012737 012737 012737 | 000200 040004 100020 | 177776 177774 177776 | | MOV MOV MOV | #MODE.a#CMDREG #ENAL!LOOP.a#MODREG #ENABLE+20.a#CMDREG | : ENABLE LINK, SELECT MODE : ENABLE LOOPBACK : POINTER TO FRONT OF RAM | | | | | | | |
| 798 799 | 002604' 002610' 002612' | 005021 | 176034 000100 | | ; | MOV CLR MOV | TBUFP,R1 (R1)+ #MINBC,(R1)+ | : POINT AT XMIT BUFFER : CLEAR OUT STATUS WORD : SET BYTE COUNT TO MIN ALLOWED | | | | | | | |
| 800 801 802 803 804 805 | | | | | **** | ***** GET PHYSICAL ADDRESS INTO DATAGRAM **** | | | | | | | | | |
| 806 807 808 809 810 811 812 | 002616' 002622' 002624' 002630' 002632' | 012700 010011 052721 010021 010021 | 177777 000001 | | <i>:</i> | MOV MOV BIS MOV MOV | #177777,RO RO,(R1) #01,(R1)+ RO,(R1)+ RO,(R1)+ | : && STAND-IN FOR PHYSICAL ADDR : SET MULTICAST ADDRESS BIT | | | | | | | |
| 813 814 815 816 817 818 | 002634° 002640° 002644° 002652° | 005067 016737 | 021034 175756 175772 175766 | 021032 021030 | ; | C. R CLR MOV MOV | a#CLRFIF FLG5 RBUFP,a#LFRBUF TBUFP,a#LTAC | CLEAR THE FIFO CLEAR INTERRUPT FLAG TELL UNA WHERE RECEIVE BUF IS TELL UNA WHERE XMIT BUF IS | | | | | | | |
| 819 820 821 822 823 824 825 826 827 | | 026727 002015 032767 | 000140 175734 000100 | 000002 175720 | 40\$: | MTPS (MP BGE Blt Beq | <pre>#PRIO3 SANTIM,#2 60\$ #RCVFLG,FLG5 40\$</pre> | : ALLOW XMIT AND REC TO INTER : && LEAVE IT 2 SECONDS : EXIT IF TIMER DONE : WAIT FOR RECEIVER INTERRUPT | | | | | | | |
| 825 826 827 | 002704' 002712' | 032767 001774 | 000040 | 175710 | | BIT BEQ | #TRNFLG,FLG5 | ; WAIT FOR XMIT INT TOO! | | | | | | | |
| 828 | 002714' 002716' 002724' | 000241 112767 000207 | 000004 | 175703 | ; 50 \$: | CLC MOVB RTS | #4,PCSR1+1 PC | ; INDICATE SUCCESS ; TELL HOST WE ARE DONE | | | | | | | |
| 829 830 831 832 833 834 835 836 | 002726° 002730° | 000261 000772 | | | 60\$: | SEC BR | 50\$ | ; INDICATE ERROR ; RETURN TO MICROMONITOR | | | | | | | |

MICROE - MICROCODE MODULE E MACY11 30(1046) 11-JAN-83 09:53 PAGE 19 MICROE.MAC 10-JAN-83 17:53 MULTICAST ADDRESS TEST MICESZ::MICESZ-MICROE+2 END

| MICROE - MICROCODE MICROE.MAC 10 | MODULE | E 7:53 | MACY11 30 | (1046) ROSS REI | 11-JAN- | 83 09:53 TABLE | S PAGE (| 21 MBOLS | | | | | | |
|---|--------|--|---|--|-------------------------------|------------------------------|---------------------|------------------------------|------------------------------|-------------|------|------|------|------|
| ACLO = 002000 ADRERR= 000001 ADRREG= 177774 AFILE 001320R ARAM = 000100 BFILE 002330RG BITO = 000001 | 002 | 87# 130# 34# 329 80# 603 54# 53# | 365* 347 351 616 103 | 482* 439# 480 638 | 656* 642 726# | 763 * 761 | | | | | | | | |
| BIT1 = 000002 BIT10 = 002000 BIT11 = 004000 BIT13 = 010000 BIT13 = 020000 BIT15 = 100000 BIT15 = 100004 BIT3 = 000010 BIT4 = 000020 BIT5 = 000040 BIT5 = 000100 BIT6 = 000100 BIT7 = 000200 | | 4478 44218 44218 44392 4488 4478 4478 | 104 575 570 681 998 880 756 | 73 86 71 112 85 78 105 106 107 108 109 | 87 113 114 111 84 | 238 110 | 243 | 246 | | | | | | |
| BIT8 = 000400 BIT9 = 001000 CLRFIF= 021034 CMDREG= 177776 | | 46# 45# 22# 35# 794* | 411* 136* 796* | 74 530* 343* | 703* 364* | 814* 401* | 474* | 481* | 513* | 634* | 655* | 692* | 755* | 762* |
| COLL = 000020 CSRFLG= 000001 CSRVEC= 000064 CSRWRT 000436R | 002 | 89# 103# 96# 160 129# | 194 161* 225# | 225 162* | | | | | | | | | | |
| DATERR= 000000 DMACSR= 021002 DMAF = 021022 DMAINT 000472R DMATO = 021004 | 002 | 9# 17# 155 10# | 237 237# | 246* | | | | | | | | | | |
| DMAT1 = 021006 DMAVEC= 000114 | | 11# 97# | 156* | 157* | | | | | | | | | | |
| DMAWC = 021024 DMDONE 000640R DNI = 004000 DRTY = 000040 | 002 | 18# 237* 72# 88# | 238 140 | 243 218 | 273# | | | | | | | | | |
| DTCR = 000010 ENABLE= 100000 ENAL = 040000 ENCR = 004000 | | 90 <i>n</i> 78 <i>n</i> 85 <i>n</i> 86 <i>n</i> | 401 795 | 513 | 692 | 796 | | | | | | | | |
| ERRFLG= 000002 ERRINT 000446R | 002 | 104# 142 | 228 228# | | | | | | | | | | | |
| FATI = 000400 FLG5 000622R | 002 | 74# 187* 531* | 190 538 | 194 546 | 219* 704* | 225 * 711 | 228 * 714 | 250 * 815 * | 257 * 822 | 260* 825 | 268# | 412• | 428 | 431 |
| INERR = 000003 INMON = 000001 INTST = 000002 IOADR = 020000 | | 102# 100# 101# 124# | 216 138 291 125 | 417 202 425 | 214 464 | 577 | 745 | | | | | | | |
| IOSIZ = 020000 IPCSR0= 021000 IPCSR1= 021020 | | 120# 8# 16# | 125 140* 139* | 199 202• | 218* 217* | 229 * 292 * | 240• 418• | 245* 426* | 251 * 465 * | 578* | 746* | | | |

| MICROE - MICROCODE MICROE.MAC 10-J | MODULE | E 7:53 | MACY11 | | 11-JAN- | -83 09:3 | 3 PAGE | 22 YMBOLS | | | | | | SEQ |
|--|---------------------------------|--|---|--------------------|------------------------------|---------------------|--------------|------------------------------|------------|--------------|-----|------|-----|------|
| IPCSR2 000630R LASFTP= 012400 | 002 | 185 * 56# | 186* | 271# | 299 | 300 | 587 | 588 | | | | | | |
| LFRBUF = 021032 LINADR = 100000 LINSIZ = 077774 | | 21# 126# 122# | 413 * 379 | 532* 382 | 705 * 393 | 816 • 491 | 494 | 505 | 670 | 673 | 684 | 772 | 775 | 786 |
| LOOP = 000004 LRBUF = 021044 | | 91 <i>n</i> 26 <i>n</i> | 344 255 | 475 | 635 | 756 | 795 | | | | | | | |
| LTAC = 021030 MAXBC = 002752 | | 20# 128# | 414. | 533* | 70ċ* | 817* | | | | | | | | |
| MDMARO= 021014 MDMAR1= 021016 MDMAW0= 021026 | | 14# 15# 19# | 301 | 302 | 307 | 312 | 317 | 589 | 590 | 595 | | | | |
| MDMAW1 = 021036 MDMAO = 021010 MDMA1 = 021012 MDMSR = 021042 | | 23 <i>n</i> 12 <i>n</i> 13 <i>n</i> 25 <i>n</i> | 299 * | 304* 305* | 587 * 588 * | 592* 593* | | | | | | | | |
| MICESZ 002732RG MICE1 000646R MICE2 001430R MICE3 001702R MICE4 002440R MICROE 000000RG MINBC = 000100 MODE = 000200 MODREG= 177774 MICH = 020000 NPRERR= 100000 NPRERR= 100000 NMERR= 040000 NXMERR= 040000 NXMFLG= 000010 PARERR= 010000 | 002 005 005 005 005 | 838# 263 264 265 266 135# 127# 110# 110# 110# 110# 111# 106# 113# | 291# 464# 577# 745# 838 405 344* 422 245 240 | 517 474 475* | 696 634 635* | 800 755 756* | 794 795* | | | | | | | |
| PARFLG= 000004 PARINT 000550R PARVEC= 000140 PCBADR 000634R PCEI = 040000 | 2005 | 105# 150 98# 272# 69# | 250 250# 151* | 152* | | | | | | | | | | |
| PCSRSW= 021040 PCSR1 000626R | 002 | 24# 138* 464* | 179 139 465 | 214* 558* | 216* 577* | 217 578 | 270# 718* | 291 * 745 * | 292 746 | 417* 829* | 418 | 425* | 426 | 434* |
| PHYADO= 021060 PHYAD1= 021062 PHYAD2= 021064 PHYAD3= 021066 PHYAD4= 021070 PHYAD5= 021072 PRIO0 = 000000 PRIO1 = 000040 PRIO2 = 000100 | | 27 | 188* | . | 700 | | | | | | | | | |
| PRIO3 = 000140 PRIO4 = 000200 PRIO5 = 000240 PRIO6 = 000300 | | 61# 60# 59# 58# | 416* 162 167 | 535* 172 177 | 708* | 819* | | | | | | | | |
| PRIO7 = 000340 PROM = 100000 | | 57# 84# | 135+ | 145 | 152 | 157 | 193• | | | | | | | |
| RBUFP 000642R RCE1 = 002000 | 002 | 274# 73# | 380• | 413 | 492• | 532 | 671• | 705 | 773• | 816 | | | | |

| MICROE - MICROCODE MICROE.MAC 10- | E MODULE E JAN-83 17: | MACY11 | 30(1046) CROSS RE | 11-JAN- FERENCE | -83 09:5 TABLE | 3 PAGE USER SY | 23 MBOLS | | | | | | |
|---|--------------------------|---|--------------------------|--------------------|--------------------|-------------------|-------------|------------|------|-----|-----|------|-----|
| RCVFLG= 000100 | | 09# 257 | 428 | 538 | 711 | 822 | | | | | | | |
| RCVINT 000566R RCVVEC= 000120 ROMADR= 040000 ROMSIZ= 040000 | 1 | 75 2554 944 1764 254 126 214 126 704 | 177* | | | | | | | | | | |
| RXI = 020000 SANTIM 000624R SANVEC= 000134 | | 34* 2694 95% 166* | | 536 | 580+ | 709 | 748* | 820 | | | | | |
| SERI = 100000 SIZ1K = 004000 SIZ2K = 010000 SIZ4K = 020000 SIZ8K = 040000 SIACK = 001000 | 1 1 1 | 15# 116 16# 117 17# 118 18# 121 99# 137 | 382 393 119 122 | 494 505 120 | 673 684 | 775 786 | | | | | | | |
| TBLD 000612R TBUFP 000644R | 002 2 | 08 2634 75# 3914 117 | 403 | 414 | 420 | 503* | 515 | 533 | 682* | 694 | 706 | 784* | 798 |
| TIMINT 000464R TRNFLG= 000040 TRNINT 000602R TRNVEC= 000070 | 002 1 | 65 2344 08# 260 70 2604 93# 1714 | 431 | 546 | 714 | 825 | | | | | | | |
| TXI = 010000 UNIERR= 020000 WCSADR= 000000 WCSSIZ= 020000 . = 002734R | 002 | 12# 229 23# 124 19# 124 42 150 264 265 | 155 266 | 160 329 | 165 3 47 | 170 603 | 175 616 | 196 638 | 208 | 231 | 247 | 253 | 263 |

000 001 002 000000 . ABS. 000000 002734 MICRE

ERRORS DETECTED: ()
DEFAULT GLOBALS GENERATED: 0

MICROE.OBJ.MICROE.LST/(RF/DOC/NL:TOC/SOL=MICROE.MAC RUN-TIME: .9 1 .3 SECONDS RUN-TIME RATIO: 86/3=28.7 CORE USED: 9K (18 PAGES)

DOCUMENT PAGES: 22

```
.TITLE MICROF - MICROCODE MODULE F
                                             : && DEDICATED THE CRC CIRCUITRY TO THE RECEIVE SIDE OF THE LINK
                                             .CSECT MICRF
               000000
                                                        REGISTER DEFINITIONS USED BY THE T11
                                             .SBTTL
                                             IPCSRO
DMACSR
DMATO
              021000
021002
021004
                                                                            :INTERNAL PCSRO ADDRESS
                                                                 21000
                                                                            DMA ENGINE CONTROL STATUS REGISTER DMA ENGINE TO ADDRESS REGISTER #0
                                                                  21002
                                                                 21004
10
                                             DMAT1
MDMAO
MDMA1
MDMARO
                                                                            DMA ENGINE TO ADDRESS REGISTER #1
                                                                  21006
11
               021006
                                                                            MICROCPU DMA TO ADDRESS REGISTER #0
MICROCPU DMA TO ADDRESS REGISTER #1
MICROCPU DMA DATA REGISTER - AUTO INCREMENT R/O
MICROCPU DMA DATA REGISTER - AUTO DECREMENT R/O
                                                                  21010
12
13
14
15
16
17
               021010
                                                                  21012
               021012
                                                                  21014
               021014
                                             MDMAR1
IPCSR1
                                                                  21016
               021016
                                                                            INTERNAL PCSR1 ADDRESS
                                                                  21020
               021020
                                                                            DMA ENGINE FROM ADDRESS REGISTER
                                                                  21022
                                             DMAF
               021022
                                             DMAWC
MDMAWO
LTAC
LFRBUF
CLRFIF
                                                                  21024
                                                                            DMA ENGINE WORD COUNT REGISTER
021024
                                                                  21026
                                                                            MICROCPU DMA DATA REGISTER - AUTO INCREMENT W/O
               021026
                                                                 21030
21032
21034
21036
21040
                                                                            LINK TRANSMIT ADDRESS COUNTER REGISTER
               021030
                                                                            LINK RECIEVE BUFFER ADDRESS FIFO
               021032
                                                                            CLEAR FIFO
               021034
                                             MDMAW1
PCSRSW
MDMSR
                                                                            MICROCPU DMA DATA REGISTER - AUTO DECREMENT W/O
               021036
                                                                            SWITCH PACK REGISTER
               021040
                                                                  21042
                                                                            MICROCPU DMA STATUS REGISTER
               021042
                                                                            LINK RECIEVE BUFFER COMPLETED
                                             LRBUF
                                                                  21044
                                             PHYADO
PHYAD1
PHYAD2
PHYAD3
PHYAD4
PHYAD5
                                                                  21060
                                                                            PHYSICAL ADDRESS ROM BYTE O
               021060
                                                                            PHYSICAL ADDRESS ROM BYTE
                                                                  21062
               021062
                                                                            PHYSCIAL ADDRESS ROM BYTE
                                                                  21064
               021064
                                                                  21066
                                                                            PHYSICAL ADDRESS ROM BYTE
               021066
                                                                            PHYSICAL ADDRESS ROM BYTE 4 PHYSICAL ADDRESS ROM BYTE 5
                                                                  21070
               021070
                                                                  21072
               021072
               177774
                                                                  177774
                                                                            LINK MODE REGISTER
                                             MODREG
                                                                            LINK STATION ADDRESS RAM REGISTER
                                                                  177774
                                             ADRREG
                                                                           LINK COMMAND REGISTER
                                                                  177776
                                             CMDREG
               177776
                                                         OTHER DEFINITIONS USED BY THE MICROCODE
                                              .SBTTL
                                                                  100000
               100000
                                             BIT15
                                                                  40000
               040000
                                             BIT14
                                                                  20000
               020000
                                             BIT13
                                                                  10000
               010000
                                              BIT12
                                                                  4000
               004000
                                              BIT11
                                                                  2000
               002000
                                              BIT10
                                                                  1000
               001000
                                              BIT9
               000400
                                                                  400
                                              BIT8
                                                                  200
100
                                              BIT7
               000100
                                              BI16
                                                                  40
               000040
                                              BIT5
                                                                  20
10
                                              BI14
                                              BIT3
               000010
                                              BIT2
               000004
                                              BITT
               000002
               000001
                                              BITO
                                                                  BIT8:BIT10:BIT12 : LOAD AND START FUNCTION TEST PATTERN
                                              LASFTP
               012400
```

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MACY11 30(1046) 11-JAN-83 09:54 PAGE 2
MICROF - MICROCODE MODULE F
MICROF .MAC
                  10-JAN-83 17:53
                                                       OTHER DEFINITIONS USED BY THE MICROCODE
     57
58
59
                                                                           340
300
                     000340
                                                     PRI07
                     000300
                                                     PRI06
                                                                =
                                                                           240
200
                     000240
                                                     PRIO5
                                                                =
                     000200
     60
                                                     PRIO4
                                                                =
     61
                     000140
                                                     PRI03
                                                                =
                                                                           140
     62
                     000100
                                                     PRIO2
                                                                =
                                                                           100
     63
                     000040
                                                     PRI01
                                                                =
                                                                           40
     64
                     000000
                                                     PRI00
                                                                =
                                                                           0
     66
67
                                                      PCSRO - PORT CONTROL STATUS REGISTER O
     68
                     100000
                                                      ŠERI
                                                                           BIT15
                                                                =
     040000
                                                      PCEI
                                                                           BIT14
                                                                =
                     020000
                                                                           BIT13
                                                      RXI
                                                                =
                                                                           BIT12
                     010000
                                                      TXI
                                                                =
                     004000
                                                     DNI
                                                                           BIT11
                                                                =
                     002000
                                                      RCEI
                                                                           BIT10
                                                                =
                                                                           BIT8
                     000400
                                                      FATI
                                                                =
                                                      LINK COMMAND REGISTER
                                                                           BIT15
                     100000
                                                      ENABLE
                                                                                      ;ENABLE LINK MODULE
                                                                =
                                                                           BIT7
                     000200
                                                                                      ENABLE MODE REGISTER
                                                      MODE
                                                                =
                                                      ARAM
                                                                           BIT6
                                                                                      ENABLE STATION ADDRESS RAM
                     000100
                                                                =
                                                      LINK MODE REGISTER
                                                      PROM
                     100000
                                                                           BIT15
                                                                                      :PROMISCUIOUS MODE
                                                      ENAL
                                                                           BIT14
                                                                                      ENABLE MULTICAST
                     040000
                                                                =
                                                                                      ENABLE COLLISION TEST
     86
87
                     004000
002000
                                                                           BIT11
                                                      ENCR
                                                                =
                                                                                      ENABLE ACLO
DISABLE RETRY LOGIC
SIMULATE A COLLISION
DISABLE TRANSMIT CRC LOGIC
                                                                           BIT10
                                                      ACLO
                                                                =
                                                                           BIT5
     88
                     000040
                                                      DRTY
                                                                =
                                                                           BIT4
     89
                     000020
                                                      COLL
                                                                =
                                                                           BIT3
     90
                     000010
                                                      DTCR
                                                                =
                                                                                      ENABLE LOOPBACK : HALF DUPLEX BIT
                                                                           BIT2
     91
                     000004
                                                      LOOP
                                                                Ξ
     92
93
                                                                           BITO
                     000001
                                                      HDX
     94
95
                                                     TRNVEC= 70
RCVVEC= 120
SANVEC= 134
                                                                                      : VECTOR ADDRESS FOR THE TRANSMITTER
                     000070
                                                                                      VECTOR ADDRESS FOR THE RECEIVER
                     000120
                                                                                      VECTOR ADDRESS FOR THE SANITY TIMER
     96
97
                     000134
                                                                                      VECTOR ADDRESS FOR CSR WRITE INTERRUPT
                                                                                      VECTOR ADDRESS FOR CSR WRITE INTERRUPT
VECTOR ADDRESS FOR DMA DONE INTERRUPT
VECTOR ADDRESS FOR LINK MEMORY PARITY ERROR
STACK LOCATION
IN MICROMONITOR STATE
IN A TEST STATE
IN ERROR STATE
CSR WRITE INTERRUPT OCCURED
UNEXPECTED ERROR OCCURED
PARITY ERROR OCCURED
NON-EXISTANT MEMORY ERROR OCCURRED
NPR TIMEOUT OCCURRED
TRANSMITTER INTERRUPT OCCURRED
                     000064
                                                      CSRVEC= 64
     98
                     000114
                                                      DMAVEC= 114
     99
                     000140
                                                      PARVEC= 140
    100
                     001000
                                                      STACK= 1000
    101
                     000001
                                                      INMON=
    102
                     000002
                                                      INTST=
                     000003
                                                      INERR=
                                                      CSRFLG= BITO
                     00001
    104
    105
                     000002
                                                      ERRFLG= BIT1
                                                      PARFLG= BIT2
                     000004
    106
                                                      NXMFLG= BIT3
    107
                     000010
                                                      NPRFLG= BIT4
    108
                     000020
                                                                                      TRANSMITTER INTERRUPT OCCURRED
                                                      TRNFLG= BITS
    109
                     000040
                                                                                       RECEIVER INTERRUPT OCCURRED
                     000100
                                                      RCVFLG= BIT6
    110
                                                                                       PCSRO FLAG INDICATING NPR ERROR OCCURRED
                                                      NPRERR= BIT15
    111
                      100000
                                                                                      PCSRO FLAG INDICATING NON-EXISTANT MEMORY ERROR OCCURRED
                                                      NXMERR= BIT14
    112
                     040000
```

MICROF - MICROCODE MODULE F MACY11 30(1046) 11-JAN-83 09:54 PAGE 4 OTHER DEFINITIONS USED BY THE MICROCODE

| 138 139 | | | | | .SBTTL | MICROCO | DE MODULE F | |
|--|--|--|--|--------------------------------------|---------|--|--|--|
| 140 141 142 143 1445 146 147 149 151 153 154 | 000000 000004 000012 000016 000024 000032 000040 000042 000046 000050 | 012737 012706 112767 016737 012737 010700 062700 005001 010021 012721 020127 | 000340 000000 001000 000001 000600 004000 000404 | 177776 000604 021020 021000 | MICROF: | :MTPS MOV MOVB MOV MOV MOV ADD CLR MOV MOV CMP BLT | #PRIO7 #0,a#CMDREG #STACK,SP #INMON,PCSR1 PCSR1,a#IPCSR0 PC,R0 #ERRINT,R0 R1 R0,(R1)+ #PRIO7,(R1)+ R1,#1000 10\$ | DISABLE INTERRUPTS TURN OFF THE LINK SETUP STACK TELL HOST WE ARE IN MICROMONITOR TELL HOST THE LOAD AND START FINISHED GET ADDRESS OF UNEXPECTED ERROR HANDLER FILL ALL UNUSED VECTORS WITH TRAP HANDLER |
| 155 156 157 158 159 | 000064' 000066' 000072' 000076' | 062700 010037. | 000462 000140 000340 | 000142 | | MOV ADD MOV MOV | PC.RO #PARINTRO RO.@#PARVEC #PRIO7.@#PARVEC+2 | SETUP PARITY TRAP VECTOR |
| 160 161 162 163 164 | 000104' 000106' 000112' 000116' | 062700 010037 | 000364 000114 000340 | 000116 | | MOV ADD MOV MOV | PC.RO #DMAINTRO RO.Ə#DMAVEC #PRIO7.Ə#DMAVEC+2 | SETUP DMA INTERRUPT VECTOR |
| 165 166 167 168 | 000124' 000126' 000132' 000136' | 062700 010037 | 000310 000064 000200 | 000066 | | MOV ADD MOV MOV | PC,RO #CSRWRT,RO RO,@#CSRVEC #PRIO4,@#CSRVEC+2 | ;SETUP CSR WRITE VECTOR |
| 169 170 171 172 173 | 000144' 000146' 000152' 000156' | 062700 010037 | 000316 000134 000240 | 000136 | | MOV ADD MOV MOV | PC,RO #TIMINT,RO RO,@#SANVÉC #PRIO5,@#SANVEC+2 | SETUP SANTITY TIMER VECTOR |
| 174 175 176 177 178 | 000164' 000166' 000172' 000176' | 062700 010037 | 000414 000070 000200 | 000072 | | MOV ADD MOV MOV | PC,RO #TRNINT,RO RO,@#TRNVÉC #PRIO4,@#TRNVEC+2 | :SETUP TRANSMITTER VECTOR |
| 179 180 181 182 183 | 000204' 000206' 000212' 000216' | 010700 062700 010037 012737 | 000360 000120 000240 | 000122 | | MOV ADD MOV MOV | PC,RO #RCVINT,RO RO,@#RCVVÉC #PRIO5,@#RCVVEC+2 | ;SETUP RECEIVER VECTOR |
| 184 185 186 187 188 | 000224' 000230' 000234' 000236' | 052700 006300 006300 | 021040 176000 | | | MOV BIS ASL ASL | a#PCSRSW.RO #176000,RO RO RO | GET SWITCH PACK BITS MAP THEM INTO HOST I/O PAGE SHIFT OVER TO POSITION CORRECTLY |
| 189 190 191 192 193 | 000240° 000242° 000246° 000252° 000260° | 062700 010067 012767 | 000004 000360 000003 000340 | 000354 | | ASL ADD MOV MOV CLR | RO #4,RO RO,IPCSR2 #3,IPCSR2+2 FLG6 | :PCSR2 IS PCSR0+4 :SAVE PCSR2 ADDRESS :HIGH ORDER BITS 17:16 :INITIALIZE FLAG WORD |

| MICROF MICROF | - MICROCO | DE MODUL | E F 17:53 | MACY11 | 30(1046) MICROCOD | 11-JAN- | -83 09:54 PAGE 5 | • |
|--|---|------------------------------------|------------------|------------------|----------------------------------|--------------------------|-----------------------------------|--|
| 194 | 0002641 | 106427 | 000000 | | 15\$: | MTPS | #PR100 | ; ALLOW INTERRUPTS |
| 195 196 197 198 | 000270 | 005767 001775 | 000330 | | 20\$: | TST BEQ | FLG6 20\$ | ; WAIT FOR A COMMAND FROM HOST |
| 199 | 000276 | 106427 032767 001001 | 000340 000001 | 000314 | | MTPS BIT BNE | #PRIO7 #CSRFLG,FLG6 30\$ | :RAISE CPU PRIORITY TO SERVICE COMMAND :DID HOST GIVE US A COMMAND? :YES |
| 202 203 | 000312 | 000777 | | | | BR | • | NO, ERROR SO JUST SIT HERE FOR LACK OF ANYTHING BETTER TO DO |
| 204 205 206 | 000314° 000320° | $\Lambda I \supset J \cap \Lambda$ | 021000 177760 | | 30\$: | MOVB BIC BNE | a#IPCSRO,RO #177760,RO 35\$ | GET WHAT HOST WROTE TO PCSRO STRIP ALL BUT COMMAND BITS WAS IT THE CLEAR FUNCTION? |
| 207 208 | 000326 | 012737 | 000001 | 021020 | | MOV BR | #INMON,@#IPCSR1 50\$ | YES, CLEAR OUT THE TEST # BITS |
| 210 210 211 | 000336' 000342' | 022700 | 000017 | | 35\$: | CMP BEQ | #17,R0 60\$ | :RESTART OPERATIONAL MICROCODE? ;YES |
| 212 213 | 000324* 000326* 000334* 000336* 000350* 000352* 000356* | 162700 010701 | 000001 000240 | | | SUB MOV ADD | #1,R0 PC,R1 #TBLD,R1 | GET ADDRESS OF OUR COMMAND TABLE |
| 201 201 202 203 204 206 207 208 207 208 207 208 207 208 208 209 208 208 208 208 208 208 208 208 208 208 | 000356° 000360° 000362° 000364° | 061101 | 000240 | | | ASL ADD ADD JSR | RO R1 (R1) R1 PC,(R1) | MAKE COMMAND A BYTE OFFSET USE IT TO INDEX INTO COMMAND TABLE R1 NOW HAS COMMAND ROUTINE ADDRESS EXECUTE AS COMMANDED FROM HOST ERROR OCCURRED INDICATE TO HOST WE ARE BACK IN |
| 219 220 | 000366° 000376° | 103404 112767 | 000001 | 000232 | | BCS MOVB BR | 40\$ #INMON,PCSR1 45\$ | ; ERROR OCCURRED ; INDICATE TO HOST WE ARE BACK IN ; MICROMONITR |
| 222 | 000400° | 112767 | 000003 000216 | 000222 | 40 \$: 45 \$: | MOVB MOV | WÍNERR PCSR1 PCSR1, á#IPCSR1 | ;INDICATE TO HOST ERROR OCCURRED |
| 224 225 | 000414 | 012737 | 004000 000176 | 021000 | 50\$: | MOV CLR | #DNI,@#IPCSRO FLG6 | TELL HOST THIS MICROTEST FINISHED RESET FLAG WORD |
| 226 227 | 0004261 | 000716 | | | | BR | 15 \$ | GO WAIT FOR ANOTHER CUMMAND |
| 228 | 0004301 | 005000 000137 | 040006 | | 60\$: | CLR JMP | R0 a#40006 | FAKE SUCCESSFUL SELF TEST RESULTS START OPERATIONAL MICROCODE |
| 231 232 | 000436° 000444° | 052767 000002 | 000001 | 000160 | CSRWRT: | BIS RTI | #CSRFLG,FLG6 | :INDICATE A CSR WRITE INTERRUPT OCCURED |
| 229 231 231 233 233 235 237 237 243 243 243 | 000446° 000454° | 052767 012737 | 000002 | 000150 021000 | ERRINT: | BIS MOV | #ERRFLG,FLG6 #UNIERR,@#IPCSRO | INDICATE A UNEXPECTED INTERRUPT OCCURED TELL HOST AN UNEXPECTED INTERRUPT HAPPENED |
| 237 238 | 000462 | G00777 | | | | BR | • | JUST SIT HERE AND SPIN WHEELS COUNT ON HOST TO TIMEOUT |
| 239 240 241 | 000464° 000470° | 005267 000002 | 000136 | | TIMINT: | INC RTI | SANTIM | COUNT TICKS AS THEY OCCUR |
| 242 243 244 | 000472' 000500' | 013767 032767 | 021002 040000 | 000142 000134 | DMAINT: | BIT | a#DMACSR, DMDONE #BIT14, DMDONE | GET DMA STATUS DID A NON-EXISTANT MEMORY INTERRUPT OCCUR? |
| 245 246 247 | 000506 | 001404 012737 | 040000 | 021000 | | MOV | 10\$ #NXMERR,@#IPCSRO | :NO :YES. TELL HOST A NON-EXISTANT MEMORY :LOCATION WAS ADDRESSED |
| 248 249 | 3 000516" | 000407 032767 | 100000 | 000114 | 10\$: | BR BIT | 20\$ #BIT15,DMDONE | :DID A NPR TIMEOUT OCCUR? |

| | | | | | | | J 2 | |
|--|--|--|------------------|------------------|---|----------------------------------|---------------------------------------|---|
| MICROF MICROF | - MICROCO MAC 10 | DDE MODUI D-JAN-83 | LE F 17:53 | MACY11 | 30(1046) MICROCOL | 11-JAN DE MODUL | -83 09:54 PAGE 6 E F | |
| 250 251 252 253 254 | 000526' 000530' 000536' 000544' 000546' | 012737 | 100000 | 021000 021002 | 20 \$: | BEQ MOV MOV BR RT1 | 30\$ #NPRERR,@#IPCSRO #BIT15,@#DMACSR | :NO :TELL HOST NPR TIMEOUT HAPPENED :CLEAR THE INTERRUPT IN THE DMA ENGINE :SIT HERE AND SPIN WHEELS |
| 252 253 254 255 256 257 258 260 261 262 263 | 000550° 000556° 000564° | 012737 | 000004 010000 | 000046 021000 | PARINT: | BIS MOV BR | #PARFLG,FLG6 #PARERR,@#IPCSRO | SET PARITY ERROR OCCURRED TELL HOST A LINK MEMORY PARITY ERROR OCCURRED JUST SIT HERE AND SPIN WHEELS COUNT ON HOST TO TIMEOUT |
| 262 263 | 000566 | 005737 | 021044 | | RCVINT: | TST | a#LRBUF | READ BUFFER DONE REGISTER |
| 264 265 | 000572' 000600' | 052767 000002 | 000100 | 000024 | | BIS RTI | #RCVFLG,FLG6 | SET RECEIVER INTERRUPT OCCURRED |
| 266 267 268 269 | 000602' 000610' | 052767 000002 | 000040 | 000014 | TRNINT: | BIS RTI | #TRNFLG,FLG6 | ;SET TRANSMITTER INTERRUPT OCCURRED |
| 270 271 272 273 274 | 000612' 000614' 000616' 000620' | 000460 001032 001544 | | | TBLD: | .WORD .WORD .WORD .WORD | MICF1 MICF2 MICF3 MICF4 MICF5 | CRC DATA PATTERN CRC ERROR TEST CRC PATTERN LENGTH BUFFER RECOVERY TEST HALF-DUPLEX TEST |
| 275 276 277 278 279 280 281 282 283 284 285 286 | 000624' 000626' 000630' 000636' 000642' 000644' 000646' 000650' | 00000 00000 00000 00000 00000 00000 0000 | 000000 | | FLG6: SANTIM: PCSR1: IPCSR2: PCBADR: DMDONE: RBUFP: TBUFP: CRC1: CRC23: CRC4: | .WORD .WORD .WORD | | ;FLAG WORD :COUNT FOR SANITY TIMER :COPY OF WHAT GOES TO PCSR1 :ADDRESS IN HOST MEMORY FOR PCSR2 :ADDRESS IN HOST MEMORY FOR PCB :POINTER TO RECIEVE BUFFER :POINTER TO XMIT BUFFER :HOLDS LAST DATA BYTE AND 1ST CRC BYTE :HOLDS 2ND AND 3RD CRC BYTES :HOLDS 4TH CRC BYTE |

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MACY11 30(1046) 11-JAN-83 09:54 PAGE 7
MICROF - MICROCODE MODULE F
                               10-JAN-83 17:53
                                                                                            MICROCODE MODULE F
MICROF MAC
      **** SUBROUTINES ****
                000656' 106746
000660' 010046
000662' 010146
000664' 010246
000666' 012704
000672' 012705
000676' 112001
000700' 004767
000704' 077204
000706' 012602
000710' 012601
000712' 012600
000714' 106426
000716' 000207
                                                                                                                                 -(SP)
R0,-(SP)
R1,-(SP)
R2,-(SP)
#INITH,R4
                                                                                                                                                                                         : SAVE PSW
: SAVE RO
                                                                                             BLKCRC: MFPS
                                                                                                               MOV
                                                                                                               MOV
                                                                                                               MOV
                                                                                                                                                                                         : INITIAL CRC HIGH WORD
: INITIAL CRC LOW WORD
                                                                                                               MOV
                                                        177777
                                                                                                                                 #INITL,R5
(R0)+,R1
PC,GETCRC
R2,10$
(SP)+,R2
                                                                                                               MOV
                                                        177777
                                                                                                                                                                                        GET NEXT BYTE
CALCULATE CRC
LOOP TILL DONE
                                                                                             10$:
                                                                                                               MOVB
                                                                                                                JSR
                                                        000014
                                                                                             205:
                                                                                                                SOB
                                                                                                               MOV
                                                                                                               MOV
                                                                                                                                  (SP)+R1
                                                                                                               MOV
                                                                                                                                  (SP)+R0
                                                                                                               MTPS
                                                                                                                                  (SP)+
                                                                                                                RTS
                                                                                                                                  PC
                 000720' 106746
000722' 010146
000724' 010246
000726' 010346
000730' 042701
000734' 074105
000736' 012702
000742' 012703
000746' 012701
000752' 000241
000756' 006004
000756' 074204
000760' 103002
000762' 074204
000766' 074305
000766' 077107
000770' 012603
000772' 012602
000776' 106426
001000' 000207
       310
                                                                                                                                                                                          : SAVE REGISTERS
                                                                                             GETCRC: MFPS
                                                                                                                                  -(SP)
       311
312
313
                                                                                                                                  R1,-(SP)
                                                                                                                MOV
                                                                                                                                  R2,-(SP)
R3,-(SP)
#^(377,R1
                                                                                                                MOV
                                                                                                                MOV
       314
                                                                                                                                                                                            CLEAR HIGH BYTE
MERGE NEW BYTE WITH OLD CRC
GET POLYNOMIAL HIGH WORD
                                                                                                                BIC
       177400
                                                                                                                                  R1,R5
                                                                                                                XOR
                                                                                                                                  WPOLYH, R2
                                                                                                                MOV
                                                        166670
                                                                                                                                                                                          : GET CRC POLYNOMIAL LOW WORD
                                                                                                                                                                                         GET CRC POLYNOMIAL LOW WO LOOP COUNT
CLEAR THE CARRY
SHIFT RIGHT THE CRC
32 BITS WORTH
SKIP IF BIT O NOT SET
EXCLUSIVE OR IN THE POLY
ROTH HIGH AND LOW WORDS
ND LOOP ON ALL 8 BITS
RESTORE REGISTERS
                                                                                                                MOV
                                                                                                                                  MPOLYL, R3
                                                        101440
                                                                                                                MOV
                                                                                                                                  #8.,R1
                                                        000010
                                                                                             105:
                                                                                                                CLC
                                                                                                                ROR
                                                                                                                                  R5
                                                                                                                ROR
                                                                                                                                   20$
                                                                                                                BCC
                                                                                                                                  R2,R4
R3,R5
                                                                                                                XOR
                                                                                                                XOR
                                                                                                                                   R1,10$
                                                                                             20$:
                                                                                                                SOB
                                                                                                                                   (SP)+,R3
(SP)+,R2
                                                                                                                MOV
                                                                                                                MOV
                                                                                                                                   (\tilde{S}P)+R1
                                                                                                                MOV
                                                                                                                                   (SP)+
                                                                                                                MTPS
                                                                                                                RTS
```

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MICROF - MICROCODE MODULE F
                                    MACY11 30(1046) 11-JAN-83 09:54 PAGE 8
                10-JAN-83 17:53
MICROF_MAC
                                             MICROCODE MODULE F
   334
335
336
                                              SBTTL CRC DATA PATTERN TEST
   337
338
339
                                               ***** TELL HIM WE ARE TESTING *****
        001002' 112767 000002 177620
   341
                                             MICF1:
                                                                #INTST, PCSR1
                                                      MOVB
                                                                                           : TELL HOST WE ARE TESTING
        001010 016737 177614 021020
                                                       MOV
                                                                PCSR1, ANIPCSR1
   343
   344
345
                                               **** RETRIEVE PATTERN FROM HOST MEMORY ****
   346
347
   348
        001016' 016737
                           177610
                                    021010
                                                                IPCSR2, @#MDMA0
IPCSR2+2, @#MDMA1
                                                                                           : SET TO GET HOST PCBB ADDRESS
        001024' 016737
   349
                           177604
                                    021012
                                                       MOV
        001032 013700
   350
                           021014
                                                                a#MDMARO,RO
                                                       MOV
                                                                                           ; P5 NOW CONTAINS PCBB LOW
         001036' 013701
   351
                           021014
                                                       MOV
                                                                a#MDMARO,R1
                                                                                           ; R1 NOW CONTAINS PCBB HIGH
        001042' 010037
001046' 010137
001052' 013703
   352
                           021010
                                                       MOV
                                                                RO, @#MDMAO
                                                                                           : POINT AT PCBB
   353
                           021012
                                                       MOV
                                                                R1,a#MDMA1
   354
                           021014
                                                       MOV
                                                                a#MDMARO.R3
                                                                                           : R3 NOW HOLDS DATA PATTERN
   355
   356
357
358
                                               **** FILL RECEIVE BUFFER WITH BACKGROUND PATTERN ****
   359
   360
        001056' 012700
001062' 010067
001066' 005020
001070' 020027
001074' 103774
   361
                           100000
                                                      MOV
                                                                #LINADR,RO
                                                                                           : RECEIVE BUFFER STARTS HERE
   362
363
364
                           177556
                                                      MOV
                                                                RO.RBUFP
                                             10$:
                                                      CLR
                                                                (RO)+
                                                                                           ; FILL RECEIVE BUFFER WITH ZEROS
                           104000
                                                      CMP
                                                                RO.#LINADR+SIZ1K
                                                                                           : STOP AT THE TOP
  365
366
367
368
                                                                10$
                                                      BLO
   369
                                               **** FILL XMIT BUFFER WITH TEST PATTERN ****
   370
   371
   372
        001076' 010067
                          177544
                                                                RO, TBUFP
                                                      MOV
                                                                                           : SAVE COPY OF ADDRESS
        001102' 010320
   373
                                             20$:
                                                                R3(R0) +
                                                      MOV
                                                                                           ; FILL XMIT BUFFER WITH PATTERN
   374
        001104' 020027
                           110000
                                                      CMP
                                                                RO.#L'NADR+SIZ2K
   375
        0011101 103774
                                                      BLO
                                                                20$
   376
377
   378
   379
                                               **** SET UP LINK FOR DATAGRAM LOOPBACK ****
   380
   381
        001112' 012737
001120' 012737
   382
                          000200 177776
                                                               #MODE, a#CMDREG
#PROM!LOOP, a#MODREG
                                                      MOV
                                                                                           ; ENABLE LINK, SELECT MODE REG
                           100004
   383
                                    177774
                                                      MOV
                                                                                           ; PROM MODE AND LOOPBACK
   384
        001126' 012737
                           100000
                                    177776
                                                      MOV
                                                               WENABLE, aWCMDREG
                                                                                           : ENABLE IT
   385
   386
        001134' 016701
                           177506
                                                      MOV
                                                                TBUFP,R1
                                                                                           : POINT AT XMIT BUFFER
        001140' 005021
   387
                                                      CLR
                                                                (R1)+
                                                                                           : CLEAR OUT STATUS WORD
        001142' 012721
   388
                                                      MOV
                                                               WMAXBC,(R1)+
                                                                                             CLEAR OUT THE FIFO
        001146' 005037
                           021034
                                                               a#CLRFIF
                                                                                           : CLEAR THE F1FO
```

| MICROF MICROF. | - MICROC | ODE MODU 0-JAN-83 | ILE F 5 17:53 | MACY11 | 30(1046) CRC DAT | 11-JAN A PATTER | 1-83 09:54 PAGE 9 | |
|--|--|--------------------------------------|--------------------------------------|------------------|---------------------|---------------------------|---|---|
| 390 391 392 393 | 001152' 001156' 001164' | 005067 016737 016737 | 177446 177462 177456 | 021032 021030 | • | CLR MOV MOV | FLG6 RBUFP,@#LFRBUF TBUFP,@#LTAC | : TELL DEUNA RECEIVE BUF LOC : TELL DEUNA WHERE XMIT BUF IS |
| 394 395 396 397 398 399 | 001172' 001176' 001204' | 032767 | 000140 000100 | 177420 | 30\$: | MTPS BIT BEQ | #PRIO3 #RCVFLG,FLG6 30\$ | ; ALLOW INTERRUPTS ; WAIT FOR RECEIVER INTERRUPT |
| 398 399 400 | 001206' 001214' | 032767 001774 | 000040 | 1774;0 | 40\$: | BIT BEQ | #TRNFLG,FLG6 | ; WAIT FOR XMIT INTERRUPT TOO |
| 401 402 | 001216' | 106427 | 000340 | | ; ; | MTPS | #PR107 | ; DISABLE INTERRUPTS |
| 403 404 405 406 407 | | | | | **** | CALCULA | TE THE CRC ON THE RECE | IVER BUFFER CONTENTS **** |
| 408 409 410 411 | 001222' 001226' 001232' 001236' | 016700 062700 012702 004767 | 177416 000004 002756 177414 | | • | MOV ADD MOV JSR | RBUFP,RO #4,RO #MAXBC+4,R2 PC,BLKCRC | POINT AT RECEIVE BUFFER BY-PASS THE STATUS AND BC INCLUDE CRC BYTES |
| 412 413 414 415 | 001236 001242 001246 001250 | 020427 001010 020527 | 157273 020343 | | | CMP BNE CMP | R4, MEXCRCH 50\$ R5, MEXCRCL | ; ERROR IF NOT |
| 416 417 418 | 001254* 001256* 001260* 001266* | 001005 000241 112767 | 000001 | 177343 | 45\$: : | BNE CLC MOVB RTS | 50\$ #1,PCSR1+1 PC | ; INDICATE SUCCESS ; TELL WHAT TEST WE JUST FINISHED |
| 419 420 421 422 423 | | | | | | | ******** XIT **** | |
| 424 425 426 427 | 001270° 001272° | 000261 000772 | | | 50\$: | SEC BR | 45\$ | ; TELL HIM WE MADE ERROR ; LEAVE |

| MICROF MICROF. | - MICROCO | DDE MODU D-JAN-83 | LE F 17:53 | MACY11 | 30(1046) CRC DAT | 11-JAN A PATTER | 1-83 09:54 PAGE 10 PN TEST | |
|--|---|--|--|------------------|---------------------|---|--|---|
| 428 429 430 431 432 | | | | | SBTTL | CRC ERR | OR TEST M WE ARE TESTING **** | |
| 429 431 433 433 433 433 433 441 441 | 001274° 001302° | | 000002 177322 | 177326 021020 | MICF2: | MOVB MOV | #INTST,PCSR1 PCSR1,@#IPCSR1 | ; TELL HOST WE ARE TESTING |
| 440 441 | | | | | **** | RETRIEV | E PATTERN FROM HOST MEN | 10RY ***** |
| 442 443 4445 446 447 448 450 451 | 001310' 001316' 001324' 001330' 001334' 001344' | 016737 013704 013705 010437 010537 | 177316 177312 021014 021014 021010 021012 021014 | 021010 021012 | <i>:</i> | MOV MOV MOV MOV MOV MOV | IPCSR2, a#MDMA0 IPCSR2+2, a#MDMA1 a#MDMARO, R4 a#MDMARO, R5 R4, a#MDMAO R5, a#MDMA1 a#MDMARO, R3 | ; SET TO GET HOST PCBB ADDRESS ; R4 NOW CONTAINS PCBB LOW ; R5 NOW CONTAINS PCBB HIGH ; POINT AT PCBB ; R3 NOW HOLDS DATA PATTERN |
| 452 453 | | | | | **** | FILL RE | CEIVE BUFFER WITH BACK | ************************************** |
| 451 452 453 454 455 457 458 460 461 462 | 001350' 001354' 001360' 001362' 001366' | 010067 005020 020027 | 100000 177264 104000 | | 10\$: | MOV MOV CLR CMP BLO | #LINADR,RO RO,RBUFP (RO)+ RO,#LINADR+SIZ1K 10\$ | ; RECEIVE BUFFER STARTS HERE ; FILL RECEIVE BUFFER WITH ZEROS ; STOP AT THE TOP |
| 463 464 | | | | | **** | | IT BUFFER WITH TEST PAT | |
| 465 466 467 468 469 470 471 | 001370° 001374° 001376° 001402° | 010320 020027 | 177252 110000 | | 20\$: | MOV MOV CMP BLO | RO, TBUFP R3, (RO) + RO, #L INADR+SIZ2K 20\$ | : SAVE COPY OF ADDRESS : FILL XMIT BUFFER WITH PATTERN |
| 472 473 474 475 476 | | | | | **** | CAL CULA | TE CRC ON TRANSMIT BUFF | ER **** |
| 477 478 479 480 481 482 483 | 001404° 001410° 001414° 001420° 001424° 001430° 001434° | 062700 012702 004767 016700 062700 | 177236 000004 002746 177232 177216 000004 002746 | | • | MOV ADD MOV JSR MOV ADD ADD | TBUFP,RO #4,RO #MAXBC-4,R2 PC,BLKCRC TBUFP,RO #4,RO #MAXBC-4,RO | POINT AT RECEIVE BUFFER SKIP 1ST WORD AND BYTE COUNT DO A BUNCH POINT AT XMIT BUFFER BY-PASS STATUS AND BC ADD BUFFER OFFSET |

| MICROF MICROF | - MICROCO | DDE MODU D-JAN-83 | LE F 17:53 | MACY11 | 30(1046) CRC ERR | 11-JAN OR TEST | 1-83 09:54 PAGE 11 | |
|--|---|--|--|----------------------------|---------------------|---|---|---|
| 484 485 486 487 488 490 491 493 | 001440' 001442' 001444' 001446' 001450' | 005105 005205 | | | **** | COM COM INC MOV MOV | R4 R5 R5 R5,(R0)+ R4,(R0)+ | ; MUST SEND THE COMPLEMENT ; INTRODUCE AN ERROR IN CRC! ; APPEND THE CRC WORD ; APPEND THE OTHER CRC WORD |
| 494 495 496 497 | 001452' 001460' 001466' | 012737 012737 012737 | 000200 100014 100000 | 177776 177774 177776 | • | MOV MOV MOV | #MODE.a#CMDREG #PROM!LOOP!DTCR.a#MODRE #ENABLE.a#CMDREG | ; ENABLE, SELECT MODE ; PROM MODE AND LOOPBACK ; ENABLE THE XMTR |
| 498 499 500 501 502 503 504 505 | 001474' 001500' 001502' 001506' 001512' 001516' | 005021 | 177146 002752 021034 177106 177122 177116 | 021032 021030 | ; | MOV CLR MOV CLR CLR MOV MOV | TBUFP,R1 (R1)+ #MAXBC,(R1)+ a#CLRfIF FLG6 RBUFP,a#LFRBUF TBUFP,a#LTAC | : POINT AT XMIT BUFFER : CLEAR OUT STATUS WORD : CLEAR OUT THE FIFO : CLEAR THE FIFO : TELL DEUNA RECEIVE BUF LOC : TELL DEUNA WHERE XMIT BUF IS |
| 506 507 508 509 510 | 001532' 001536' 001544' | 106427 032767 | 000140 000100 | _ | ; 30\$: | MTPS BIT BEQ | #PRIO3 #RCVFLG,FLG6 30\$ | : ALLOW INTERRUPTS : WAIT FOR RECEIVER INTERRUPT |
| 511 512 513 514 515 | 001554' | 001774 | 000040 | 177050 | 40\$: : | BIT BEQ MTPS | #TRNFLG,FLG6 40\$ #PR107 | : WAIT FOR XMIT INTERRUPT TOO : DISABLE INTERRUPTS |
| \$16 517 518 519 | | | | | **** | WRITE S | TATUS REGISTER TO HOST M | ******** EMORY **** **** |
| 521 522 | 001562' 001566' | 012700 011003 | 100000 | | • | MOV MOV | #LINADR,RO (RO),R3 | GET RECEIVE STATUS WORD GET STATUS WORD |
| 521 521 522 523 524 525 527 528 531 533 533 537 | 001570° 001576° 001604° 001610° 001614° 001620° 001622° 001626° 001632° | 016737 013700 013701 062700 005501 010037 010137 | 177036 177032 021014 021014 000002 021010 021012 021026 | 021010 021012 | <i>:</i> | MOV MOV MOV ADD ADC MOV MOV | IPCSR2,@#MDMA0 IPCSR2+2,@#MDMA1 @#MDMAR0,R0 @#MDMAR0,R1 #2,R0 R1 R0,@#MDMA0 R1,@#MDMA1 R3,@#MDMA1 | : SET TO GET HOST PCBE : RO NOW CONTAINS PCBB LOW : R1 NOW CONTAINS PCBB HI : BUMP TO NEXT HOST WORD : POINT TO PCBB : WRITE STATUS WORD TO HOST |
| 534 535 536 537 | 001636° 001644° 001646° | 000241 | 000002 | 176765 | : | MOVB CLC RTS | #2,PCSR1+1 PC | ; TELL HIM WHICH TEST IT IS |

| MICROF - | - MICROCODE MODUI MAC 10-JAN-83 | LE F MACY11 17:53 | 30(1046) CRC ERR | 11-JA | C 3 N-83 09:54 PAGE 12 | |
|--|--|--|--------------------------|--|--|---|
| 539 539 541 543 5445 545 555 555 555 555 555 | | | **** | ***** | ATTERN LENGTH TEST | |
| 544 545 546 547 | 001650° 112767 001656° 016737 | 000002 176752 176746 021020 | | MUVB MOV | WINTST, PCSR1 PCSR1, awipcsR1 | ; TELL HOST WE ARE TESTING |
| 549 550 551 | | | **** | RETRIE | VE PATTERN FROM HOST ME | MORY **** |
| 552 553 554 555 557 558 559 560 561 562 563 | 001664' 016737 001672' 016737 001700' 013704 001764' 013705 001710' 010437 001714' 010537 001720' 013703 | 176742 021010 176736 021012 021014 021014 021010 021012 021014 | | MOV MOV MOV MOV MOV MOV | IPCSR2, a/MDMAO IPCSR2+2, a/MDMA1 a/MDMARO, R4 a/MDMARO, R5 R4, a/MDMAO R5, a/MDMA1 a/MDMARO, R3 | ; SET TO GET HOST PCBB ADDRESS : R4 NOW CONTAINS PCBB LOW : R5 NOW CONTAINS PCBB HIGH ; POINT AT PCBB ; R3 NOW HOLDS DATA PATTERN |
| 562 563 564 | | | **** | FILL ! | RECEIVE BUFFER WITH BACK | CAOUND PATTERN **** |
| 565 566 567 568 569 570 571 | 001724' 012700 001730' 010067 001734' 005020 001736' 020027 001742' 103774 | 100000 176710 104000 | ; 10 \$: ; | MOV MOV CLR CMP BLO | #LIMAC: , RU RG, RBUFP .RO)+ RO, #LIMADR+SIZIK 10\$ | : RECEIVE BUFFER STARTS HERE : FILL RECEIVE BUFFER WITH ZEROS : STOP AT THE TOP |
| 572 573 574 575 | | | **** | fit. | MIT BUFFER WITH TEST P | ATTERN **** |
| 576 577 578 579 580 581 | 001744' 010067 001750' 010320 001752' 020027 001756' 103774 | 176676 110000 | : 20\$: : | MOV MOV (MP BLO | RO,TBUFP R3.(RO)+ R0.#LINADR+SIZ2K 20\$ | : SAVE COPY OF ADDRESS : FILL XMIT BUFFER WITH PATTERN |
| 582 583 584 585 | | | | RETRI | EVE BYTE COUNT FROM HOS | T MEMORY **** |
| 586 587 588 589 590 591 592 593 | 001760' 016737 001766' 016737 001774' 013704 002000' 013705 002004' 062704 002010' 005505 002012' 010437 | 176646 021010 176642 021010 021014 021014 000002 | | MOV MOV MOV ADD ADC MOV | IPCSR2, a#MDMAO IPCSR2+2, a#MDMA1 a#MDMARO, R4 a#MDMARO, R5 #2, R4 R5 R4, a#MDMAO | : SET TO GET HOST PCBB : R4 NOW CONTAINS PCBB LO : R5 NOW CONTAINS PCBB HI : BUMP LOW BY TWO : POINT AT PCBB |

| - MICROCOD MAC 10- | E MODUL | E F 17:53 | MACY11 3 | 0(1046) CRC PAT | 11-JAN TERN LEN | -83 09:54 PAGE 13 GTH TEST | |
|---|--|--|---|--|---|---|--|
| 002016° 0 | 10537 13703 | 021012 021014 | | : | MOV MOV | R5,@#MDMA1 @#MDMAR0,R3 | ; R3 NOW HOLDS BYTE COUNT |
| | | | | **** | CALCULA | TE CRC ON TRANSMIT BUFFE | R **** |
| 0020321 0 | 162700 110302 | 176614 000004 | | • | MOV ADD MOV | TBUFP,R0 #4,R0 R3,R2 | POINT AT RECEIVE BUFFER BY-PASS STATUS AND BC R3 CONTAINS BYTE COUNT |
| 002040' 0 002044' 0 002050' 0 002054' 0 002056' 0 | 004767 016700 062700 060300 005104 | 176612 176576 000004 | | | JSR MOV ADD ADD COM | PC,BLKCRC TBUFP,RO #4,RO R3,RO R4 | : POINT AT XMIT BUFFER : BY-PASS STATUS AND BC : ADD BUFFER BYTE COUNT : COMPLEMENT BEFORE SENDING |
| 002062' 0 | 05105 | 000001 | | | COM BIT BEQ | ♥1,R0 25\$ | :ARE WE LOOKING AT AN ODD BOUNDARY? :NO, GOOD IT MAKES THINGS EASIER |
| 002070' 1 002074' 0 002100' 1 |)11067 10567 00305 | 000001 176550 176545 | | ; | SUB MOV MOVB SWAB | #1,R0 (RÓ),CRC1 R5,CRC1+1 R5 | POINT BACK TO EVEN BOUNDARY GET DATA BYTE AND JUNK REPLACE JUNK WITH 1ST CRC BYTE POSITION 2ND CRC BYTE GET 3ND CRC BYTE POSITION 4TH CRC BYTE CLEAR JUNK FOR THE HELL OF IT STORE DATA AND 1ST CRC BYTE IN BUFFER STORE 2ND AND 3RD CRC BYTES IN BUFFER |
| 002116' 0 002116' 0 | 110467)00304 | 176535 | | | MOVB Swab | R5,CRC23 R4,CRC23+1 R4 | GET AND CHE BYTE GET 3RD CRC BYTE POSITION 4TH CRC BYTE |
| 002140° C | 105067 016720 016720 016710 | 176530 176525 176514 176512 176510 | | | MOVB CLRB MOV MOV MOV BR | R4,CRC4 CRC4+1 CRC1,(R0)+ CRC23,(R0)+ CRC4,(R0) 26\$ | CLEAR JUNK FOR THE HELL OF IT STORE DATA AND 1ST CRC BYTE IN BUFFER STORE 2ND AND 3RD CRC BYTES IN BUFFER STORE 4TH CRC BYTE IN BUFFER CARRY ON |
| 002150° 0 |)10520)10420 | | | 25 \$: 26 \$: ; | MOV MOV | R5,(R0)+ R4,(R0)+ | ; APPEND THE CRC WORD ; APPEND THE OTHER CRC WORD |
| | | | | **** | SET UP | LINK FOR DATAGRAM LOOPBA | ******* (K **** ****** |
| 002152' (002160' (002166' (| 012737 | 000200 100014 100000 | 177776 177774 177776 | • | MOV MOV MOV | #MODE, @#CMDREG #PROM!LOOP!DTCR, @#MODRE #ENABLE, @#CMDREG | G : ENABLE, SELECT MODE : PROM MODE AND LOOPBACK : LET HER GO! |
| 002174 ' (| 005021 | 176446 | | • | MOV CLR ADD | TBUFP,R1 (R1)+ #4,R3 | POINT AT XMIT BUFFER CLEAR OUT STATUS WORD ACCOUNT FOR CRC BYTES |
| 002206' | 010321 005037 | 021034 | | | MOV CLR | R3,(R1)+ @#CLRFIF | ; WRITE THE BYTE COUNT ; CLEAR THE FIFO |
| 002220 ' 002226 ' (| 016737 | 176420 176414 | 021032 021030 | ; | MOV MOV | RBUFP, and FRBUF TBUFP, and TAC | : TELL DEUNA RECEIVE BUF LOC : TELL DEUNA WHERE XMIT BUF IS |
| | 002016' 0 002032' 0 002032' 0 002036' 0 002036' 0 002056' 0 002056' 0 002056' 0 002056' 0 002056' 0 002056' 0 002056' 0 00216' 0 002116' 0 002134' 0 002134' 0 002136' 0 002152' 0 002220' 0 002220' 0 002220' 0 002220' 0 002220' 0 002220' 0 002220' 0 002220' 0 002220' 0 002220' 0 002220' 0 002220' 0 002220' 0 002220' 0 002220' 0 002220' 0 002220' 0 002220' 0 | .MAC 10-JAN-83 002016' 010537 002022' 013703 002026' 016700 002032' 062700 002036' 010302 002040' 004767 002044' 016700 002056' 005104 002056' 005105 002066' 001427 002070' 162700 002074' 011067 002106' 010567 002106' 110567 002112' 110467 002112' 110467 002120' 110467 002130' 016720 002134' 016720 002134' 016720 002146' 010520 002146' 010520 002150' 010420 002152' 012737 002166' 010321 002200' 005021 002200' 005021 002200' 005021 002200' 005037 002214' 005067 002220' 016737 002226' 016737 | .MAC 10-JAN-83 17:53 002016' 010537 021012 002022' 013703 021014 002032' 062700 000004 002036' 010302 002040' 004767 176612 002044' 016700 176576 002050' 062700 000004 002056' 005104 002060' 005105 002062' 032700 000001 002070' 162700 000001 002074' 011067 176550 002100' 110567 002100' 176545 002104' 000305 00212' 110467 176535 002116' 000304 002120' 110467 176535 002116' 000304 002120' 110467 176535 002130' 016720 176514 002134' 016701 176514 002134' 016701 176510 002144' 000402 002146' 010520 002152' 012737 000200 002166' 012737 100000 002174' 016701 176510 002146' 010520 002152' 012737 000200 002152' 012737 000200 002152' 010420 002152' 012737 100000 | .MAC 10-JAN-83 17:53 002016' 010537 021012 002022' 013703 021014 002032' 062700 000004 002036' 010302 002044' 016700 176576 002050' 062700 000004 002054' 060300 002054' 060300 002056' 005105 002062' 032700 000001 002066' 001427 002070' 162700 000001 002074' 011067 176550 002100' 110567 176545 002106' 110567 176545 0021106' 110567 176545 002112' 110467 176535 002116' 000304 002120' 110467 176535 002116' 000304 002124' 105067 176512 002130' 016720 176514 002134' 016720 176512 002144' 000402 002146' 010520 002146' 010520 002146' 010520 002152' 012737 000200 177776 002166' 012737 100014 177774 002174' 016701 176510 002152' 012737 100000 177776 002174' 016701 176446 002200' 005021 002166' 012737 100000 177776 002174' 016701 176446 002200' 005037 021034 002202' 062703 000004 002206' 010321 002202' 062703 000004 002206' 010321 002206' 010321 002206' 010321 002206' 010321 002210' 005037 021034 002220' 016737 176414 021030 | .MAC 10-JAN-83 17:53 CRC PAT | MAC 10-JAN-83 17:53 CRC PATTERN LENG | 002016: 010537 021012 002022: 013703 021014 |

| MICROF MICROF. | - MICROCO | DDE MODUI | LE 5 17:53 | MACY11 | 30(1046) CRC PAT | 11-JAN TERN LEN | N-83 09:54 PAGE 14 | |
|---|--|--|--|------------------|---------------------|---|--|---|
| 650 651 653 654 655 657 658 | 002234° 002240° 002246° | 106427 032767 001774 | 000140 000100 | 176356 | 30\$: | MTPS BIT BEQ | #PRIO3 #RCVFLG,FLG6 30\$ | ; ALLOW INTERRUPTS ; WAIT FOR RECEIVER INTERRUPT |
| 654 655 | 002250' 002256' | 032767 001774 | 000040 | 176346 | 40\$: | BIT BEQ | #TRNFLG,FLG6 | ; WAIT FOR XMIT INTERRUPT TOO |
| 657 658 | 005560. | 106427 | 000340 | | ; ; | MTPS | #PR107 | ; DISABLE INTERRUPTS |
| 660 661 662 | | | | | **** | WRITE S | TATUS REGISTER TO HOST | ************************************** |
| 663 664 665 666 | 002264 ' 002270 ' | 016700 011003 | 176354 | | ; | MOV MOV | RBUFP,RO (RO),R3 | GET RECEIVE STATUS WORD |
| 666 668 669 670 671 672 673 676 676 | 002272' 002300' 002306' 002312' 002316' 002322' 002330' 002334' | 016737 013700 013701 062700 005501 010037 010137 | 176334 176330 021014 021014 000004 021010 021012 021026 | 021010 021012 | ; ; | MOV MOV MOV ADD ADC MOV MOV | IPCSR2, a/MDMA0 IPCSR2+2, a/MDMA1 a/MDMARO, RO a/MDMARO, R1 #4, RO R1 R0, a/MDMA0 R1, a/MDMA1 R3, a/MDMAWO | : SET TO GET HOST PCBB : RO NOW CONTAINS PCBB LOW : R1 NOW CONTAINS PCBB HI : BUMP TO NEXT HOST WORD : POINT TO PCBB : WRITE STATUS WORD TO HOST |
| 677 678 679 680 681 682 683 | 002340' 002344' 002346' 002352' 002360' | 011203 010337 112767 000241 | 176302 021026 000003 | 176251 | <i>;</i> | MOV MOV MOVB CLC RTS | TBUFP,R2 (R2),R3 R3,@MMDMAWO W3,PCSR1+1 PC | GET XMIT BUFFER STATUS WRITE XMIT STATUS TO HOST TELL HIM WHICH TEST IT IS |

| | | | F 3 | |
|---|--------------------------------|--------------------------------|--|--|
| MICROF - MICROCODE MOD MICROF.MAC 10-JAN-8 | ULE F MACY11 3 17:53 | 30(1046) 11-J CRC PATTERN L | AN-83 09:54 PAGE 15 ENGTH TEST | |
| 684 685 686 | | SBTTL RECEI | VE BUFFER RECOVERY - RUI | NT TEST |
| 686 687 688 689 690 | | ***** TELL | HIM WE ARE TESTING | • |
| 691 002364' 112767 692 002372' 016737 | 000002 176236 176232 021020 | | #INTST,PCSR1 PCSR1,a#IPCSR1 | ; TELL HOST WE ARE TESTING |
| 693 694 002400' 005067 695 | 176222 | ; CLR | SANTIM | ; CLEAR FLAG FOR TIMER |
| 696 697 698 699 700 | | **** CLEAR | THE RECEIVE BUFFER *** | * * * * |
| 701 002404' 012700 702 002410' 010067 | 176230 | ; Mov Mov | #LINADR,RO RO,RBUFP | ; RECEIVER BUFFER STARTS HERE |
| 703 002414' 005020 704 002416' 020027 705 002422' 103774 706 707 | 104000 | 10\$: CLR CMP BLO | (RÓ)+ RO,#LINADR+SIZ1K 10\$ | ; FILL BUFFER WITH ZEROS ; STOP AT THE TOP |
| 707 708 709 710 711 | | ***** FILL | XMIT WITH RUNT MARKER * | *** *** |
| 712 002424 010067 713 002430 012720 714 002434 020027 715 002440 103773 716 | 125252 110000 | 20\$: MOV CMP BLO | RO,TBUFP #125252,(RO)+ RO,#LINADR+SIZ2K 20\$ | ; SAVE COPY OF THE ADDRESS |
| 718 719 | | | EVE BYTE COUNT FROM HOS | |
| 720 721 722 <u>002442' 016737</u> | 176164 021010 |) MOV | IPCSR2.@#MDMAO | ; SET TO GET HOST PCBB ADDRESS |
| 723 002450' 016737 724 002456' 013700 725 002462' 013701 726 002466' 010037 | 021014 021014 021010 | MOV MOV MOV | IP(SR2+2,a#MDMA1 a#MDMARO,RO a#MDMARO,R1 RO,a#MDMAO | : R4 NOW CONTAINS PCBB LOW : P5 NOW CONTAINS PCBB HIGH : POINT AT PCBB |
| 727 002472° 010137 728 002476° 013703 729 | 2 021012 3 021014 | MOV MOV | R1,@#MDMA1 @#MDMARO,R3 | ; R3 NOW HOLDS BYTE COUNT |
| 730 731 732 733 | | **** SET U | JP LINK FOR RUNT DATAGRA | ************************************** |
| 734 735 002502' 012737 736 002510' 012737 737 002516' 012737 | 7 100014 17777 <i>6</i> | 4 MOV | #MODE, @#CMDREG : DI #PROM!LOOP!DTCR, @#MC #ENABLE, @#CMDREG | SABLE XMIT CRC - TRUE BC DREG |
| 738 739 | 176116 | ; MOV | TBUFP,R4 | ; POINT AT XMIT BUFFER |

| MICROF MICROF | - MICROCO | DDE MODUI 0-JAN-83 | 17:53 | MACY11 | 30(1046) RECEIVE | 11-JAN BUFFER | -83 09:54 PAGE 16 RECOVERY - RUNT TEST | |
|--|---|----------------------------|--------------------------------------|----------------------------|--------------------------|----------------------------------|---|--|
| 740 741 | 0025321 | 005024 010324 | | | | CLR MOV | (R4)+ R3,(R4)+ | : CLEAR OUT STATUS WORD : WRITE PASSED BYTE COUNT |
| 742 743 744 745 746 747 | 002540' 002544' 002552' | 005067 016737 | 021034 176060 176074 176070 | 021032 021030 | : | CLR CLR MOV MOV | anclrfif flg6 rbufp,amlfrbuf tbufp,amltac | CLEAR THE FIFO CLEAR THE INTERRUPT FLAG TELL UNA WHERE RECEIVE BUF IS TELL UNA WHERE XMIT BUF IS |
| 748 749 750 751 752 753 | 002560' 002564' 002572' 002574' 002602' | 026727 002012 032767 | 000140 176036 000100 | 000002 176022 | 30\$: | MTPS CMP BGE BIT BEQ | #PRIO3 SANTIM,#2 50\$ #RCVFLG,FLG6 30\$ | ; ALLOW XMITTER TO INTERRUPT ; WAIT AT MOST 2 SECONDS ; EXIT NORMALLY IF TIMER DONE ; WAIT FOR RECEIVER INTERRUPT ; IF NONE, WERE OK |
| 754 755 756 757 | | | | | - | | ALLTHROUGH **** | |
| 758 759 760 | 0026041 | 032767 001774 | 000040 | 176012 | - | BIT BEQ | #TRNFLG,FLG6 40\$ | ; WAIT FOR XMIT INT TOO! |
| 761 762 763 764 765 | 002616 | 000261 000506 | | | : | EC 3R | 90\$ | : TELL HOST UNA SCREWED UP! : EXIT WITHOUT WRITING PTR |
| 765 766 767 768 | | | | | **** | NOW TRY | LEGITIMATE BUFFER SIZ | ****** E **** ***** |
| 769 770 771 772 773 774 | 002620° 002624° 002630° 002634° | 012720 020027 | 176022 052525 110000 | | 50\$: 60\$: | MOV MOV CMP BLO | TBUFP,RO #52525,(RO)+ RO,#LINADR+SIZ2K 60\$ | ; GET TRANSMIT BUFFER POINTER |
| 775 776 777 778 | | | | | **** | SET UP | LINK FOR MINIMUM DATAG | ************************************** |
| 779 780 781 782 783 | 002636° 002644° | 012737 | 000200 100004 100000 | 177776 177774 177776 | ; | MOV MOV MOV | #MODE.a#CMDREG #PROM!LOOP.a#MODREG #ENABLE.a#CMDREG | ; ENABLE LINK, SEL MODE REG |
| 783 784 785 786 787 | 002660 ' 002664 ' | 005024 | 175762 000100 | | . | MOV CLR MOV | TBUFP,R4 (R4)+ #MINBC,(R4)+ | : POINT AT XMIT BUFFER : CLEAR STATUS WORD : SEND SMALL DATAGRAM |
| 787 788 789 790 791 | 002672 ' 002676 ' | 016737 | 175726 175742 175736 | 021032 021030 | • | CLR MOV MOV | FLG6 RBUFP,@#LFRBUF TBUFP,@#LTAC | : TELL UNA WHERE RECEIVE BUF IS : TELL UNA WHERE XMIT BUF IS |
| 791 792 793 794 795 | 002712' 002716' 002724' | 032767 | 000140 000100 | 175700 | ; 70 \$: ; | MTPS BIT BEQ | #PR103 #RCVFLG,FLG6 70\$ | : ALLOW XMITR TO INTERRUPT : WAIT FOR RECEIVER INTERRUPT |

| MICROF MICROF | - MICROCO | DDE MODUI | LE F 17:53 | MACY11 | 30(1046) RECEIVE | 11-JAN- BUFFER | -83 09:54 PAGE 17 RECOVERY - RUNT TEST | |
|---|--|--|--|------------------|---------------------|--|---|--|
| 796 797 | 002734 | 032767 001774 | 000040 | 175670 | 80\$: | BIT BEQ | #TRNFLG,FLG6 80\$ | ; WAIT FOR XMIT INT TOO! |
| 798 799 800 | 002736 | 106427 | 000340 | | ; ; | MTPS | #PRI07 | : DISABLE INTERRUPTS |
| 801 802 803 804 | | | | | **** | WRITE P | ARAMETERS TO HOST PEBB | * * * * * * * * * * |
| 805 806 | 0027421 | 013703 | 021044 | | ; | MOV | a#LRBUF,R3 | ; GET LINK POINTER |
| 807 808 | 002746 | 016700 | 175672 | | • | MOV ADD | RBUFP,RO | ; POINT AT RECEIVER BUFFER |
| 809 810 811 | 002752 | 011004 | 000004 | | • | MOV | (RÓ),R4 | ; GET PATTERN WORD |
| 812 813 814 815 816 817 818 | 002760' 002766' 002774' 003000' 003004' 003010' | 016737 013700 013701 062700 005501 010037 | 175646 175642 021014 021014 000002 021010 | 021010 021012 | • | MOV MOV MOV ADD ADC MOV | IPCSR2, a#MDMA0 IPCSR2+2, a#MDMA1 a#MDMAR0, R0 a#MDMAR0, R1 #2, R0 R1 R0, a#MDMA0 | : SET TO GET HOST PCBB : RO NOW CONTAINS PCBB LO ; R1 NOW CONTAINS PCBB HI : POINT AT PCBB+2 |
| 820 821 822 823 | 003016 | 010777 | 021012 | | ; | MOV MOV | R1,a#MDMA1 P3.a#MDMAWO | : WRITE LINK POINTER |
| 823 824 | 003026 | 010437 | 021026 | | : | MOV | R4,9#MDMAWO | ; WRITE DATA BYTE |
| 824 825 826 827 828 | 003032° 003034° 003042° | 000241 112767 000207 | 000004 | 175567 | 90 \$: | CLC MOVB RTS | #4.PCSR1+1 PC | ; TELL HOST WE ARE DONE |

| MICROF MICROF | - MICROCO | DE MODUI | LE F 17:53 | MACY11 | | 11-JAN PLEX TES | | | |
|---|--|--------------------------------------|--------------------------------------|----------------------------|----------------------------|---------------------------|---|----|---|
| 829 830 | | | | | SBTTL | HALF-DU | PLEX TEST | | |
| 829 830 831 832 833 834 836 837 838 | | | | | **** | TELL HI | M WE ARE TESTING **** | | |
| 834 835 836 | 003044° 003052° | 112767 016737 | 000002 175552 | 175556 021020 | MICF5: | MOVB MOV | #INTST.PCSR1 PCSR1,@#IPCSR1 | : | TELL HOST WE ARE TESTING |
| 838 839 840 | 003060 | 005067 | 175542 | | • | CLR | SANTIM | : | CLEAR FLAG FOR TIMER |
| 840 841 842 843 | • | | | | **** | CLEAR T | HE RECEIVE BUFFER **** | | |
| 844 845 846 | 003064 | 012700 010067 | 100000 175550 | | ; | MOV MOV | #LINADR,RO RO,RBUFP | : | RECEIVER BUFFER STARTS HERE |
| 847 848 849 850 | 003074' 003076' 003102' | 005020 020027 | 104000 | | 10\$: | CLR (MP BLO | (RÓ)+ RO,#LINADR+S!Z1K 10\$ | : | FILL BUFFER WITH ZEROS STOP AT THE OP |
| 851 852 853 854 | | | | | **** | FILL XM | IIT WITH RUNT MARKER *** | * | |
| 856 857 858 859 860 | 003104° 003110° 003114° 003120° | 012720 020027 | 175536 125252 110000 | | 20\$: | MOV MOV CMP BLO | RO, TBUFP #125252,(RO)+ RO, #LINADR+SIZ2K 20\$ | ; | SAVE COPY OF THE ADDRESS |
| 861 862 863 864 | 3 | | | | **** | SET UP | LINK FOR RUNT DATAGRAM L | 00 | ************************************** |
| 865 866 867 868 | 003122° 003130° 003136° | 012/37 012737 012737 | 000200 100005 100000 | 177776 177774 177776 | • | MOV MOV MOV | ##ODE,@#CMDREG #PROM!LOOP!HDX,@#MODREG #ENABLE,@#CMDREG | ; | DISABLE XMIT CRC - TRUE BC |
| 869 870 871 872 |) 003144' 003150' 003152' | | 175476 | | • | MOV CLR MOV | TBUFP,R4 (R4)+ R3,(R4)+ | : | POINT AT XMIT BUFFER CLEAR OUT STATUS WORD WRITE PASSED BYTE COUNT |
| 873 874 875 876 877 | 003154' 003160' 003164' 003172' | 005037 005067 016737 016737 | 021034 175440 175454 175450 | 021032 021030 | ; | CLR CLR MOV MOV | a#CLRf1f flG6 rbufp,a#lfrbuf tbufp,a#ltac | • | CLEAR THE FIFO CLEAR THE INTERRUPT FLAG TELL UNA WHERE RECEIVE BUF IS TELL UNA WHERE XMIT BUF IS |
| 878 879 880 881 883 | 9 003200° 0 007/04° | 002012 | 000140 175416 000100 | 000002 175402 | <i>:</i> 30 \$: | MTPS CMP BGE BIT | #PRIO3 SANTIM,#2 50\$ #RCVFLG,FLG6 | • | ALLOW XMITTER TO INTERRUPT WAIT AT MOST 2 SECONDS EXIT NORMALLY IF TIMER DONE WAIT FOR RECEIVER INTERRUPT |
| 88 88 88 88 | 3 003222° | 001770 | | | ; | BEQ | 30\$ | ; | IF NONE, WERE OK |

| MICROF. | - MICROCO | DDE MODU D-JAN-83 | LE F 17:53 | MACY11 | |) 11-JA UPLEX TE | N-83 09:54 PAGE 19 ST | |
|---|--|----------------------|----------------------------|----------------------------|----------------------------|--------------------------|--|--|
| 885 886 887 888 889 | | | | | **** | • ERROR | FALLTHROUGH **** | |
| 889 890 891 892 | 003224' 003232' | 032747 001774 | 000040 | 175372 | ξ 0 \$: | BIT BEQ | #TRNFLG,FLG6 | ; WAIT FOR XMIT INT TOO! |
| 893 894 895 | 003234' 003236' | 000261 000503 | | | : : | SEC BR | 90\$ | : TELL HOST UNA SCREWED UP! : EXIT WITHOUT WRITING PTR |
| 896 897 898 899 | | | | | **** | NOW SE | E IF BUFFER RECOVERS **** | |
| 900 901 902 903 904 905 | 003240° 003244° 003250° 003254° | 012720 020027 | 175402 052525 110000 | | 50\$: 60\$: | MOV MOV (MP BLO | TBUFP,R0 #52525,(R0)+ R0,#LINADR+SIZ2K 60\$ | ; GET TRANSMIT BUFFER POINTER |
| 906 907 908 909 | | | | | **** | * SET UP | LINK FOR MINIMUM DATAGRAM | MESSAGE **** |
| 910 911 912 913 | 003256' 003264' 003272' | 012737 | 000200 100004 100000 | 177776 177774 177776 | • | MOV MOV | #MODE. @#CMDREG #PROM!LOOP. @#MODREG #ENABLE, @#CMDREG | ; ENABLE LINK, SEL MODE REG |
| 914 915 916 917 | 003300° 003304° 003306° | 005024 | 175342 000100 | | : | MOV CLR MOV | TBUFP,R4 (R4)+ #MINBC,(R4)+ | POINT AT XMIT BUFFFR CLEAR STATUS WORD SEND SMALL DATAGRAM |
| 918 919 920 921 | 003312' 003316' 003324' | 016737 | 175306 175322 175316 | 021032 021030 | ; | CLR MOV MOV | FLG6 RBUFP, @#LFRBUF TBUFP, @#LTAC | : TELL UNA WHERE RECEIVE BUF IS : TELL UNA WHERE XMIT BUF IS |
| 922 923 924 925 | 003332° 003336° 003344° | 032767 | 000140 000100 | 175260 | <i>:</i> 70 \$: | MTPS BIT BEQ | #PRIO3 #RCVFLG,FLG6 70\$ | : ALLOW XMITR TO INTERRUPT : WAIT FOR RECEIVER INTERRUPT |
| 926 927 928 | 003346° 003354° | 032767 001774 | 000040 | 175250 | 805: | BIT BEQ | #TRNFLG,FLG6 80\$ | ; WAIT FOR XMIT INT TOO! |
| 929 930 931 | 003356* | 106427 | 000340 | | : : | MTPS | #PR107 | : DISABLE INTERRUPTS |
| 921 923 923 923 924 926 928 928 929 931 933 934 938 938 939 | | | | | *** | + WRITE | PARAMETERS TO HOST PCBB + | * * * * * * * * * * * * |
| 936 937 | 003362' | 013703 | 021044 | | | MOV | a#LRBUF,R3 | : GET LINK POINTER |
| 938 939 940 | 003366' 003372' | 016700 062700 | 175252 000004 | | • | MOV ADD | RBUFP,RO #4,RO | : POINT AT RECEIVER BUFFER |

| MICROF MICROF | - MICROCO MAC 10 | DE MODUL)-JAN-83 | 17:53 | MACY11 | 30(1046) HALF-DU | 11-JAN- PLEX TES | | |
|---------------------------------|---------------------|----------------------|------------------|------------------|---------------------|---------------------|------------------------------------|--|
| 941 942 943 | 0033761 | 011004 | | | : | MOV | (RO),R4 | ; GET PATTERN WORD |
| 944 | | 016737 016737 | 175226 175222 | 021010 021012 | • | MOV MOV | IPCSR2,@#MDMAO IPCSR2+2,@#MDMA1 | ; SET TO GET HOST PCBB |
| 945 946 | 0034141 | 013700 | 021014 | 021012 | | MÓV | a/MDMARO,RO | RO NOW CONTAINS PEBB LO |
| 947 948 | 003420° 003424° | 013701 010037 | 021014 021010 | | | MOV MOV | a#MDMARO,R1 RO,a#MDMAO | RÍ NÓW CONTAINS PCBB HI POINT AT PCBB+2 |
| 949 950 | 0034301 | | 021012 | | • | MOV | R1,8#MDMA1 | |
| 951 | 003434 | 010337 | 021026 | | • | MOV | R3, a/MDMAWO | : WRITE LINK POINTER : WRITE DATA BYTE |
| 952 953 954 955 956 | 0034401 | Č10437 | 021026 | | : | MOV | R4, @#MDMAWO | ; WRITE DATA BYTE |
| 954 | 003444 | 000241 | | | • | CLC | | |
| 956 | 0034461 | 112767 | 000005 | 175155 | 90\$: | MOVB | #5,PCSR1+1 | ; TELL HOST WE ARE DONE |
| 957 958 | 003454 | 000207 | | | | RTS | PC | |
| 959 | 003456 | 003460 | | | MICFSZ: | :MICFSZ- | MICROF+2 | |
| 960 961 | | 000001 | | | END | | | |

| MICROF - MICROCOD MICROF.MAC 10- | E MODUL | E F 17:53 | MACY11 | 30(1046) CROSS RE | 11-JAN- | -83 09:5 | 4 PAGE USER SY | 22 MBOLS | | | | | | SEQ |
|--|-------------------|---|---|---|------------------------|---------------------|----------------------|------------------------------|---------------------|---------------------|------|-------|------------|--------------|
| ACLO = 002000 ADRERR = 000001 ADRREG = 177774 ARAM = 000100 BITO = 000001 BIT1 = 002000 BIT11 = 004000 BIT12 = 010000 BIT13 = 020000 BIT14 = 040000 BIT15 = 100000 BIT15 = 100000 BIT15 = 000000 BIT1 = 0000000 BIT1 = 0000000 BIT1 = 0000000 BIT1 = 0000000 | | 8704888 1380488888888888888888888888888888888888 | 92 105 75 70 68 90 88 88 75 56 | 104 73 86 71 113 85 78 106 107 108 109 110 | 87 114 112 84 | 244 111 | 249 | 252 | | | | | | |
| BLKCRC 000656R CLRFIF= 021034 CMDREG= 177776 | 002 | 45# 295# 22# 35# 868* | 411 389* 142* 911* | 480 502* 382* 913* | 605 645* 384* | 743+ 495+ | 874 * 497* | 637* | 639* | 735+ | 737* | 780• | 782• | 866* |
| COLL = 000020 CRC1 000650R CRC23 000652R CRC4 000654R CSRFLG= 000001 CSRVEC= 000064 CSRWRT 000436R | 002 002 002 | 89# 284# 285# 286# 104# 97# 166 | 615* 618* 621* 200 167* 231# | 616* 619* 622* 231 168* | 623 624 625 | | | | | | | | | |
| DATERR= 000000 DMACSR= 021002 | | 129# 9# | 243 | 252* | | | | | | | | | | |
| DMAF = 021022 DMAINT 000472R DMATO = 021004 DMAT1 = 021006 | 002 | 17# 161 10# 11# | 243# | | | | | | | | | | | |
| DMAVEC= 000114 DMAWC = 021024 | | 98# 18# | 162* | 163• | | | | | | | | | | |
| CMDONE 000642R DNI = 004000 DRTY = 030040 | 002 | 243* 72# 88# | 244 146 | 249 224 | 281# | | | | | | | | | |
| DTCR = 000010 ENABLE = 100000 ENAL = 040000 ENCR = 004000 | | 90# 78# 85# 86# | 496 384 | 638 497 | 736 639 | 737 | 782 | 868 | 913 | | | | | |
| ERRFLG= 000002 ERRINT 000446R EXCRCH= 157273 EXCRCL= 020343 FAT1 = 000400 | 002 | 105# 148 136# 137# 74# | 234 234# 412 414 | | | | | | | | | | | |
| FLG6 000624R | 002 | 193• 503• | 196 508 | 200 511 | 225* 646* | 231 • 651 | 234 • 654 | 256 * 744 * | 264 • 751 | 267 * 759 | 276# | 390 • | 395 204 | 398 975 • |
| GETCRC //00720R HDX = 000001 | 002 | 882 302 92# | 890 311# 867 | 919• | 924 | 927 | 0)4 | 144= | 7)1 | 137 | 788∗ | 793 | 796 | 875* |

| MICROF - MICROCODE MODULE F MICROF.MAC 10-JAN-83 17:53 | MACY11 30(1046) CROSS R | 11-JAN-8 | 3 09:5 ABLE | 4 PAGE USER SY | 23 MBOLS | | | | | | SEQ |
|--|--|----------------------------|----------------------------|------------------------------|----------------------------|----------------------------|---------------------|------------|------------|------|------|
| INERR = 000003 103# INITH = 177777 132# INITL = 177777 133# INMON = 000001 101# INTST = 000002 102# IOADR = 020000 124# | 222 299 300 144 341 435 125 125 | ∠20 545 | 691 | 835 | | | | | | | |
| IOSIZ = 020000 120# IPCSR0= 021000 8# IPCSR1= 021020 16# IPCSR2 000632R 002 191* 667 LASFTP= 012400 56# | 125 146* 205 145* 208* 192* 279# 668 722 | 224* 223* 348 723 | 235* 342* 349 813 | 246* 436* 443 814 | 251* 546* 444 944 | 257* 692* 524 945 | 836 * 525 | 553 | 554 | 587 | 588 |
| LFRBUF = 021032 21# LINADR = 100000 126# 714 | 391* 504* 361 364 772 845 | 647 * 374 848 | 745 + 456 858 | 789* 459 903 | 876* 469 | 920 * 521 | 556 | 569 | 579 | 701 | 704 |
| LINSIZ= 077774 122# LOOP = 000004 91# LRBUF = 021044 26# LIAC = 021030 20# | 383 496 262 806 392* 505* | 638 937 648* | 736 746* | 781 790* | 867 877* | 912 921* | | | | | |
| MAXBC = 002752 | 388 410 350 351 595 669 | 479 354 670 | 483 445 724 | 501 446 725 | 449 728 | 526 815 | 527 816 | 555 946 | 556 947 | 559 | 589 |
| MDMAW0= 021026 19# MDMAW1= 021036 23# | 532* 675* | 680* | 822* | 823* | 951* | 952* | | | | | |
| MDMA0 = 021010 12# 722* | 348* 352* 726* 813* | 443* 819* | 447* 944* | 524 * 948 * | 530* | 553* | 557* | 587* | 593* | 667* | 673* |
| MDMA1 = 021012 13# 723* | 349* 353* 727* 814* | 444 * 820* | 448* 945* | 525 * 949 * | 531* | 554* | 558* | 588* | 594+ | 668• | 674* |
| MDMSR = 021042 | 341# 435# 545# 691# 835# 959 786 917 382 495 383* 496* | 637 638* | 735 736* | 780 781* | 866 867* | 911 912* | | | | | |
| NXMERR= 040000 112M NXMFLG= 000010 107M PARERR= 010000 114M PARFLG= 000004 106M PARINT 000550R 002 156 PARVEC= 000140 99M PCBADR 000636R 002 280M PCEi = 040000 69M | 246 257 256 256# 157* 158* | | | | | | | | | | |
| PCSRSW= 021040 24N PCSR1 000630R 002 144* 546 PHYAD0= 021060 27N PHYAD1= 021062 28N PHYAD2= 021064 29N | 185 145 220* 681* 691* | 222 • 692 | 223 827* | 278# 835* | 341* 836 | 342 956* | 417* | 435* | 436 | 535• | 545* |

| MICROF - MICROF.M | MICROCODI NAC 10- | E MODUL JAN-83 | E F 17:53 | MACY11 | 30(1046) CPOSS RE | 11-JAN- FERENCE | 83 09:5 TABLE | 4 PAGE USER SY | 24 MBOLS | | | | | | 36 |
|--|--|-------------------|---|---|--------------------------|--------------------|---------------------|-------------------|-------------|------------|-------------|---------------------|------------|------------|------------|
| | 021070 021072 166670 101440 000000 000040 000100 000140 000200 | | 30# 31# 32# 135# 63# 63# 60# 59# | 317 318 194* 394* 168 173 | 507* 178 183 | 650* | 748* | 792* | 879* | 923* | | | | | |
| PRIO6 = PRIO7 = | 000300 | | 58# 57# | 141* | 151 | 158 | 163 | 199+ | 401* | 514* | 657* | 799* | 930+ | | |
| PROM = RBUFP | 100000 000644R | 002 | 84# 282# 846* | 383 362* 876 | 496 391 920 | 638 408 939 | 736 457* | 781 504 | 867 567* | 912 647 | 664 | 702* | 745 | 789 | 808 |
| RCVFLG= RCVINT RCVVEC= ROMADR= ROMSIZ= | 000566R 000120 040000 040000 | 002 | 73# 110# 181 95# 125# 121# | 264 262# 182* 126 126 | 395 183* | 508 | 651 | 751 | 793 | 882 | 924 | | | | |
| SANTIM SANVEC= | | 002 | 70# 240* 96# | 277# 172* | 694* 173* | 749 | 838* | 880 | | | | | | | |
| SIZ1K = SIZ2K = SIZ4K = SIZ8K = | 010000 020000 | | 68# 115# 116# 117# 118# 100# | 116 117 118 121 143 | 364 374 119 122 | 459 469 120 | 569 579 | 704 714 | 848 772 | 858 | 903 | | | | |
| TBLD | 000612R 000646R | 002 002 | 214 283# 648 | 270# 372* 678 | 386 712• | 392 739 | 467 * 746 | 477 770 | 481 784 | 499 790 | 505 856* | 577 * 870 | 602 877 | 606 901 | 641 915 |
| TRNVEC= | 000040 000602R | 002 | 921 171 109# 176 94# 71# | 240 m 267 267 m 177* | 398 | 511 | 654 | 759 | 796 | 890 | 927 | | | | |
| UNIERR= WCSADR= WCSSIZ= | 020000 030000 | 002 | 113# 123# 119# 148 271 | 235 124 124 156 272 | 161 273 | 166 274 | 171 | 176 | 181 | 202 | 214 | 238 | 253 | 259 | 270 |

. ABS. 0000 0 000 000000 001 MICRF 003460 002

ERRORS DETECTED: 0
DEFAULT GLOBALS GENERATED: 0

MICROF.OBJ, MICROF.LST/CRF/DOC/NL: TOC/SOL=MICROF.MAC

N(

MICROF - MICROCODE MODULE F MACY11 30(1046) 11-JAN-83 09:54 PAGE 25 CROSS REFERENCE TABLE -- USER SYMBOLS

RUN-TIME: 1 1 .3 SECONDS RUN-TIME RATIO: 40/3=11.5 CORE USED: 9K (18 PAGES)

DOCUMENT PAGES: 24

NO

```
MICROG. MAC
                                                              10-JAN-83 17:54
                                                                                                                                                                                ITITLE MICROG - MICROCODE MODULE G
                                                                                                                                                                                .CSECT MICRG
                                                                      000000
                                                                                                                                                                                                                      REGISTER DEFINITIONS USED BY THE T11
                                                                                                                                                                                .SBTTL
                                                                                                                                                                                                                                                                                        :INTERNAL PCSRO ADDRESS
;DMA ENGINE CONTROL STATUS REGISTER
;DMA ENGINE TO ADDRESS REGISTER #0
;DMA ENGINE TO ADDRESS REGISTER #1
;MICROCPU DMA TO ADDRESS REGISTER #0
;MICROCPU DMA TO ADDRESS REGISTER #1
;MICROCPU DMA DATA REGISTER - AUTO INCREMENT R/O
;MICROCPU DMA DATA REGISTER - AUTO DECREMENT R/O
;MICROCPU DMA DATA REGISTER - AUTO DECREMENT R/O
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IPCSR1
                                                                       021016
                                                                                                                                                                                                                                                                                         :MILKULPU DMA DAIA REGISTEM - AUTO DELREMENT R/O
:INTERNAL PCSR1 ADDRESS
:DMA ENGINE FROM ADDRESS REGISTER
:DMA ENGINE WORD COUNT REGISTER
:MICROCPU DMA DATA REGISTER - AUTO INCREMENT W/O
:LINK TRANSMIT ADDRESS COUNTER REGISTER
                 16
17
                                                                       021020
                                                                       021022
                                                                                                                                                                                DMAF
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MDMAWO
LTAC
LFRBUF
                  11222222222333333333333444444444455555555
                                                                       021024
                                                                       021026
                                                                                                                                                                                                                   Ξ
                                                                       021030
                                                                                                                                                                                                                   =
                                                                                                                                                                                                                                                                                           LINK RECIEVE BUFFER ADDRESS FIFO
                                                                       021032
                                                                                                                                                                                                                   =
                                                                                                                                                                                                                                                                                      CLEAR FIFO
MICROCPU DMA DATA REGISTER - AUTO DECREMENT W/O
SWITCH PACK REGISTER
MICROCPU DMA STATUS REGISTER
LINK RECIEVE BUFFER COMPLETED
PHYSICAL ADDRESS ROM BYTE 0
PHYSICAL ADDRESS ROM BYTE 1
PHYSICAL ADDRESS ROM BYTE 2
PHYSICAL ADDRESS ROM BYTE 3
PHYSICAL ADDRESS ROM BYTE 3
PHYSICAL ADDRESS ROM BYTE 5
LINK MODE REGISTER
LINK STATION ADDRESS RAM REGISTER
LINK COMMAND REGISTER
                                                                                                                                                                                                                                                                                          CLEAR FIFO
                                                                                                                                                                                CLRFIF
                                                                       021034
                                                                                                                                                                                                                   =
                                                                       021036
                                                                                                                                                                                MDMAW1
                                                                       021040
                                                                                                                                                                                PCSRSW
                                                                                                                                                                                                                   =
                                                                       021042
                                                                                                                                                                                MDMSR
                                                                                                                                                                                                                   =
                                                                       021044
                                                                                                                                                                                LRBUF
                                                                                                                                                                                                                   =
                                                                       021060
                                                                                                                                                                                PHYADO
                                                                                                                                                                                                                   =
                                                                                                                                                                                PHYAD1
PHYAD2
PHYAD3
                                                                       021062
                                                                                                                                                                                                                   =
                                                                       021064
                                                                                                                                                                                                                   =
                                                                       021066
                                                                                                                                                                                                                   =
                                                                       021070
021072
                                                                                                                                                                                PHYAD4
                                                                                                                                                                                                                   =
                                                                                                                                                                                PHYAD5
                                                                       177774
                                                                                                                                                                                MODREG
                                                                                                                                                                                                                   =
                                                                       177774
                                                                                                                                                                                 ADRREG
                                                                                                                                                                                                                   =
                                                                                                                                                                                                                                                        177774
                                                                       177776
                                                                                                                                                                                 CMDREG
                                                                                                                                                                                                                                                        177776
                                                                                                                                                                                                                        OTHER DEFINITIONS USED BY THE MICROCODE
                                                                                                                                                                                  .SBTTL
                                                                                                                                                                                                                                                       100000
40000
20000
10000
                                                                                                                                                                                BIT15
BIT14
BIT13
                                                                        100000
                                                                                                                                                                                                                    =
                                                                       100000
040000
020000
010000
004000
001000
000400
000200
000100
                                                                                                                                                                                                                   =
                                                                                                                                                                                                                   =
                                                                                                                                                                                 BIT12
                                                                                                                                                                                                                                                        4000
                                                                                                                                                                                 BITTI
                                                                                                                                                                                                                                                        2000
                                                                                                                                                                                 BIT10
                                                                                                                                                                                 BIT9
                                                                                                                                                                                                                                                        400
200
100
                                                                                                                                                                                 BIT8
                                                                                                                                                                                                                    =
                                                                                                                                                                                 BIT7
                                                                                                                                                                                                                    =
                                                                                                                                                                                                                    =
                                                                                                                                                                                  B116
                                                                                                                                                                                                                                                        40
20
10
                                                                                                                                                                                 BITS
                                                                        000040
                                                                                                                                                                                  BIT4
                                                                        000020
                                                                                                                                                                                  BIT3
                                                                        000010
                                                                                                                                                                                  BIT2
BIT1
                                                                        000004
                                                                         000002
                                                                                                                                                                                                                     =
                                                                                                                                                                                  BITO
                                                                         000001
                                                                                                                                                                                                                                                        BIT8:BIT10:BIT12 ; LOAD AND START FUNCTION TEST PATTERN
                                                                                                                                                                                  LASFIP
                                                                        012400
```

MACY11 30(1046) 11-JAN-83 09:54 PAGE 1

MICROG - MICROCODE MODULE G

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MACY11 30(1046) 11-JAN-83 09:54 PAGE 2
MICROG - MICROCODE MODULE G
                                                       OTHER DEFINITIONS USED BY THE MICROCODE
                  10-JAN-83 17:54
MICROG.MAC
                                                      PR107
                     000340
     300
240
200
                     000300
000240
000200
                                                      PR 106
                                                                 =
                                                      PRIOS
                                                                 =
                                                      PR104
                                                                 Ξ
                                                      PRI03
                                                                            140
                     000140
                                                                 =
                                                                            100
                     000100
                                                      PR102
                                                                 =
                     003040
                                                      PRIOT
                                                                 =
                                                                            40
                                                      PRIOD
                                                                            0
                     000000
                                                      PCSRO - PORT CONTROL STATUS REGISTER O
                                                       ŠFRI
                                                                            BIT15
                      100000
                                                                 =
                                                                            BIT14
                     040000
                                                      PCEI
                                                                 =
                                                                            BIT13
                      020000
                                                      RXI
                                                                 Ξ
                     010000
                                                      TXI
                                                                 =
                                                                            BIT12
                     004000
                                                      DNI
                                                                            BIT11
                                                                 =
                                                      RCEI
                                                                 =
                                                                            BIT10
                                                      FATI
                                                                            BIT8
                      000400
                                                       LINK COMMAND REGISTER
                                                                                       :ENABLE LINK MODULE
                                                                            BIT15
                                                       ÉNABLE
                      100000
                                                                 =
                                                                                       ENABLE MODE REGISTER
ENABLE STATION ADDRESS RAM
                                                                            BIT7
                      000200
                                                       MODE
                                                                 =
                      000100
                                                       ARAM
                                                                 =
                                                                            BIT6
                                                       LINK MODE REGISTER
                                                                                       ;PROMISCUIOUS MODE
;ENABLE MULTICAST
;ENABLE COLLISION TEST
;ENABLE ACLO
                                                       PROM
                                                                            BIT15
                      100000
                                                                 Ξ
                     040000
                                                                            BIT14
                                                                 =
                                                       ENAL
                                                                            BIT11
                                                      ENCR
                                                                 =
                                                                            BIT10
                      002000
                                                       ACLO
                                                                 Ξ
                                                                                       DISABLE RETRY LOGIC
                      000040
                                                       DRTY
                                                                            BIT5
                                                                 =
                                                                            BIT4
BIT3
                                                                                       SIMULATE A COLLISION
                                                      COLL
                      000020
                                                                 =
                                                                                       DISABLE TRANSMIT CRC LOGIC
                      000010
                                                       DICR
                                                                 =
                                                                                       ; ENABLE LOOPBACK
                                                                            BIT2
                                                       LOOP
                      000004
                                                                                       : VECTOR ADDRESS FOR THE TRANSMITTER
                                                       TRNVEC= 70
                      000070
                                                                                       VECTOR ADDRESS FOR THE RECEIVER
                     000120
                                                       RCVVEC= 120
                                                                                       : VECTOR ADDRESS FOR THE SANITY TIMER
                                                       SANVEC= 134
                                                                                       VECTOR ADDRESS FOR CSR WRITE INTERRUPT
                                                       CSRVEC= 64
                      000064
                                                                                       VECTOR ADDRESS FOR CSR WRITE INTERRUPT
VECTOR ADDRESS FOR DMA DONE INTERRUPT
VECTOR ADDRESS FOR LINK MEMORY PARITY ERROR
STACK LOCATION
IN MICROMONITOR STATE
IN A TEST STATE
IN ERROR STATE
CSR WRITE INTERRUPT OCCURED
                                                       DMAVEC = 114
                      000114
                                                       PARVEC= 140
                      000140
                      001000
                                                       STACK=
                                                                 1000
                      000001
                                                       INMON=
                      000002
                                                       INTSI=
     101
                                                       INERR=
     102
                      000003
000002
000004
000010
000020
000100
100000
040000
                                                       CSRFLG= BITO
                                                                                       UNEXPECTED ERROR OCCURED

PARITY ERROR OCCURED

NON-EXISTANT MEMORY ERROR OCCURRED

NPR TIMEOUT OCCURRED
                                                       ERRFLG= BITT
     104
                                                      PARFLG= BIT2
NXMFLG= BIT3
     105
     106
                                                       NPRFLG= BIT4
     107
                                                                                        TRANSMITTER INTERRUPT OCCURRED
                                                       TRNFLG= BITS
     108
                                                                                        RECEIVER INTERRUPT OCCURRED
                                                       RCVFLG= BIT6
     109
                                                                                        PCSRO FLAG INDICATING NPR ERROR OCCURRED
                                                       NPRERR= BIT15
     110
                                                                                       PCSRO FLAG INDICATING NON-EXISTANT MEMORY ERROR OCCURRED PCSRO FLAG INDICATING UNEXPECTED INTERRUPT OCCURRED
                                                       NXMERR= BIT14
     111
                                                       UNIERR= BIT13
                      020003
     112
```

NO NO

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MICROG - MICROCODE MODULE G
                                                   MACY11 30(1046) 11-JAN-83 09:54 PAGE 3
                      10-JAN-83 17:54
MICROG.MAC
                                                                 OTHER DEFINITIONS USED BY THE MICROCODE
    113
114
                         010000
                                                                PARERR= BIT12
                                                                                                      ;PCSRO FLAG INDICATING LINK MEMORY PARITY ERROR OCCURRED
                                                                SIZ1K= 4000
SIZ2K= SIZ1K+2
SIZ3K= SIZ1K+3
                         004000
                                                                                                      ; 1K WORDS
    115
                         010000
                                                                                                      : 2K WORDS
: 3K WORDS
                         014000
020000
    116
    117
                                                                S174K= S172K+2
S178K= S174K+2
                                                                                                      :4K WORDS
:8K WORDS
    118
                         040000
                                                                                                      SIZE OF WRITEABLE CONTROL STORE
SIZE OF I/O PAGE
SIZE OF ROM
SIZE OF LINK MEMORY
BASE ADDRESS OF WCS
BASE ADDRESS OF I/O PAGE
                                                               WCSSIZ= SIZ4K

10SIZ= SIZ4K

ROMSIL= SIZ8K

LINSIZ= SIZ8K+2-4
    119
                         020000
    120
121
122
123
124
125
126
127
                         020000
                         040000
                         077774
                         000000
                                                                WCSADR= 0
                         020000
                                                                10ADR= WCSADR+WCSS1Z
                         040000
                                                                ROMADR = IOADR + IOSIZ
                                                                                                       BASE ADDRESS OF ROM
                                                                                                      BASE ADDRESS OF LINK MEMORY
MAXIMUM W OF BYTES IN A TRANSMIT BUFFER
FLAG INDICATING DATA ERROR OCCURRED
NUMBER OF BYTES IN A CRC
FLAG INDICATING ADDRESS ERROR OCCURRED
                         100000
                                                                LINADR = ROMADR+ROMSIZ
                         002756
                                                                MAXBC = 1518.
    128
129
                                                                DATERR= 0
                         000004
                                                                CRCSIZ= 4
    130
                         000001
                                                                ADRERR= 1
    131
```

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NO NO

| MICROG - MICROCODE MODULE G MICROG.MAC 10-JAN-83 17:54 | MACY11 30(1046) 11-JAP OTHER DEFINIT | N-83 09:54 PAGE 4 IONS USED BY THE MICROCODI | : |
|--|---|---|--|
| 132 133 | .SBTTL MICROCO | ODE MODULE G | |
| 132 133 134 135 000000' 106427 000340 136 000004' 012706 001000 137 000010' 112767 000001 138 000016' 016737 000574 139 000024' 012737 004000 140 000032' 010700 141 000034' 062700 000404 142 000040' 005001 143 000042' 010021 144 000044' 012721 000340 145 000050' 020127 001000 146 000054' 002772 | 000600 MCVB 021020 MOV 021000 MOV MOV ADD CLR 10\$: MOV | <pre>#PRIO7 #STACK,SP #INMON,PCSR1 PCSR1,@#IPCSR1 #DNI,@#IPCSR0 PC,R0 #ERRINT,R0 R1 R0,(R1)+ #PRIO7,(R1)+ R1,#1000 10\$</pre> | DISABLE INTERRUPTS SETUP STACK TELL HOST WE ARE IN MICROMONITOR TELL HOST THE LOAD AND START FINISHED GET ADDRESS OF UNEXPECTED ERROR HANDLER FILL ALL UNUSED VECTORS WITH TRAP HANDLER |
| 147 148 000056' 010700 149 000060' 062700 000462 150 000064' 010037 000140 151 000070' 012737 000340 | MOV | PC,RO #PARINT,RG RO,@#PARVEC #PR107,@#PARVEC+2 | SETUP PARITY TRAP VECTOR |
| 149 000060' 062700 000462 150 000064' 010037 000140 151 000070' 012737 000340 152 153 000076' 010700 154 000100' 062700 000364 155 000104' 010037 000114 156 000110' 012737 000340 157 158 000116' 010700 159 000120' 062700 000310 160 000124' 010037 000064 161 000130' 012737 000200 162 163 000136' 010700 164 000140' 062700 000316 165 000144' 010037 000134 | MOV | PC,RO #DMAINTRO RO,@#DMAVEC #PRIO7,@#DMAVEC+2 | ;SETUP DMA INTERRUPT VECTOR |
| 158 000116' 010700 159 000120' 062700 000310 160 000124' 010037 000064 161 000130' 012737 000200 | MOV | PC.RO MCSRWRTRO RO.aMCSRVEC MPRIO4.aMCSRVEC+2 | SETUP CSR WRITE VECTOR |
| 166 000150' 012737 000240 | MOV | PC.RO #TIMINTRO RO.@#SANVÉC #PRIO5.@#SANVEC+2 | ;SETUP SANTITY TIMER VECTOR |
| 167 168 000156' 010700 169 000160' 062700 000414 170 000164' 010037 000070 171 000170' 012737 000200 | MOV | PC,RO #TRNINT,RO RO,Ə#TRNVÉC #PRIO4,Ə#TRNVEC+2 | ;SETUP TRANSMITTER VECTOR |
| 172 173 030176' 010700 174 000200' 062700 000360 175 000204' 010037 000120 176 000210' 012737 000240 | MOV | PC,RO WRCVINT-,RO RO,AWRCVVÉC WPRIO5,AWRCVVEC+2 | SETUP RECEIVER VECTOR |
| 177 178 000216' 013700 021040 179 000222' 052700 176000 180 000226' 006300 181 000230' 006300 182 000232' 006300 | | ampcsrsw.ro m176000,r0 ro ro ro | GET SWITCH PACK BITS ;MAP THEM INTO HOST I/O PAGE ;SHIFT OVER TO POSITION CORRECTLY |
| 181 000230 006300 182 000232 006300 183 000234 062700 000004 184 000240 010067 000354 185 000244 012767 000003 186 000252 005067 000334 187 000256 106427 000000 | ADD MOV 5 000350 MOV CLR | #4.RO RO,IPCSR2 #3.IPCSR2+2 FLG7 #PR100 | :PCSR2 IS PCSR0+4 :SAVE PCSR2 ADDRESS :HIGH ORDER BITS 17:16 :INITIALIZE FLAG WORD :ALLOW INTERRUPTS |

| | | | | | | | 6 4 | |
|--|--|--|--|--------------------------------------|-------------------------|---|--|---|
| MICROG . | - MICROCO MAC 10 | DE MODU D-JAN-83 | LE G 17:54 | MACY11 | 30(1046) MICROCO | 11-JAN DE MODUL | 1-83 09:54 PAGE 5 E G | |
| 188 189 190 | 000569, | 005767 001775 | 000324 | | 20\$: | TST BEQ | FLG7 20\$ | ; WAIT FOR A COMMAND FROM HOST |
| 191 192 193 194 195 | 000270° 000274° 000302° 000304° | 032767 001001 | 000340 000001 | 000310 | | MTPS BIT BNE BR | #PRIO7 #CSRFLG,FLG7 30\$ | ;RAISE CPU PRIORITY TO SERVICE COMMAND;DID HOST GIVE US A COMMAND?;YES;NO, ERROR SO JUST SIT HERE;FOR LACK OF ANYTHING BETTER TO DO |
| 197 198 199 200 201 202 203 204 205 206 207 208 209 210 | 000306' 000316' 000320' 000326' 000330' 000336' 000342' | 042700 001004 012737 000432 022700 001432 162700 010701 | 021000 177760 000001 000001 000001 | 021020 | 30 \$: | MOVB BIC BNE MOV BR CMP BEQ SUB MOV | amipcsro, RO #177760, RO 35\$ #INMON, amipcsr1 50\$ #17, RO 60\$ #1, RO PC, R1 | GET WHAT HOST WROTE TO PCSRO STRIP ALL BUT COMMAND BITS WAS IT THE CLEAR FUNCTION? YES, CLEAR OUT THE TEST # BITS RESTART OPERATIONAL MICROCODE? YES GET ADDRESS OF OUR COMMAND TABLE |
| 207 208 209 210 211 212 213 214 215 216 217 218 219 220 | 000350* 000352* 000354* 000356* 000360* 000370* 000372* 000400* | 006300 060001 061101 004711 103404 112767 000403 112767 016737 012737 | 000240 000001 000003 000212 004000 000172 | 000226 000216 021020 021000 | 40\$: 45\$: 50\$: | ADD ASL ADD ADD JSS MOV BR MOV MOV CLR BR | #TBLG,R1 R0 R0,R1 (R1),R1 PC,(R1) 40\$ #INMON,PCSR1 45\$ #INERR,PCSR1 PCSR1,@#IPCSR0 FLG7 15\$ | MAKE COMMAND A BYTE OFFSET USE IT TO INDEX INTO COMMAND TABLE R1 NOW HAS COMMAND ROUTINE ADDRESS EXECUTE AS COMMANDED FROM HOST ERROR OCCURRED INDICATE TO HOST WE ARE BACK IN MICROMONITR INDICATE TO HOST ERROR OCCURRED TELL HOST THIS MICROTEST FINISHED RESET FLAG WORD GO WAIT FOR ANOTHER COMMAND |
| 221 222 223 | 000422° 000424° | 005000 000137 | 040006 | | 60\$: | CLR JMP | RO a#40006 | FAKE SUCCESSFUL SELF TEST RESULTS START OPERATIONAL MICROCODE |
| 224 225 | 000430° 000436° | 052767 000002 | 000001 | 000154 | CSRWRT: | BIS RTI | #CSRFLG,FLG7 | ; INDICATE A CSR WRITE INTERRUPT OCCURED |
| 224 225 226 227 228 230 231 232 233 235 236 237 238 | 000440° 000446° 000454° | 012737 | 020000 | 000144 021000 | ERRINT: | BIS MOV BR | WERRFLG, FLG7 WUNIERR, @WIPCSRO | INDICATE A UNEXPECTED INTERRUPT OCCURED TELL HOST AN UNEXPECTED INTERRUPT HAPPENED JUST SIT HERE AND SPIN WHEELS COUNT ON THE HOST TO TIMEOUT WAITING |
| 232 233 234 235 | 000456° 000462° | 005267 000002 | 000132 | | TIMINT: | INC RTI | SANTIM | COUNT TICKS AS THEY OCCUR |
| 239 240 | 000464° 000472° 000500° 000502° | 032767 | 021002 040000 040000 | 000136 000130 021000 | DMAINT: | MOV BIT BEQ MOV | a#DMACSR,DMDONE #BIT14,DMDONE 10\$ #NXMERR,@#IPCSRO | GET DMA STATUS DID A NON-EXISTANT MEMORY INTERRUPT OCCUR? NO YES, TELL HOST A NON-EXISTANT MEMORY LOCATION WAS ADDRESSED |
| 241 242 243 | 000510° 000512° | 000407 032767 | 100000 | 000110 | 10\$: | BR BIT | 20\$ #BIT15,DMDONE | DID A NPR TIMEOUT OCCUR? |

SE SE ŠĹ \$1 S١ XF XF XF

NO

NO

MS

MS MS

MS

M\$ MS

MS

MS MS

MS

MS MS

MS

MS

OP

PC

PR PR

PR PR

RE

RE

RF

NC NC

| | | | | | | J 4 | |
|---|--|--|------------------|---------------------|--|--|--|
| MICROG - MICROG.M | MICROCODE MODU NAC 10-JAN-83 | | MACY11 | 30(1046) MICROCO | 11-JAN DE MODUL | | |
| 336 | 001114' 112767 001122' 016737 | 000002 177470 | 177474 021020 | MICG2: | MOVB MOV | WINTST,PCSR1 PCSR1,aWIPCSR1 | TELL HOST THAT WE ARE IN A TEST |
| 339 340 | 001130' 012700 001134' 010067 001140' 012720 001144' 020027 001150' 103773 | 100000 177472 177777 104000 | | 10\$: | MOV MOV MOV (MP BLO | #LINADR,RO RO,RBUFP #177777,(RO)+ RO,#LINADR+SIZ1K 10\$ | ; FILL RECEIVE BUFFER WITH ALL 1'S |
| 345 346 347 | 001152' 010067 001156' 005020 001160' 020027 001164' 103774 | 177456 110000 | | 20\$: | MOV (LR (MP BLO | RO_TBUFP (RO)+ RO_#LINADR+SIZ2K 20\$ | ; FILL TRANSMIT BUFFEP WITH ALL O'S |
| 348 349 | 001166' 016737 001174' 016737 | 177426 177422 | 021010 021012 | | MOV MOV | IPCSR2,@#MDMA0 IPCSR2+2,@#MDMA1 | GET HOST'S POBB ADDRESS |
| 351 352 353 | 001202' 013700 001206' 013701 001212' 010037 | 021014 021014 021010 | 021012 | | MOV MOV | a#MDMARO,RO a#MDMARO,R1 RO,a#MDMAO | :RO HOLDS HOST'S PCBB LOW ADDRESS :R1 HOLDS HOST'S PCBB HI ADDRESS :POINT TO PCBB+0 |
| 354 355 | 001216' 010137 001222' 013703 | 021012 021014 | | | MOV MOV | R1,@#MDMA1 @#MDMARO,R3 | GET BYTE COUNT FOR TRANSMIT OPERATION |
| 358 | 001226' 012737 001234' 012737 | 100200 100004 | 177776 177774 | | MOV MOV | #MODE!ENABLE,@#CMDREG #PROM!LOOP,@#MODREG | :ENABLE LINK MODULE AND SELECT MODE REG :ACCEPT ALL PACKETS IN LOOP BACK |
| 359 360 361 362 363 364 365 366 367 | 001242' 016704 001246' 005724 001250' 010324 001252' 005037 001256' 005067 001262' 016737 001270' 016737 | 177366 021034 177330 177344 177340 | 021032 021030 | | MOV TST MOV CLR CLR MOV MOV | TBUFP,R4 (R4)+ R3,(R4)+ a#CLRFIF FLG7 RBUFP,a#LFRBUF TBUFP,a#LTAC | POINT TO TRANSMIT BUFFER SKIP FIRST WORD SET BYTE COUNT TO HOST'S VALUE CLEAR THE FIFO CLEAR THE FLAG WORD TELL UNA WHERE RECEIVE BUFF IS TELL UNA WHERE TRANSMIT BUFF IS AND START THE TRANSMIT OPERATION |
| 370 371 | 001276' 106427 001302' 032767 001310' 001774 | 000140 000040 | 177302 | 30\$: | MTPS BIT BEQ | #PRIO3 #TRNFLG,FLG7 30\$ | ;ALLOW INTERRUPTS;WAIT FOR TRANSMIT DONE INTERRUPT |
| 372 373 | 0013121 106427 | 000340 | | | MTPS | #PR107 | ;DISABLE INTERRUPTS |
| 380 381 | 001316' 016702 001322' 005722 001324' 012203 001326' 042703 001332' 062700 001336' 005501 001340' 010037 001344' 010137 | 021010 | | | MOV TST MOV BIC ADD ADC MOV MOV | TBUFP,R2 (R2)+ (R2)+,R3 #176000,R3 #2,R0 R1 R0,@#MUMA0 R1,@#MDMA1 | POINT TO TRANSMIT BUFFER SKIP FIRST STATUS WORD GET SECOND STATUS WORD STRIP ALL BUT TDR VALUE BITS POINT TO HOST'S PCBB+2 |
| 383 384 | 001350 010337 | | | | MOV | R3, a#MDMAWO | ; DUMP TOR COUNTER VALUE TO P(BB+2 |
| 382 383 384 385 386 387 368 | 001354' 112767 001362' 000241 001364' 000207 | | 177235 | | MOVB (LC RTS | #2,PCSR1+1 PC | ; TELL HOST WHAT TEST JUST FINISHED |
| 389 390 | 001366' 112767 001374' 016737 | 000002 177216 | 177222 021020 | MICG3: | MOVB MOV | #INTST,PCSR1 PCSR1,a#IPCSR1 | ; TELL HOST THAT WE ARE IN A TEST |

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| MICROG · | | ROCO 10 | DE MODUL -JAN-83 | | MACY11 | 30(1046) MICROCOL | 11-JAN- DE MODULE | | |
|---|--------------------------------------|--------------------------|--|--|------------------|----------------------|--|---|--|
| 596 | 0014 0014 0014 | 06' 12' 16' | 012700 010067 012720 020027 103773 | 100000 177220 177777 104000 | | 10\$: | MOV MOV MOV (MP BLO | #LINADR,RO RO,RBUFP #177777,(RO)+ RO,#LINADR+SIZ1K 10\$ | ;FILL RECEIVE BUFFER WITH ALL 1'S |
| 397 398 399 400 401 402 | 0014 | 30' 32' | 010067 005020 020027 103774 | 177204 110000 | | 20\$: | MOV CLR CMP BLO | RO, TBUFP (RO)+ RO, #LINADR+SIZ2K 20\$ | ;FILL TRANSMIT BUFFER WITH ALL O'S |
| ፈበኛ | 0014 | 40: | 016737 | 177154 | 021010 021012 | | MOV MOV | IPCSR2,@#MDMAO IPCSR2+2,@#MDMA1 | GET HOST'S PCBB ADDRESS |
| 404 405 406 407 | 0014 0014 0014 | 54' 60' | 016737 013700 013701 010037 010137 | 177150 021014 021014 021010 | 021012 | | MOV MOV MOV | a/MDMARO,RO a/MDMARO,R1 RO,a/MDMAO | :RO HOLDS HOST'S PCBB LOW ADDRESS :R1 HOLDS HOST'S PCBB HI ADDRESS :POINT TO PCBB+0 |
| 409 | 0014 | 74' | 010137 | 021012 021014 | | | MOV MOV | R1,@#MDMA1 @#MDMARO,R3 | GET BYTE COUNT FOR TRANSMIT OPERATION |
| 410 411 412 413 | 0015 0015 | 00' | 012737 012737 | 100200 100024 | 177776 177774 | | MOV MOV | <pre>#MODE!ENABLE,@#CMDREG #PROM!LOOP!COLL,@#MODREG</pre> | :ENABLE LINK MODULE AND SELECT MODE REG :ACCEPT ALL PACKETS IN LOOP BACK AND :FORCE A COLLISION |
| 414 415 416 417 418 420 421 423 424 | 0015 0015 0015 0015 | 20' 22' 30' 34' | 016704 005724 010324 005037 005067 016737 | 177114 021034 177056 177072 177066 | 021032 021030 | | MOV TST MOV CLR CLR MOV MOV | TBUFP,R4 (R4)+ R3,(R4)+ a#CLRFIF FLG7 RBUFP,a#LFRBUF TBUFP,a#LTAC | POINT TO TRANSMIT BUFFER SKIP FIRST WORD SET BYTE COUNT TO HOST'S VALUE CLEAR THE FIFO CLEAR THE FLAG WORD TELL UNA WHERE RECEIVE BUFF IS TELL UNA WHERE TRANSMIT BUFF IS AND START THE TRANSMIT OPERATION |
| 425 426 427 428 431 433 434 | 0015 0015 0015 0015 0015 | 52' 56' 66' 70' | 005005 106427 032767 001002 005205 000772 106427 | 000140 000040 000340 | 177026 | 30 \$: | CLR MTPS BIT BNE INC BR MTPS | R5 WPRIU3 WTRNFLG,FLG7 35\$ R5 30\$ WPRIO7 | CLEAR COUNTER ALLOW INTERRUPTS IS TRANSMITTER DONE? YES NO, COUNT TIME DISABLE INTERRUPTS |
| 431 | | | 062700 | 000002 | | J). | ADD | #2.R0 | :POINT TO HOST'S PCBB+2 |
| 435 436 | 0016 0016 0016 | 02' | 005501 010037 010137 010537 | 021010 021012 021026 | | | ADC MOV MOV MOV | R1 R0.a/MDMAO R1.a/MDMA1 R5.a/MDMAWO | ; DUMP COUNTER VALUE TO PCBB+2 |
| 437 438 439 440 | 0016 | 26' | 112767 000241 000207 | 000003 | 176771 | | MOVB CLC RTS | # PCSR1+1 | ; TELL HOST WHAT TEST JUST FINISHED |
| 441 442 443 | 0016 | 32' | 001634 000001 | | | MICGSZ: .END | :MICGSZ- | MICROG+2 | |

| MICROG - MICROCO MICROG.MAC 10 | DE MODUI | LE G 17:54 | MACY11 | | 11-JAN | -83 09:5 | 54 PAGE - USER SY | 11 MBOLS | | | | | | SEQ 4 |
|---|----------|--|--|--|------------------------|---------------------|----------------------|-------------------------------------|---------------------|------|------|------|-----|-------|
| ACLO = 002000 ADRERE = 000001 ADRREG = 177774 ARAM = 000100 BITO = 000001 BIT1 = 002000 BIT11 = 004000 BIT12 = 010000 BIT13 = 020000 BIT14 = 040000 BIT15 = 100000 BIT15 = 100000 BIT15 = 000040 BIT5 = 000040 BIT6 = 000100 BIT6 = 000400 | | 878 13348 1348 1348 1348 144 144 144 144 144 144 144 144 144 1 | 103 10562 105756 | 73 86 71 112 85 78 105 106 107 108 109 | 87 113 111 84 | 2 38 110 | 243 | 246 | | | | | | |
| BIT9 = 001000 CLRFIF= 021034 CMDREG= 177776 | | 45 <i>n</i> 22 <i>n</i> 35 <i>n</i> | 308* 302* | 363* 357* | 418* 411* | | | | | | | | | |
| COLL = 000020 CRCSIZ= 000004 CSRFLG= 000001 CSRVEC= 000064 CSRWRT 000430R DATERR= 000000 | 002 | 89# 129# 103# 96# 159 128# | 412 307 193 160* 224# | 224 161* | | | | | | | | | | |
| DBUFP 000636R DMACSR= 021002 | 002 | 276# 9# | 237 | 246* | | | | | | | | | | |
| DMAF = 021022 DMAINT 000464R DMATO = 021004 DMAT1 = 021006 | 002 | 17# 154 10# 11# | 237# | | | | | | | | | | | |
| DMAVEC = 000114 DMAWC = 021024 | | 18# | 155* | 156* | | | | | | | | | | |
| DMDONE 000630R DNI = 004000 DRTY = 000040 | 002 | 237* 72# 88# | 238 139 | 243 217 | 273# | | | | | | | | | |
| DTCR = 000010 ENABLE= 100000 ENAL = 040000 ENCR = 004000 | | 90 <i>n</i> 78 <i>n</i> 85 <i>n</i> 86 <i>n</i> | 302 | 357 | 411 | | | | | | | | | |
| ERRFLG= 000002 ERRINT 000440R | 002 | 104# 141 | 227 227# | | | | | | | | | | | |
| FATI = 000400 FLG7 000612R | 002 | 74# 186* 370 | 189 419* | 193 426 | 218* | 224* | 227* | 250* | 258* | 261* | 268# | 309* | 315 | 364* |
| INERR = 000003 INMON = 000001 INTST = 000002 IDADR = 020000 | | 102# 100# 101# 124# | 215 137 279 125 | 201 335 | 213 389 | | | | | | | | | |
| IOSIZ = 020000 IPCSR0= 021000 IPCSR1= 021020 IPCSR2 000620R | 002 | 120# 8# 16# 184* | 125 139* 138* 185* | 198 201 * 271# | 217* 216* 293 | 228* 280* 294 | 240* 336* 349 | 245 * 390 * 350 | 251 * 403 | 404 | | | | |

| MICROG - MICROCODE MODULE G MICROG.MAC 10-JAN-83 17:54 | MACY11 3 | 0(1046) CROSS RE | 11-JAN- FERENCE | 83 09:5 TABLE | 4 PAGE USER SY | 12 MBOLS | | | | | | SEQ |
|--|---|------------------------------|---------------------|------------------|------------------------------|----------------|--------------|--------------|--------------|-----|-------|------|
| LASFTP= 012400 56N LFRBUF= 021032 21N LINADR= 100000 126N LINSIZ= 077774 122N LOOP = 000004 91N | 310* 282 358 | 365* 285 412 | 420 + 290 | 338 | 341 | 346 | 392 | 395 | 400 | | | |
| LRBUF = 021044 26# LTAC = 021030 20# MAXBC = 002756 127# | 256 311* 307 | 366* | 421+ | | | | | | | | | |
| MBUFP 000640R 002 277# MDMARO= 021014 14# | 295 | 296 | 299 | 351 | 352 | 355 | 405 | 406 | 409 | | | |
| MDMAR1= 021016 15 <i>n</i> MDMAW0= 021026 19 <i>n</i> | 328* | 329+ | 383+ | 436* | | | | | | | | |
| MDMAW1 = 021036 23 N MDMAO = 021010 12 N MDMA1 = 021012 13 N MDMSR = 021042 25 N | 293* 294* | 297 * 298 * | 326* 327* | 349* 350* | 353 • 354 • | 381 * 382 * | 403* 404* | 407* 408* | 434* 435* | | | |
| MICGSZ 001632RG 002 442M MICG1 000642R 002 264 MICG2 001114R 002 265 MICG3 001366R 002 266 MICROG 000000RG 002 135M MODE = 000200 79M MODREG= 177774 33M NPRERR= 100000 110M NPRFLG= 000020 107M | 279# 335# 389# 442 302 303* 245 | 357 358* | 411 412* | | | | | | | | | |
| NXMERR= 040000 1111W NXMFLG= 000010 106W PARERR= 010000 113W PARFLG= 000004 105W PARINT 000542R 002 149 PARVEC= 000140 98W PCBADR 000624R 002 272W PCEI = 040000 69W | 240 251 250 250# 150* | 151* | | | | | | | | | | |
| PCSRSW= 021040 24# PCSR1 000616R 002 137* 390 | 178 138 438* | 213* | 215* | 216 | 270# | 279* | 280 | 331* | 335* | 336 | 385 • | 389* |
| PHYAD1= 021062 PHYAD2= 021064 29N PHYAD3= 021066 30N PHYAD4= 021070 31N PHYAD5= 021072 32N PRIO0 = 000000 64N PRIO1 = 000040 63N | 187+ | | | | | | | | | | | |
| PRIO2 = 000100 62M PRIO3 = 000140 61M PRIO4 = 000200 60M PRIO5 = 000240 59M PRIO6 = 000300 58M | 314 + 161 166 | 369* 171 176 | 425* | | | | | | | | | |
| PR107 = 000340 57% | 135* | 144 | 151 | 156 | 192* | 318* | 373* | 430* | | | | |
| PROM = 100000 84# RBUFP 000632R 002 274# | 358 283* | 412 310 | 339+ | 365 | 393+ | 420 | | | | | | |
| RCEI = 002000 73# RCVFLG= 000100 109# RCVINT 000560R 002 174 RCVVEC= 000120 94# | 258 256# 175* | 176* | | | | | | | | | | |

| MICROG - MICROCOL MICROG.MAC 10- | DE MODULE -JAN-83 1 | 7:54 | MACY11 3 | 0(1046) CROSS RE | 11-JAN- FERENCE | | 4 PAGE - USER SY | | | | | | | |
|--|------------------------|--|--------------------------|---------------------|--------------------|------------|---------------------|-----|-----|-----|------|-----|-----|-----|
| ROMADR= 040000 ROMSIZ= 040000 | | 125# 121# | 126 126 | | | | | | | | | | | |
| RXI = 020000 SANTIM 000614R SANVEC= 000134 | 002 | 70# 233* 95# | 269# 165* | 166* | | | | | | | | | | |
| SERI = 100000 SIZ1K = 004000 SIZ2K = 010000 SIZ3K = 014000 | | 68# 114# 115# | 115 117 | 116 290 | 285 346 | 341 400 | 395 | | | | | | | |
| SIZ3K = 014000 SIZ4K = 020000 SIZ8K = 040000 STACK = 001000 | | 116# 117# 118# 99# | 118 121 136 | 119 122 | 120 | | | | | | | | | |
| TBLG 000604R TBUFP 000634R TIMINT 000456R | 002 002 002 | 207 275# 164 | 264# 288* 233# | 305 | 311 | 320 | 344• | 360 | 366 | 375 | 398* | 415 | 421 | |
| TRNFLG= 000040 TRNINT 000574R | 002 | 108# 169 | 261 261# | 315 | 370 | 426 | | | | | | | | |
| TRNVEC= 000070 TXI = 010000 UNIERR= 020000 WCSADR= 000000 WCSSIZ= 020000 . = 001634R | 002 | 93 <i>n</i> 71 <i>n</i> 112 <i>n</i> 123 <i>n</i> 119 <i>n</i> 141 265 | 170* 228 124 124 149 266 | 171• | 159 | 164 | 169 | 174 | 195 | 207 | 230 | 247 | 253 | 264 |

000000 000 . ABS. 000000 001 001634 002 MICRG

ERRORS DETECTED: 0
DEFAULT GLOBALS GENERATED: 0

MICROG.OBJ.MICROG.LST/CRF/DOC/NL:TOC/SOL=MICROG.MAC RUN-TIME: .6 .9 .3 SECONDS RUN-TIME RATIO: 30/2=14.8 CORE USEC: 9K (18 PAGES)

DOCUMENT PAGES: 12

000000° 000000° 000004°

000001

.TITLE NO MORE MICROCODE MODULES
.CSECT NOMORE
.MCALL SVC
SVC
LASTAD
L\$LAST::
.END

•

```
MACY11 30(1046) 11-JAN-83 09:55 PAGE 4
NO MORE MICROCODE MODULES
NOMORE . MAC
                 20-DEC-82 16:44
                                                 CROSS REFERENCE TABLE -- USER SYMBOLS
ASSEMB= 000010
                                  C$AU = 000052
C$AUTO= 000061
C$BRK = 000022
C$BSEG= 000004
C$BSUB= 000002
CSCEFG= 000045
C$CLCK= 000062
C$CLEA= 000012
C$CLOS= 000035
C$CLP1= 000006
C$CVEC= 000036
CSDCLN= 000044
C$DODU= 000051
C$DRPT= 000024
                                                . •
($DU = 000053
C$EDIT= 000003
C$ERDF = 000055
CSERHR= 000056
C$ERRO= 000060
CSERSF = 000054
CSERSO= 000057
CSESCA= 000010
C$ESEG= 000005
C$ESUB= 000003
C$ETST= 000001
CSEXIT= 000032
C$GETB= 000026
(SGETW= 000027
($GMAN= 000043
C$GPHR= 000042
C$GPLO= 000030
($GPRI= 000040
                                   511
($INIT= 000011
($INLP= 000020
                                   ($MANI = 000050
($MEM = 000031
($MSG = 000023
(SOPEN= 000034
($PNTB= 000014
($PNTF = 000017
C$PNTS= 000016
C$PNTX= 000015
($010 = 000377
($RDBU= 000007
($REFG= 000047
($RESE= 000033
($REVI= 000003
($RFLA= 000021
($RPT = 000025
($SEFG= 000046
($SPRI= 000041
($SVEC = 000037
(STPRI= 000013
DIAGMC= 000000
ESEND = 002100
```

```
NO MORE MICROCODE MODULES
NOMORE.MAC 20-DEC-82 16:44
                                         MACY11 30(1046) 11-JAN-83 09:55 PAGE 5
                                                   CROSS REFERENCE TABLE -- USER SYMBOLS
E$LOAD= 000035
                                   F$AU = 000015
F$AUTO= 000020
F$BGN = 000040
F$CLEA= 000007
F$DU = 000016
FSEND = 000041
F$HARD= 000004
FSHW = 000013
F$INIT= 000006
f$JMP = 000050
F$MOD = 000000
F$MSG = 000011
F$PROT= 000021
F$PWR = 000017
F$RPT = 000012
F$SEG = 000003
F$SOFT= 000005
f$SRV = 000010
F$SUB = 000002
F$SW = 000014
F$TEST= 000001
G$CNTO= 000200
G$DELM= 000372
G$DISP= 000003
G$EXCP= 000400
G$HILI= 000002
G$LOLI = 000001
G$NO = 000000
G$0FFS= 000400
GSOFSI = 000376
G$PRMA= 000001
G$PRMD= 000002
G$PRML = 000000
G$RADA= 000140
G$RADB= 000000
G$RADD= 000040
G$RADD= 000040
G$RADL= 000120
G$RADO= 000020
G$XFER= 000004
G$YES = 000010
I$AU = 000041
I$AUTO= 000041
15CLN = 000041
ISOU = 000041
ISINIT= 000041
ISMOD = 000041
ISMSG = 000041
ISPROT= 000041
 ISPTAB= 000041
ISPWR = 000041
 ISRPT = 000041
 1$SEG = 0000'1
 1$SETU= 000C41
 185RV = 000041
 1$SUB = 000041
```

| NO MORE MICROCODE MODULES NOMORE.MAC 20-DEC-82 16:44 | MACY11 30(1046) 11-JAN-83 09:55 PAGE 6 CROSS REFERENCE TABLE USER SYMBOLS |
|---|--|
| ISTST = 000041 JSJMP = 000167 LSLAST 000004RG 002 OSAPTS = 000000 OSAU = 000000 OSBGNR = 000000 OSBGNS = 000000 OSBGNS = 000000 OSERRT = 000000 OSERRT = 000000 OSFOIN = 000000 SWCGBL = 000000 SVCGBL = 177777 SVCSUB - 177777 SVCTAG = 177777 SVCTST = 177777 SWCTST = 177777 | 6 6 6 |
| T\$ERRN= 000000 5N T\$GMAN= 000000 5N T\$LAST= 000001 5N T\$LSYM= 010000 5N T\$LINO= 000000 7N T\$NEST= 177777 5N T\$PTNU= 000000 5N | 6# |
| T\$SAVL = 177777 T\$SEGL = 177777 T\$SEGL = 177777 T\$SUBN = 000000 T\$TAGL = 177777 T\$TAGN = 010000 T\$TEST = 000000 T\$TSTSTM = 177777 T\$TSTS = 000000 X\$ALWA = 000000 X\$ALWA = 000000 X\$FALS = 00040 X\$OFFS = 000400 X\$TRUE = 000020 | 7 |

| NO MORE MICROCODE MODUL=S NOMORE.MAC 20-DEC-82 16:44 | | MACY11 | 30(1046) 11-JAN-83 09:55 PAGE 8 CROSS REFERENCE TABLE MACRO NAMES |
|--|---|--------|---|
| BERRAUTN BERNAULN BER | 1 | | |

| NO MORE MICROC | CODE MODULES 20-DFC-82 16:44 | MACY11 | 30(1046) 11-JAN-83 09:55 PAGE 9 CROSS REFERENCE TABLE MACPO NAMES |
|--|--|--------|--|
| ENDSW 1A ENDTST 1A EQUALS 1A ERRUF 1A ERROR 1A ERRSOF 1A ERRSOF 1A ERRSOF 1A ESCAPE 1A ESCAPE 1A GETBYT 1A | 5 M 5 M 5 M 5 M 5 M 5 M 5 M 5 M 5 M | | |
| GPHARD GPRMA GPRMD GPRML HEADER INLOOP IOSETU IOSETU IOSTAR KITT LASTAD MANUAL MEMORY MSBYTE MSCHEC MSCNTO MSCOUN | 5 M 5 M 5 M 5 M 5 M 5 M 5 M 5 M 5 M 5 M | | |
| MSDATA MSDECR MSDECR MSDEFA MSENDE MSENDE MSESCA MS | | | |

```

...

< m

```
MACY11 30(1046) 11-JAN-83 09:55 PAGE 10
NO MORE MICROCODE MODULES
NOMORE . MAC
 20-DEC-82 16:44
 CROSS REFERENCE TABLE -- MACRO NAMES
MSHNAP
M$INCR
 5#
 1#
 M$10SE
 1#
 1#
M$LDRO
 1#
MSMASK
 1#
MSMCHI
MSMCLO
 1#
MSMSk1
 1#
MSPOP
 1#
MSPRIN
 1#
MSPUSH
 1#
MSPUT
 1#
MSPUT1
 1#
MSRADI
 1#
MSRBRO
 1#
MSRNRO
 1#
MSSETS.
 1#
MSSTAR
 1#
MSSVC
 1#
MSTLAB
 1#
MSTSTL
 1#
MSWORD
 1#
 6
MSXFER
 1#
OPEN
 1#
POINTE
 11
PRINTB
 1#
PRINTF
 1#
PRINTS
 1#
PRINTX
 1#
READBU
 1#
READEF
 1/
RFLAGS
 1#
SETPRI
 1#
SETVEC
 1#
SLASH
 1#
STARS
 1#
 5#
 1#
 3#
SVC
 1#
 511
XFER
XFERF
 14
 5#
XFERT
 1#
 5#
 000
. ABS.
 000000
 000000
NOMORE
 000004
 002
 ERRORS DETECTED: 0
 DEFAULT GLOBALS GENERATED: 0
NOMORE.OBJ, NOMORE.LST/CRF/DOC/NL:TOC/SOL SV(34R.P11, NOMORE.MAC RUN-TIME: 2 2 .4 SECONDS RUN-TIME RATIO: 56/5=11.0
 CORE LISED: 17K (34 PAGES)
 DOCUMENT PAGES: 7
```

. . MOI SE < . . MOD SE . . MOI SE < ... MOI SE < ... MO SE < . . MOD SE ( < ... MOD SE ( < ... MO SE ( < −

> R( 51

SEQ 472

```
LNKX11 V023 12-JAN-83 1:15
```

#CZUAAA.BIC/B:2000,CZUAAA.MAP=CZUAAA,MICROA,MICROB,MICROC,MICROD,MICROE,MICROF,MICROG,NOMORE/E

```
LOAD MAP
```

```
TRANSFER ADDRESS: 000001
LOW LIMIT: 002000
HIGH LIMIT: 100772
MODULE PARAME
SECTION ENTRY
<. ABS.>
 ADDRESS 5:ZE 000000 000020
 ADR
 ADRERR
 000001
 BITO
 000001
 000001
000002
000004
000010
000020
000100
 BITOO
 BITOI
 B1102
B1103
 BIT04
 BIT05
 B1106
 BITO7
 000200
 BI108
 000400
 B1109
 001000
 BITT
 000002
 002000
 61110
 BITTT
 004000
 BIT12
BIT13
 010000
 020000
 BIT14
 040000
 BIT15
 100000
 BIT2
BIT3
 000004
 000010
 BIT4
 000020
 BITS
 000040
 BIT6
 000100
 000200
 BIT7
 BI18
 B119
 001000
 000406
 BOE
 CLEAR
 CRCSIZ
 000004
 DATERR
 000000
 DIM
 000020
 004000
 DNI
 EF.CON
 000036
 Er.NEW
 000035
 000034
 EF .PWR
 EF.RES
EF.STA
 000040
 ENP
 000400
 ERRS
 040000
 000004
 EVL
 000400
 FATI
 GETCMD
 000002
```

```
ROMADR 040000
RPA 000016
RPS 000016
RRF 000010
RSET 000040
RSIDP C00022
RTM 000014
RUN 000003
RXI 020000
SET 000001
SET 000001
SET 000001
SET 000000
SET 00000
SET 000000
SET 000000

 000000
053774
<UNAREP>
```

```
CLKSRV 023674
CLKYEC 002300
CLRDNI 021374
CNTTAB 002624
CNTTAB 002674
CRUPRI 005674
CRUPRI 005656
CRUPRI 005656
CRUPRI 005704
CRCTAT 005656
CRCPAT 005704
CRCTAT 005656
CRCPAT 005704
CRCTAT 005656
CRCPAT 004662
CRCTAT 007074
CRCTAT 007077
CRCTAT 00707
CRCTAT CRCTAT 00707
CRCTAT CRCTAT 00707
CRCTAT CRCTAT 00707
CRCTAT CRCTAT 00707
CRCTAT CRCTAT 00707
CRCTAT CRCTAT 00707
CRCTAT CRCTAT 00707
CRCTAT CRCTAT 00707
```

```
0123456789
 011256
011341
011407
011416
011403
011503
0115607
0115607
0115607
012137
012237
012237
012237
012363
0126510
0126510
0126510
0126510
0126510
013135
013336
 013336
013433
006566
013551
013613
013655
013772
014047
014115
014225
 014225
 006650
014334
014413
014456
006732
002324
002322
002672
006016
054766
021130
021212
021250
055057
054767
004251
```

D 6 SEQ 480

```
11
 110
 111
112
114
 116
 117
 118
119
120123456789
11231133113311337
 138
139
14
140
141
142
143
144
145
146
15
16
17
19
UNACSR
UNAPRI
UNAPRI
UNASRC
UNIOD
WADRER
SAFTER
$BEFOR
$BITO
```

```
$BIT10
$BIT110
$BIT1123
$BIT123
$BIT135
$BIT13
 $STRT
 SIXI
 SXPUR
 000024
<MI(RA >
 MICASZ
MICROA
 002314
 <MI(RB >
 MICBSZ
MICROB
 003254
 <MICRC >
 MICCSZ
MICC7
 MICROC
 <MILED >
 004706
 MICDSZ
 MICROD
 002734
 <MI(RE >
 BFILE
```

| MI                             | CROE         | 07345C<br>070516           | 007.40          |
|--------------------------------|--------------|----------------------------|-----------------|
|                                | CFSZ         | 073452<br>077130<br>073452 | 003460          |
| <micrg> MI</micrg>             | CGSZ         | 073452<br>077132<br>100764 | 001634          |
| <ncmgre></ncmgre>              | CROG<br>LAST | 077132<br>100766<br>100772 | 000004          |
| MODULE MI                      | CROA         | *****                      | 6176            |
| SECTION EN                     | 187          | ADDRESS<br>100772          | S12E<br>000000  |
| MODULE MI<br>SECTION EN        | CROB         | ADDRESS<br>100772          | SIZE<br>00C000  |
|                                | CROC         | 4000555                    | 6136            |
| SECTION EN                     | 187          | ADDRESS<br>100772          | 000000          |
| MODULE MI<br>SECTION EN        | CROD<br>TRY  | ADDRESS<br>100772          | S17E<br>000000  |
| MODULE MI<br>SECTION EN        | CROE         | ADDRESS                    | SIZE            |
| < > >                          |              | 100772                     | 000000          |
| MODULE MI<br>SECTION EN<br>< > | CROF         | ADDRESS<br>100772          | \$17E<br>000000 |
| MODULE MI<br>SECTION EN        | CROG         | ADDRESS<br>100772          | \$12E<br>000000 |
| MODULE NO<br>SECTION EN        |              | ADDRESS<br>100772          | \$17E<br>000000 |
|                                |              |                            |                 |

RUN-TIME 5 SECONDS 5K CORE USED