

IDENTIFICATION

SEQ 0001

PRODUCT CODE: MAINDEC-11-DZIRA-A-D
PRODUCT NAME: ICR11 CONTROLLER DIAGNOSTIC
DATE: FEBRUARY 1976
MAINTAINER: DIAGNOSTIC ENGINEERING
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1. ABSTRACT

THIS PROGRAM WILL EXERCISE AND DIAGNOSE ONE OR MORE ICR11 CONTROLLERS. THE CONTROLLER CONSISTS OF A M8094, M8098, M8098 AND M8096. IT WILL NOT EXERCISE ANY LOGIC BEYOND THE M8096. (I.E. I/O BOARDS) THEREFORE IT IS NOT NECESSARY TO REMOVE ANY OF THE MODULES FROM WITHIN THE FILE BOX EXCEPT UNSOLICITED INTERRUPT MODULES OR THEIR SOURCES. THIS PROGRAM ALSO EXERCISES THE TERMINAL AT THE ICR11 END.

2. REQUIREMENTS

2.1 EQUIPMENT

POP-11 COMPUTER
 ICR11 CONTROLLER
 CONSOLE TTY
 REMOTE TTY (OPTIONAL)
 SHORTING PLUG FOR REMOTE TTY (OPTIONAL)

2.2 STORAGE

THIS PROGRAM RESIDES IN 8K OF CORE

3. LOADING PROCEDURE

3.1 METHOD

USE STANDARD POP-11 LOADING PROCEDURE

4. STARTING PROCEDURE

4.1 CONTROL SWITCH SETTINGS

| | | | | |
|------|-----|------------------------------------|---------------|-------------------|
| SW00 | | FILE BOX UNDER TEST | | |
| SW01 | | FILE BOX UNDER TEST | | |
| SW02 | | FILE BOX UNDER TEST | | |
| SW03 | | FILE BOX UNDER TEST | | |
| SW04 | -0- | TEST ALL FILE BOXES ON SYSTEM | | |
| | -1- | TEST FILE BOX SPECIFIED BY SW00-03 | | |
| SW05 | -0- | | | |
| | -1- | LOOP ON TEST SPECIFIED BY SW07,06 | | |
| SW06 | | TEST NUMBER | SW07=0 SW06=0 | CSR TEST |
| | | | SW07=0 SW06=1 | M8094, M8098 TEST |
| SW07 | | TEST NUMBER | SW07=1 SW06=0 | M8096 TEST |
| | | | SW07=1 SW06=1 | REMOTE TTY TEST |

SW00 -0-
 -1- LOOP ON M8098 DATA LOOP BACK TEST
 (USES SW00-07 FOR DATA PATTERN)
 NOTE: SW06,07 SHOULD BE 0,1 OR 1,0
 SW06,07 AS 0,0 WILL DEFAULT TO 0,1
 SW06,07 AS 1,1 WILL DEFAULT TO 1,0

SW09 -0- HALT AFTER PRINTING RUN SUMMARY
 -1- LOOP ON DIAGNOSTIC

SW10 -0- PRINT ON LOCAL CONSOLE
 -1- PRINT ON LOCAL CONSOLE AND REMOTE TTY

SW11 -0- RESERVED FOR FUTURE USE
 -1-

SW12 -0- QUICK VERIFY
 -1- LONG TEST (100 PASSES OF TEST)

SW13 -0-
 -1- SUPPRESS ERROR TYPEOUT

SW14 -0-
 -1- SCOPE LOOP

SW15 -0-
 -1- HALT ON ERROR

4.2

STARTING ADDRESS(ES)

PROGRAM START 200

PROGRAM RESTART 210

NOTE: SAME FILE BOX TO BE TESTED

AFTER START OF 200, SEPARATE RESTARTS OF INDIVIDUAL TESTS MAY BE DONE.

| | |
|-------------------|-----|
| CSR TEST | 210 |
| M8098 TEST | 204 |
| M8096 TEST | 214 |
| REMOTE TTY TEST | 220 |
| POWER FAIL OPTION | 224 |

THIS PROGRAM INCLUDES AN OPTIONAL POWER FAIL TEST
IF THE POWER FAIL TEST IS REQUIRED, LOAD ADDRESS
224 AND SET SWR PER SECTION 4.1, AND PRESS START.

THE TEST WILL EXECUTE AS A START 200 UNTIL AFTER
THE REMOTE TTY TEST (SECTION 4.3 *10*), AT WHICH
TIME THE PROGRAM WILL RESPOND WITH:

ICR POWER FAIL TEST
POWER DOWN THE REMOTE END OF THE ICR

POWERING DOWN THE REMOTE END SHOULD PRODUCE:

ICR POWER FAIL SENSED
POWER REMOTE END BACK UP

THIS VERIFIES THAT THE POWER FAIL BIT OF THE ICR
CSR FUNCTIONS CORRECTLY. POWER REMOTE END BACK
UP AND THE TEST WILL PROCEED NORMALLY. THIS TEST IS
PERFORMED ON ALL ICR'S AND ONLY WITHIN THE FIRST PASS.

4.3 PROGRAM AND/OR OPERATOR ACTION

LOAD PROGRAM
SET SWR TO 200
LOAD ADDRESS
SET SWR PER 4.1
PRESS START

THE PROGRAM WILL THEN RESPOND BY TYPING:

```
ICR11 CONTROLLER DIGNOSTIC MAINDEC-11-DZIRA-A      (*1*)
***** SYSTEM MAP *****                          (*2*)
FILE BOX X ICR=XXXXXX ICSR=XXXXXX                 (*3*)
FILE BOX Y ICR=YYYYYY ICSR=YYYYYY
*****
TESTING FILE BOX X                                  (*4*)
ICR VECTOR ADDRESS=MNN                             (*5*)
PRIORITY LEVEL=ZZZZZ                                (*6*)
MAINTENANCE MODE ACTIVATED                          (*7*)
INPUT MODULE ADDRESS RANGE                          (*8*)
START   XXXXX
FINISH  YYYYYY                                       (*9*)
REMOTE  TTY TEST                                     (*10*)

*RUN SUMMARY - FILE X*                               (*11*)
PASS COUNT      X                                    (*12*)
ERROR COUNT     Y                                    (*13*)
LINE ERROR COUNT Z                                  (*14*)

RERUN OR LOAD FIELD TEST?                           (*15*)
```

- 1• HEADING IDENTIFYING THE PROGRAM
A OF MAINDEC-11-DZIRA-A INDICATES
REVISION, BE SURE IT AGREES WITH
THIS DOCUMENT.
- 2• PROGRAM IS NOW GOING TO INDICATE
ALL ICR'S THAT ARE PRESENT ON
SYSTEM AND WILL RESPOND WHEN
ADDRESSED WITH SBYNC.
- 3• FILE BOX(ES) THAT ARE ACTUALLY PRESENT
ON SYSTEM, CHECK THAT ALL ICR(S) REPORTED
EXIST AND THAT ALL THAT EXIST ARE
REPORTED.
- 4• PROGRAM IS BEGINNING TO TEST ONE
SPECIFIC FILE BOX (ICR). ALL MESSAGES
PRINTED FROM THIS POINT ON REFER
TO THIS ONE FILE BOX.
- 5• ICR VECTOR ADDRESS IS THE ADDRESS THAT
THE FILE BOX INTERRUPTED TO WHEN A
INTERRUPT OCCURRED. COMPARE THIS VALUE WITH
THAT ONE EXPECTED, IF THEY DO
NOT ARGEE INVESTIGATE JUMPER VX-VY
ON THE M8094.
- 6• PRIORITY LEVEL IS THAT LEVEL AT WHICH THE
ICR IS SET TO INTERRUPT AT. SIX (6) IS
THE STANDARD LEVEL. THIS LEVEL IS DETERMINED
BY THE PRIORITY CHIP ON THE M8094.
- 7• AT THIS POINT THE PROGRAM IS EXERCISING THE
MAINTENANCE MICROCODE WITHIN THE M8094
AND M8096. AT THIS TIME IT IS NOT RECOMMENDED
THAT THE REMOTE END OF THE ICR BE POWERED
DOWN NOR SHOULD THE PROGRAM BE HALTED. FOR
EXPLANATION OF PRINTOUTS AT THIS TIME REFER
TO SECTION 7.
- 8•,•9• THE INPUT MODULE RANGE IS THE RANGE THAT
JUMPERS OF THE M8096 WILL ALLOW THE M8096 TO
SCAN OR POLL. THIS IS DETERMINED BY THE PROGRAM
AND THE STANDARD IS 0000-0016.
- 10• THE PROGRAM IS PERFORMING TESTS TO THE ICR11
REMOTE TTY. THE SHORTING PLUG MUST BE PLUGGED IN FOR
THIS TEST TO RUN, OTHERWISE IT WILL ABORT THE TEST
AND INDICATE 80.
- 11• RUN SUMMARY OF TESTS THAT HAVE BEEN PERFORMED.
(SUMMARY IS PRINTED FOR EACH FILE)
- 12• PASS COUNT. DECIMAL VALUE OF NUMBER OF PASSES
COMPLETED BY PROGRAM

- *13* ERROR COUNT, DECIMAL VALUE OF ERRORS SEEN BY PROGRAM DURING RUNNING.
- *14* LINE ERROR COUNT, DECIMAL VALUE OF LINE ERRORS DETECTED DURING DIAGNOSTIC. (LINE ERRORS INDICATE ONLY THE NOISE LEVEL OF THE CABLE BETWEEN THE ICR AND PDP-11, THEY HAVE NO BEARING ON ERRORS DETECTED UNLESS THEY ARE EXTREMELY HIGH.)

NOTE: IF ANY VALUES ARE PRECEDED BY A MINUS SIGN (-), AN OVERFLOW OF 2**16 (16,384) WAS SEEN.

- *15* RERUN OR LOAD FIELD TEST?

AT THIS POINT RESPONDING ON EITHER LOCAL OR REMOTE (IF SELECTED) TERMINALS WITH A "R" WILL RESTART THE PROGRAM AT *6* OF THIS SECTION.

RESPONDING WITH A "L" WILL INITIATE THE HIGH SPEED READER TO START LOADING. THIS LOADING CAPABILITY IS TO FACILITATE THE LOADING OF THE ICR-11 FIELD TEST (MAINDEC-11-DZIRB) ONLY.

DO NOT ATTEMPT TO LOAD OTHER

 PROGRAMS BY THIS METHOD!

5. OPERATING PROCEDURE

5.1 OPERATIONAL SWITCH SETTINGS

SEE SECTION 4.1

5.2 OPERATING FROM LOCAL END

5.2.1 TO RUN THIS DIAGNOSTIC FROM THE LOCAL END FOLLOW THIS PROCEDURE.

5.2.1.1 LOAD SWITCH REGISTER TO 000200, PRESS LOAD ADDRESS.

5.2.1.2 SET SWITCH REGISTER PER SECTION 4.1

IF SW10 IS SET TO A ZERO, CHECK THAT THE SHORTING PLUG IS IN THE REMOTE END. IF SW10 IS ZERO, AND THE SHORTING PLUG IS NOT IN, THEN THE REMOTE TTY TEST WILL NOT RUN AND WILL BE INDICATED AS SUCH.

IF SW10 IS SET TO A ONE, BE SURE THE REMOTE TERMINAL IS CONNECTED AND POWERED ON.

5.2.1.3 PRESS START

THE PROGRAM WILL NOW START TO RESPOND AS IN SECTION 4.3. ANY DEVIATION FROM THIS TYPEOUT IS EXPLAINED IN SECTION UNDER ERROR EXPLANATIONS.

5.3 GOING FROM LOCAL TO REMOTE USAGE

WHEN QUESTION "RERUN OR LOAD FIELD TEST?" IS ASKED, SET SW10 TO A ONE (1), THEN POWER DOWN ICR AND ATTACH REMOTE TTY. POWERING UP ICR WILL REASK QUESTION REMOTELY (AS WELL AS LOCALLY).

OR

IF ERROR IS OCCURRING, SET SCOPE LOOP SWITCH AND SW10 TO ONE (1). POWER DOWN ICR (REMOTE END), ATTACH REMOTE TTY. POWERING UP ICR (REMOTE END) WILL PRINT "RESTARTING DIAGNOSTIC".

5.4 OPERATING FROM REMOTE END

PROGRAM MUST INITIALLY BE STARTED AT LOCAL END PER SECTION 5.2.

5.4.1 ERROR REPORTING

SINCE ONCE THE MAINTENANCE MODE HAS BEEN ACTIVATED THE REMOTE TERMINAL IS INOPERATIVE, ALL ERRORS THAT ARE DETECTED DURING THIS PERIOD ARE BUFFERED AND REPORTED PRIOR TO THE END OF EACH PASS.

5.4.2 RUN INDICATION

IF SW09 IS SET TO LOOP ON DIAGNOSTIC, TESTING WILL FLASH (ON RT02 ONLY) DURING PASSES.

5.4.3 ABORTING FROM TEST

"C WILL EXIT TEST AND RETURN YOU TO QUESTION "RERUN OR LOAD FIELD TEST?"

"P WILL EXIT TEST, PRINT RUN SUMMARY AND RETURN YOU TO QUESTION "RERUN OR LOAD FIELD TEST?"

NOTE: "C AND "P ARE NOT INTERRUPT DRIVEN DUE TO MAINTENANCE MICRO CODE BEING EXECUTED SO HAVE PATIENCE, THE PROGRAM WILL RESPOND.

5.4.4 POWER FAIL ABORT

POWERING DOWN THE ICR MAY BE USED TO EXIT SCOPE LOOPS OR TO ABORT THE TEST ONCE THE POWER FAILURE HAS BEEN DETECTED BY THE PDP11, THE LOCAL END IS NOTIFIED, AND WILL BE KEPT INFORMED OF THE SITUATION EVERY MINUTE OR SO UNTIL THE LINK GOES ERROR FREE INDICATING POWER HAS BEEN RESTORED. AT THIS TIME THE DIAGNOSTIC WILL RESTART.

6. SCOPE LOOPS

SW14 AS A ONE (1) WILL LOCK THE PROGRAM INTO A SCOPE LOOP. THE SCOPE LOOP OPERATION VARIES WITH EACH TEST.

6.1.1 CSR TEST

SCOPE LOOPS IN THIS SECTION LOOP ON THE ONE ERROR INVOLVED AND ANY NECESSARY CODE TO SET UP THE ERROR CONDITION.

6.1.2 M8894 TEST

DUE TO THE MICROCODE AND HARDWARE STRUCTURE THE SCOPE LOOP IS FROM THE ERROR BACK TO THE BEGINNING OF THE TEST. THEREFORE FOR AN ERROR IN THE LATTER PART OF THE TEST ALL PREVIOUS SUBTESTS ARE PERFORMED WITHIN THE SCOPE LOOP. THE EXCEPTION IS THE M8898 TEST WHICH IS CONTROLLED BY SW88. WITH SW88 SET THE PROGRAM WILL LOOP ON SENDING SW87-88 UNTIL SW88 IS CLEARED.

6.1.3 M8896 TEST

SCOPE LOOPS IN THE M8896 TEST INVOLVE LOOPING ON THE WHOLE TEST, WITH THE EXCEPTION OF THE M8898 TEST WHICH IS CONTROLLED BY SW88. WITH SW88 SET THE PROGRAM WILL LOOP ON SENDING SW87-88 UNTIL SW88 IS CLEARED.

6.1.4 REMOTE TTY TEST

ALL SCOPE LOOPS RETURN TO THE LAST TRANSMISSION ATTEMPT.

6.1.5 ESCAPE FROM SCOPE LOOPS

LOCAL

^C, ^P OR SW14 TO ZERO WITH ALLOW THE USER TO ESCAPE FROM SCOPE LOOPS.

REMOTE

^C, ^P OR POWERING DOWN ICR WILL ALLOW ESCAPE FROM SCOPE LOOP BACK TO BEGINNING.

7.0 ERRORS

7.1 ERRONEOUS INFORMATION

DURING THE TEST CERTAIN INFORMATION WILL BE TYPED OUT INDICATING CERTAIN JUMPER CONFIGURATIONS, FILE BOX ADDRESSES. THESE MAY BE IN ERROR AND SHOULD BE CHECKED TO VERIFY THEIR CORRECTNESS. THEY ARE:

SYSTEM MAP
 ICR VECTOR ADDRESS
 PRIORITY LEVEL
 INPUT MODULE RANGE

7.2 FATAL ERRORS

FATAL ERRORS ARE THOSE ERRORS WHICH UPON FINDING THE PROGRAM WILL HALT. TO RECOVER FROM THESE ERRORS A START OF THE PROGRAM IS NECESSARY.

THE FOLLOWING ERRORS ARE CONSIDERED FATAL.

SEQ 0009

"NO ICR'S-ABORTED" - WHEN THE PROGRAM WAS TRYING TO DETERMINE THE ICR CONFIGURATION, THERE WAS NO SSYNC RECEIVED FROM ANY OF THE LEGAL ICR ADDRESSES. SEE SECTION 9.3 FOR ADDRESSES.

"NON-EXISTANT FILE BOX" - IN SELECTING A SPECIFIC FILE BOX TO TEST VIA SW4 AND SW03-00, THE USER SELECTED A NON-EXISTANT FILE BOX.

"MOD. INT. WILL NOT INT-ABORTED" - WHEN TRYING TO DETERMINE THE INTERRUPT VECTOR ADDRESS AND INTERRUPT PRIORITY LEVEL, THE FORCED MODULE INTERRUPT WOULD NOT TAKE PLACE. (NOTE: DEPRESSING CONTINUE WILL FORCE A SCOPE LOOP).

"REMOTE TTY HUNG--DESELECT IT" - TEST OF TBMT OF THE REMOTE TTY WAS UNSUCCESSFUL, CHECK REMOTE TTY OR DESELECT IT BY SETTING SW10 TO A ZERO(0).

"SPUR ICR INT" - EXTRANEIOUS INTERRUPT FROM ICR OCCURED DURING TTY INTERRUPT TEST.

"UNEXP MOD INT" - UNEXPECTED MODULE INTERRUPT.

"TTY INTERRUPT TEST HUNG" - REMOTE TTY INTERRUPT TEST TIMED OUT WHILE WAITING FOR TBMT OR DA TO INTERRUPT.

7.3 RECOVERABLE ERRORS

ALL ERRORS ARE PRINTED WITH CORRESPONDING ERROR PC OF THE LISTING SO ACTUAL TEST PERFORMED MAY BE SEEN.

"CSR BIT 15 SET" - BIT 15 OF THE ICR CSR WAS SET WHEN NO TRANSMISSION WAS OCCURRING.

"RESET BIT SET" - BIT 6 OF THE ICR CSR WHICH IS USED TO RESET MODULES WITHIN FILE BOX. READ BACK AS A ONE(1) WHICH IT SHOULD NOT.

"TTY ENA NOT SET" - ICR CSR BIT 5 WOULD NOT SET (ONE).

"TTY ENA SET" - ICR CSR BIT 5 WOULD NOT CLEAR (ZERO).

"THOUT FLP NOT SET" - DURING M8094 MICRODIAGNOSTIC THE TIMEOUT FLOP ON THE M8094 DID NOT SET WITH SUFFICIENT TIME FOR IT TO OCCUR.

"SEQ COMPARE ERR" - DURING M8094 MICRODIAGNOSTIC THE SEQUENCE COMPARE FLOP ON THE M8094 WOULD NOT TEST TRUE.

"ERRONEOUS INT" - DURING M8094 MICRODIAGNOSTIC, INTERRUPT OTHER THAN INTERRUPT EXPECTED OCCURRED. CHECK LISTING AT ERRPC FOR FURTHER EXPLANATION.

"NO INT FROM ERR" - DURING M8094 MICRODIAGNOSTIC ERROR WAS FORCED BUT ERROR BIT DID NOT SET IN CSR (BIT 12).

"INT SET AFT RIF" - AFTER A MODULE INTERRUPT OCCURRED, THE RIF BIT WAS SET AND CLEARED BUT THE MODULE INTERRUPT WAS STILL POSTED.

"ERR AFT CLR" - ADDRESSING THE ICAR WOULD NOT CLEAR OUT THE ERROR INTERRUPT BIT.

"DATA VALID TRUE" - DATA VALID TESTED TRUE WITHIN M8896 MICRODIAGNOSTIC WHEN THE DATA SHOULD HAVE BEEN FALSE.

"INPUT ADDR ERR" - IN M8896 MICRODIAGNOSTIC WHEN WRAPPING THE INPUT MODULE ADDRESS BACK, THEY CAME BACK OUT OF SEQUENCE. CHECK EXP'D REC'D.

"NO MOD INT" - MODULE INTERRUPT WAS EXPECTED BUT NOT POSTED, CHECK ERRPC IN LISTING FOR FURTHER EXPLANATION.

"OUT BUSY STUCK" - OUTPUT BUSY POSTED LONGER THEN SPECIFIED TIME.

"FME ERROR" - FORCED MASTER ERROR IN M8894 MICRODIAGNOSTIC WAS INITIATED BUT IT DID NOT OCCUR, THAT IS A MODULE INTERRUPT WAS TO BE POSTED BY THE MICROCODE AT THIS TIME INDICATING THE FME EVENTS TOOK PLACE. THE MODULE INTERRUPT DID NOT OCCUR.

"FME NO TIMEOUT" - FORCE MASTER ERROR. SHOULD HAVE INITIATED A TIMEOUT ON THE M8894 BUT IT DID NOT.

"SL ACK ON BD CRC" - WHEN THE BAD CRC WAS GENERATED BY THE MASTER THE SLAVE SHOULD NOT HAVE ACKNOWLEDGED THE MESSAGE, BUT THE SLAVE DID RESPOND TO THE BAD CRC.

"FSE ERROR" - FORCED SLAVE ERROR IN M8894. MICRODIAGNOSTIC WAS INITIATED BUT IT DID NOT OCCUR, THAT IS A MODULE INTERRUPT WAS TO BE POSTED BY THE MICROCODE AT THIS TIME INDICATING THE FSE EVENTS TOOK PLACE. THE MODULE INTERRUPT DID NOT OCCUR.

"FSE TIMEOUT" - THE BAD CRC FROM THE SLAVE CAUSED THE MASTER TO TIMEOUT WHICH IT SHOULDN'T HAVE. THE MASTER SHOULD HAVE IGNORED THE BAD CRC AND REASK FOR THE MESSAGE.

"FSE NO ERROR" - THE SUPPOSED BAD CRC GENERATED BY THE SLAVE WAS GOOD AT THE MASTER END OR THE SLAVE WILL NOT GENERATE A BAD CRC.

"TIMEOUT ERROR" - A TIMEOUT OF THE MASTER OCCURRED IN THE M8898 LOOP BACK TEST. INDICATING THE M8898 (SLAVE) DID NOT LOOP BACK THE DATA.

"DATA VALID ERROR" - A BAD CRC WAS RETURNED BY THE M8898 (SLAVE) DURING THE M8898 LOOP BACK TEST.

"ICAR ERROR" - THE DATA LOOPED BACK AND LOADED INTO THE ICAR DURING THE M8898 TEST WAS INCORRECT. BITS 19 AND 12 ARE NOT CHECKED DUE TO THE FACT THEY ARE NOT DIRECTLY LOADED DURING THIS TEST.

DATA SENT = BIT 7-0 THAT WERE SENT OUT IN THE LAST BYTE OF THE OUTGOING MESSAGE.

EXP'D COUNTS = 16 BIT WORD THAT SHOULD HAVE BEEN LOADED INTO THE ICAR.

REC'D COUNTS = 16 BIT WORD THAT WAS ACTUALLY IN ICAR.

THE CORRELATION BETWEEN THE DATA SEND AND ICAR EXPECTED IS AS FOLLOWS. FOR THE 8 BIT BYTE OUT (BITS 7-0) THE EXPECTED IS:

BITS Y,1,0,Y,4,5,6,7,X,X,X,X,3,2,1,0

WHERE Y = NOT TESTED

WHERE X,X,X,X = FILE BOX UNDER TEST

"MOD ADDR ERROR" = DURING THE M8000 TEST THE DATA IS ALSO LOADED INTO THE 16 X 16 FILE IMAGE ON THE M8000, THIS DATA WAS IN ERROR.

MODULE ADDRESS = ADDRESS WITHIN RAM WHERE THE DATA WAS READ.

DATA SENT = 8 BIT BYTE SENT.

EXP'D CONTS = 16 BIT EXP'D CONTENTS OF MODULE ADDRESS BITS 7-0, 7-0.

REC'D CONTS = 16 BIT CONTENTS THAT WERE READ.

"DA NOT SET ON TTY TEST" = DATA AVAILABLE WAS NOT POSTED IN THE REMOTE TTY LOOP BACK TEST AFTER A BYTE WAS SENT OUT.

"TBMT WAS SET AFTER TTY TRANS" = UART TRANSMITTER BUFFER WAS EMPTY IMMEDIATELY AFTER IT WAS LOADED WITH A CHARACTER TO BE TRANSMITTED.

"TBMT WAS CLEAR AFTER TTY TRANS TIME" = UART TRANSMITTER BUFFER WAS STILL FULL AFTER TTY TRANSMISSION TIME.

"TTY SEND RECEIVE ERROR" = ERROR WAS DETECTED IN THE REMOTE TTY LOOP DATA TEST.

SENT = 8 BIT BYTE THAT WAS SENT

REC'D = 8 BIT BYTE THAT WAS RECEIVED

"TTY INTERRUPT SEND RECEIVE ERROR" = DATA ERROR IN REMOTE TTY INTERRUPT DRIVEN TEST.

"RIF BIT WOULD NOT SET" = RIF BIT OF CSR WOULD NOT SET.

"RIF BIT WOULD NOT CLEAR" = RIF BIT OF CSR WOULD NOT CLEAR.

"MAINT BIT 3 ON" - MAINTENANCE BIT 3 IS USED AS AN INITIALIZE ON THE M8894, UPON SETTING IT, IT SHOULD CLEAR ITSELF OUT.

"PWR FAIL BIT ON" - POWER FAIL INDICATOR BIT OF THE CSR IS SET.

"ICSR REG. ERROR" - BIT IN CSR IS IN ERROR.

EXP'D - WHAT THE CSR SHOULD BE
REC'D - WHAT WAS READ

"NO TBMT INTERRUPT" - WITH UART TRANSMITTER BUFFER EMPTY AND TBMT INTERRUPT ENABLE SET THERE WAS NO INTERRUPT.

"TBMT NOT SET" - TRANSMITTER EMPTY BUFFER NEVER SET.

"TBMT INT ERROR" - WITHIN MICRODIAGNOSTIC OF M8894 TEST OF TBMT WAS FALSE.

"NO BMT INT" - WITH UART TRANSMITTER BUFFER LOADED AND BMT INTERRUPT ENABLE SET THERE WAS NO INTERRUPT.

8. DIAGNOSTIC STRUCTURE

8.1 INITIAL DIALOGUE

THE INITIAL DIALOGUE IS AIMED TO GIVE THE USER A QUICK VERIFICATION OF HOW THE SYSTEM IS CONFIGURED AND HOW THE INDIVIDUAL FILE BOX(ES) ARE JUMPED WITH RESPECT TO INTERRUPT VECTOR AND INTERRUPT PRIORITY LEVEL. THIS SECTION PROVES THAT THE ICR FUNCTIONS PROPERLY AS A UNIBUS DEVICE IN AS MUCH AS ADDRESSING AND INTERRUPTING.

8.2 CSR TEST

THE TEST OF THE CSR TESTS THAT CSR BITS SET AND CLEAR PROPERLY AND INDIVIDUALLY.

8.3 M8894 TEST

THE MICRODIAGNOSTIC RESIDENT IN THE M8894 TESTS THAT FLOWS THROUGH THE M8894 ARE FUNCTIONING PROPERLY. IT WILL ALSO VERIFY THAT THE M8898 CRC CHECKING LOGIC IS WORKING CORRECTLY, AND THAT THE M8898 LOOPS DATA PROPERLY. SEE SECTION 9.1 FOR M8894 MICRODIAGNOSTIC CODE AND FLOWCHARTS.

8.4 M8896 TEST

THE M8896 MICRODIAGNOSTIC TESTS CERTAIN FLOWS ON THE M8896 WITHOUT INTERFERING WITH MODULES IN THE FILE BOX. THE INPUT MODULE RANGE JUMPERS ARE CHECKED AS WELL AS THE FACT THAT THE FOLLOWING CIRCUITRY IS FUNCTIONING CORRECTLY. THE MODULE ADDRESSES ARE ALSO VERIFIED THAT CERTAIN BIT PATTERNS LOAD AND READ PROPERLY. THIS TEST ALSO ALLOWS THE USER TO TRANSMIT A FIXED PATTERN VIA THE SWITCH REGISTER (SW00 AND SW07-00) OR VARY THE BITS FOR SCOPING PURPOSES AGAIN BY THE SWITCH REGISTER. SEE SECTION 9.2 FOR M8896 MICRODIAGNOSTIC CODE AND FLOWCHARTS.

THIS TEST EXERCISES THE UART AND ITS ASSOCIATED LOGIC, AS WELL AS THE WHOLE LINK, WITH ALL DATA PATTERNS IN BOTH FLAG AND INTERRUPT MODES. THIS TEST WILL ALSO RECORD ALL LINE ERRORS INDUCED BY SURROUNDING NOISES. (LINE ERRORS INDICATE ONLY THAT THE MASTER OR SLAVE HAD TO RESEND A MESSAGE NOT THAT ANY DATA WAS LOST).

9. MISCELLANEOUS

9.1 M8094 MICRODIAGNOSTIC

9.1.1 M8094 MICRODIAGNOSTIC STRUCTURE

THE MICRODIAGNOSTIC WITHIN THE M8094 IS CONTROLLED BY MAINTENANCE BIT 2 OF THE ICR'S CSR. SETTING THIS BIT TO A 1 WILL CAUSE THE MICROCODE TO ENTER THE MICRODIAGNOSTIC. TOGGING THIS BIT WILL THEN ALLOW THE MICRODIAGNOSTIC TO RUN IN SYNCHRONIZATION WITH THE PDP11 DIAGNOSTIC.

THE M8094 MICRODIAGNOSTIC PERFORMS BASIC CHECKS OF THE M8094 SUCH AS MODULE INTERRUPT, TIMEOUT FLOP OPERATION, ERROR FLOP OPERATION, SEQUENCE COMPARE, DATA VALID AND TBMT. NEXT THE M8098 CRC LOGIC IS TESTED AS BOTH MASTER AND SLAVE CRC ERRORS ARE FORCED AND VERIFIED. THESE ARE DONE BY SETTING THE M8098 MAINTENANCE BIT AND FORCING THE TT BITS TO CERTAIN CONDITIONS WITH DATA BITS 6,7 OF THE OUTGOING MESSAGE AS 0,0 OR 1,1 (SEE SECTION 9.1.2 FOR EXACT TT AND DATA BIT PATTERNS). M8098 IS THEN PUT INTO A LOOP BACK MODE, WHERE THE SLAVE TURNS THE DATA AROUND AND THE MICRODIAGNOSTIC LOADS IT INTO THE ICAR AND ADDRESS RAM WHICH IS READ AND VERIFIED BY THE PDP11 DIAGNOSTIC.

9.1.2 M8098 DIAGNOSTIC FEATURES

THE FOLLOWING CRC TEST FUNCTIONS ARE DEFINED IF THE MAINTENANCE BIT IS SET:

1. MASTER MODE:

- A. FORCE AN OUTGOING CRC ERROR IN THE MASTER IF: TT=1.

2. SLAVE MODE:

- A. FORCE AN OUTGOING CRC ERROR IN THE SLAVE IF BITS 6 AND 7 OF THE LAST DATA BYTE ARE BOTH ONE.
- B. INHIBIT CRC CHECK IF BITS 6 AND 7 OF THE LAST DATA BYTE ARE BOTH ZERO.

MAINTENANCE -- THE MAINTENANCE BIT CAUSES THE SLAVE TO REPEAT THE MESSAGE BACK TO THE MASTER. IF DATA IS PART OF THE MESSAGE, THE LAST DATA BYTE RECEIVED IS SEND BACK 'N' TIMES WHERE 'N' EQUALS THE NUMBER OF DATA BYTES INDICATED BY THE RECEIVED LENGTH BITS.

ICR11 DIAGNOSTIC MICROCODE (M8094)

| LOCATION | INSTRUCTION | CODE | COMMENT |
|----------|----------------|----------|------------------------|
| 0 | TST MAINT | 00000011 | MAINT SET? |
| 1 | CJMP .+2 | 11110011 | YES, CONT |
| 2 | CLR PC | 1101XXXX | NO, START AGAIN |
| 3 | LOAD MODINT | 00010001 | CREATE INTERRUPT |
| 4 | TST MAINT | 00000011 | MAINT SET? |
| 5 | CJMP .-1 | 11110100 | YES, HANG |
| 6 | TST TIMEOUT | 00000000 | TIMEOUT SET? |
| 7 | CJMP .+2 | 11111001 | YES, CREATE INT. |
| 10 | JMP .+2 | 11101010 | NO, DON'T INT |
| 11 | LOAD MODINT | 00010001 | CREATE INTERRUPT |
| 12 | TST MAINT | 00000011 | MAINT SET? |
| 13 | CJMP .+4 | 11111111 | YES, CONT |
| 14 | JMP .-2 | 11101010 | NO, HANG |
| 15 | | | |
| 16 | | | |
| 17 | INC SEQ | 1010XXXX | INC SEQUENCE |
| 0 | TST SEQ | 00000001 | SEQUENCE COMP? |
| 1 | CJMP .+5 | 11110110 | YES, CREATE INT. |
| 2 | INC SEQ | 1010XXXX | INC SEQUENCE |
| 3 | TST SEQ | 00000001 | SEQUENCE COMP? |
| 4 | CJMP .+2 | 11110110 | YES, CREATE INT |
| 5 | JMP .+2 | 11100111 | NO, DON'T INT |
| 6 | LOAD MODINT | 00010001 | CREATE INTERRUPT |
| 7 | TST MAINT | 00000011 | MAINT SET? |
| 10 | CJMP .-1 | 11110111 | YES, HANG |
| 11 | LOAD ERROR | 0011XXXX | CREATE ERROR INTERRUPT |
| 12 | TST MAINT | 00000011 | MAINT SET? |
| 13 | CJMP .+4 | 11111111 | YES, CONT |
| 14 | JMP .-2 | 11101010 | NO, HANG |
| 15 | | | |
| 16 | | | |
| 17 | TST DATA VALID | 00000010 | DATA VALID TRUE? |
| 0 | CJMP .+2 | 11110010 | YES, DON'T INT. |
| 1 | LOAD MODINT | 00010001 | CREATE INTERRUPT |
| 2 | TST MAINT | 00000011 | MAINT SET? |
| 3 | CJMP .-1 | 11110010 | YES, HANG |
| 4 | CLK FLAGS | 0100XXXX | CLOCK FLAGS |
| 5 | TST TBMT | 00000101 | TBMT TRUE |
| 6 | CJMP .+2 | 11111000 | YES, INTERRUPT |
| 7 | JMP .+2 | 11101001 | NO, DON'T INTR. |
| 10 | LOAD MODINT | 00010001 | CREATE INTERRUPT |
| 11 | TST MAINT | 00000011 | MAINT SET? |
| 12 | CJMP .+2 | 11111100 | YES, R |
| 13 | JMP .-2 | 11101001 | NO, HANG |

| | | | |
|----|----------------|----------|--------------------|
| 14 | TST TBMT | 00000101 | TBMT SET? |
| 15 | CJMP .-1 | 11111100 | YES, WAIT |
| 16 | CLK FLAGS | 0100XXXX | CLOCK FLAGS |
| 17 | TDP 1011 | 00101011 | ISSUE TDP |
| 0 | TST RDP | 00000111 | RECV DATA PRESENT? |
| 1 | CJMP .+4 | 11110101 | YES, CONT |
| 2 | TST TIMEOUT | 00000000 | TIMEOUT? |
| 3 | CJMP .+4 | 11110111 | YES, INDICATE |
| 4 | JMP .-4 | 11100000 | LOOP BACK |
| 5 | SET MODINT | 00010001 | SET MOD INT |
| 6 | JMP .+2 | 01101000 | CONT |
| 7 | SET ERROR | 0011XXXX | SET ERROR |
| 10 | TST MAINT | 00000011 | MAINT SET? |
| 11 | CJMP .+2 | 11111011 | YES, THEN LOOP |
| 12 | JMP .+2 | 11101100 | NO, CONT |
| 13 | CIF 12 | 10001010 | LOOP |
| 14 | TST TBMT | 00000101 | TBMT SET? |
| 15 | CJMP .-1 | 11111100 | YES, HANG |
| 16 | CLK FLAGS | 0100XXXX | CLOCK FLAGS |
| 17 | TDP 1001 | 00101001 | ISSUE TDP |
| 0 | TST TIMEOUT | 00000000 | TIMEOUT SET? |
| 1 | CJMP .+4 | 11110101 | YES, SET DA |
| 2 | TST RDP | 00000111 | RECV DATA PRESENT? |
| 3 | CJMP .+4 | 11110111 | YES, CONT |
| 4 | JMP .-4 | 11100000 | LOOP |
| 5 | SET DA | 01110000 | SET DA |
| 6 | JMP .+4 | 11101010 | CONT |
| 7 | TST DATA VALID | 00000010 | DATA VALID? |
| 10 | CJMP .+2 | 11111010 | YES, CONT |
| 11 | SET MODINT | 00010001 | NO, SET MOD INT |
| 12 | JMP .+2 | 11101100 | CONT |
| 13 | CIF 15 | 10001011 | LOOP |
| 14 | TST MAINT | 00000011 | MAINT SET? |
| 15 | CJMP .+2 | 11111111 | YES, CONT |
| 16 | JMP .-3 | 11101011 | NO, LOOP |
| 17 | CLK FLAGS | 0100XXXX | CLOCK FLAGS |
| 0 | CLR MODINT | 00010000 | CLEAR MOD INTR |
| 1 | TDP 1010 | 00101010 | ISSUE TDP |
| 2 | TST RDP | 00000111 | RECV DATA PRESENT? |
| 3 | CJMP .+5 | 11111000 | YES, CONT |
| 3 | CJMP .+5 | 11111000 | YES, CONT |
| 4 | TST TIMEOUT | 00000000 | TEST TIMEOUT |
| 5 | CJMP .+2 | 11110111 | SET, INDICATE |
| 6 | JMP .-4 | 11100010 | LOOP ON TEST |
| 7 | CIF 16 | 10001110 | INDICATE TIMEOUT |
| 10 | TST RDP | 00000111 | WAIT TIL RDP |
| 11 | CJMP .-1 | 11111000 | GOES AWAY |
| 12 | TST DATA VALID | 00000010 | TEST DATA VALID |
| 13 | CJMP .+2 | 11111101 | CONT |
| 14 | CIF 16 | 10001110 | DATA INVALID |
| 15 | LD GEN | 0110XXXX | LOAD ICAN |
| 16 | LD MEM | 1001XXXX | LOAD MEM FILE |
| 17 | NOP | 1011XXXX | NO GENERATION |

| | | | |
|----|-------------|----------|--------------------|
| 0 | LOAD MODINT | 00010001 | LOAD MOD INTR |
| 1 | TST T0MT | 00000101 | T0MT SET? |
| 2 | CJMP .-1 | 11110001 | |
| 3 | TST MAINT | 00000011 | MAINT SET? |
| 4 | CJMP .+12 | 11111110 | LOOP ON TEST |
| 5 | CLR PC | 1101XXXX | RETURN |
| 6 | | | |
| 7 | | | |
| 10 | LD DA | 01110000 | TIMEOUT INDICATION |
| 11 | JMP .-11 | 11100000 | CONT |
| 12 | LD ERROR | 0011XXXX | DATA INVALID |
| 13 | JMP .-13 | 11100000 | CONT |
| 14 | | | |
| 15 | JMP .-3 | 11101010 | DATA INVALID |
| 16 | CIF 14 | 10001100 | LOOP ON TEST |
| 17 | | | |

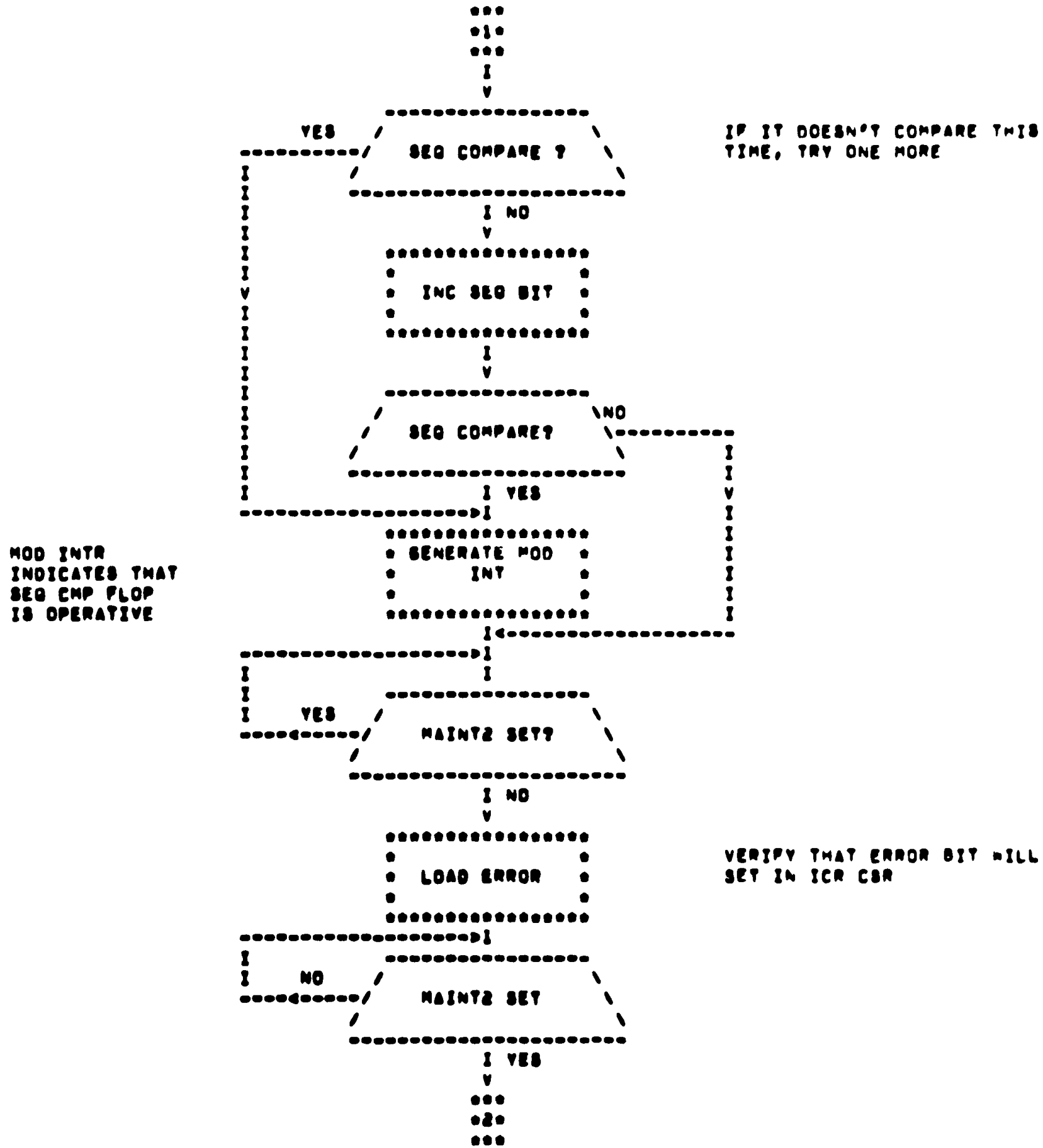
FLOW CHART

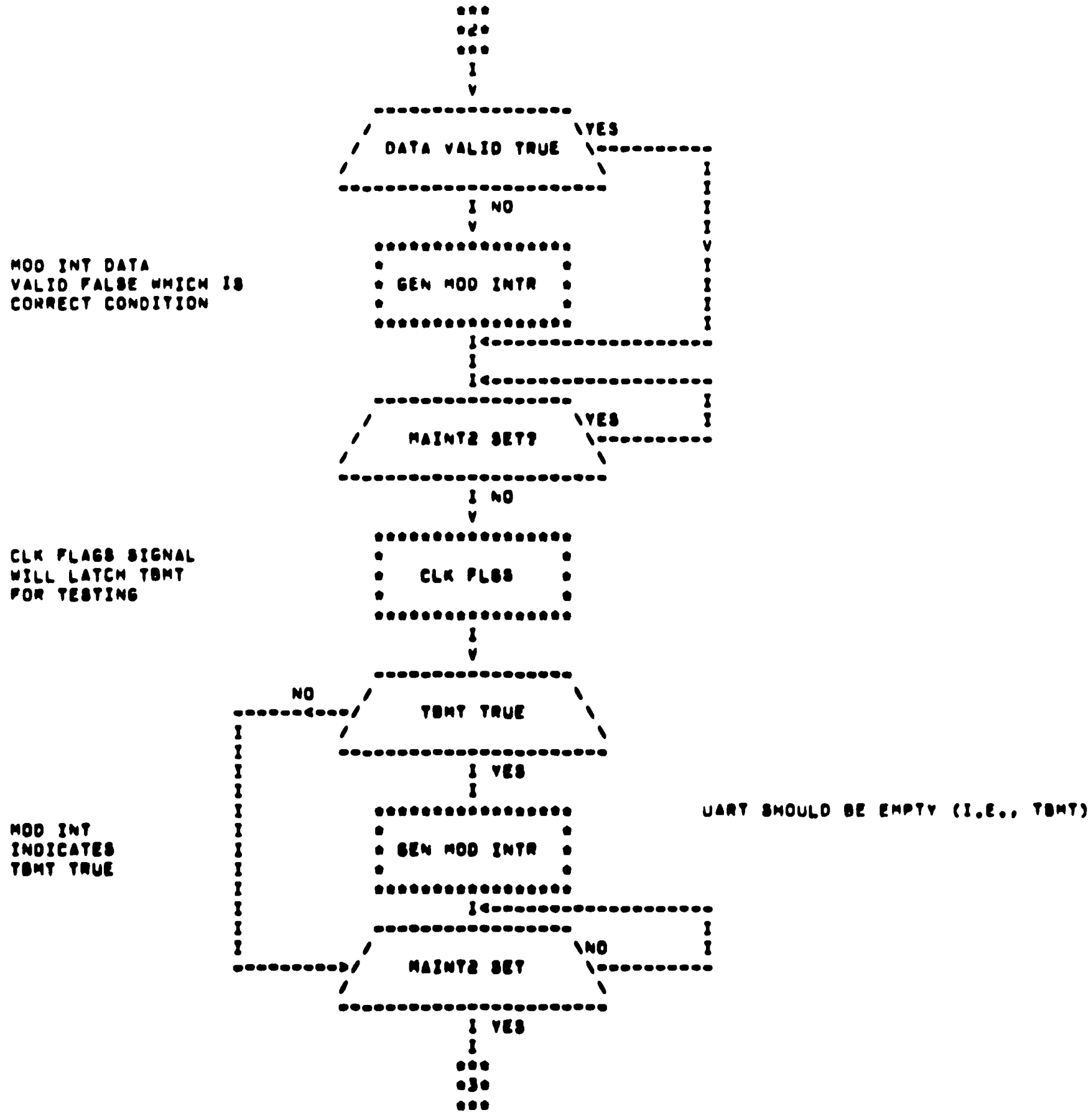
8894 DIAGNOSTIC MICRO-FLOW

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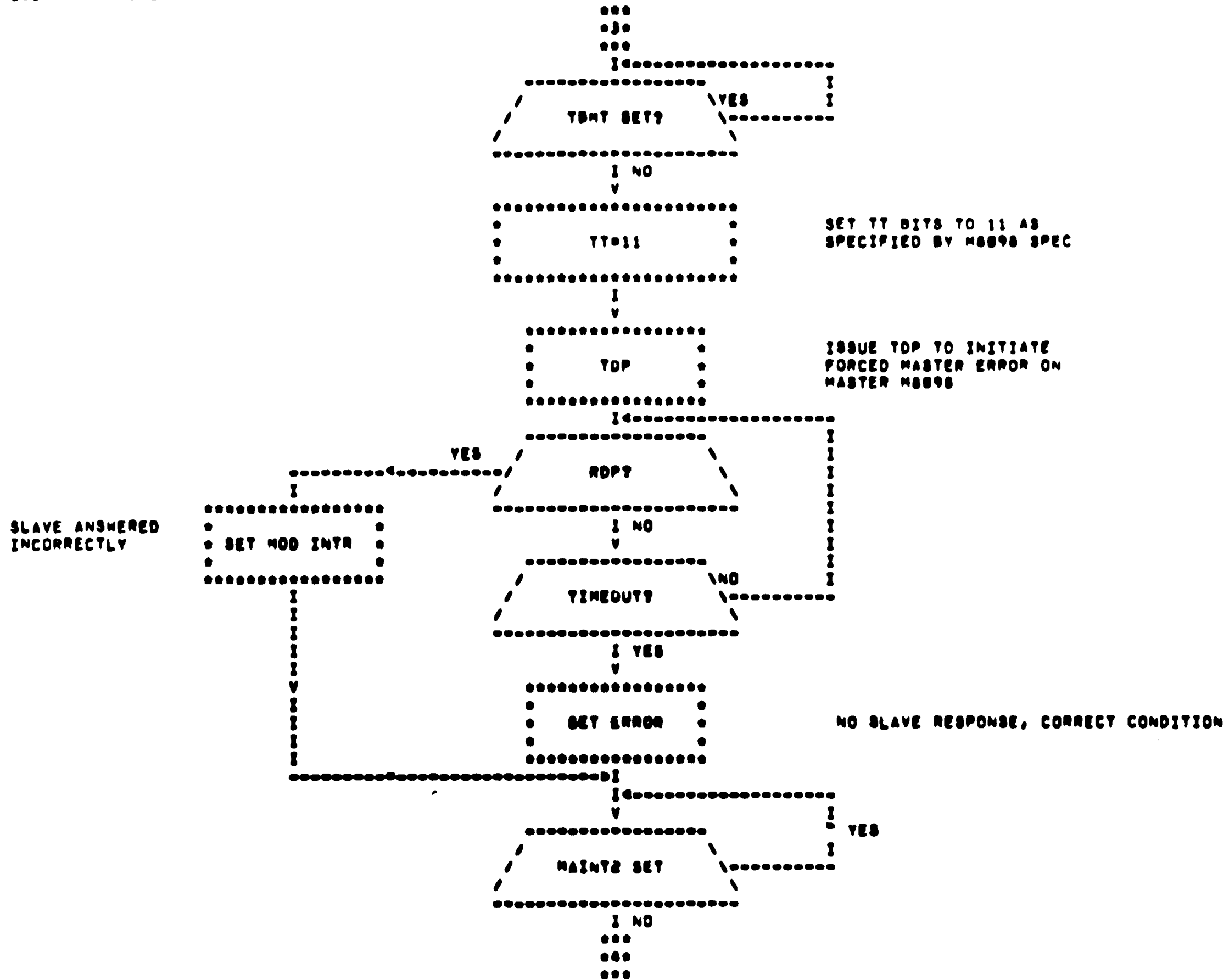
TABLE OF CONTENTS

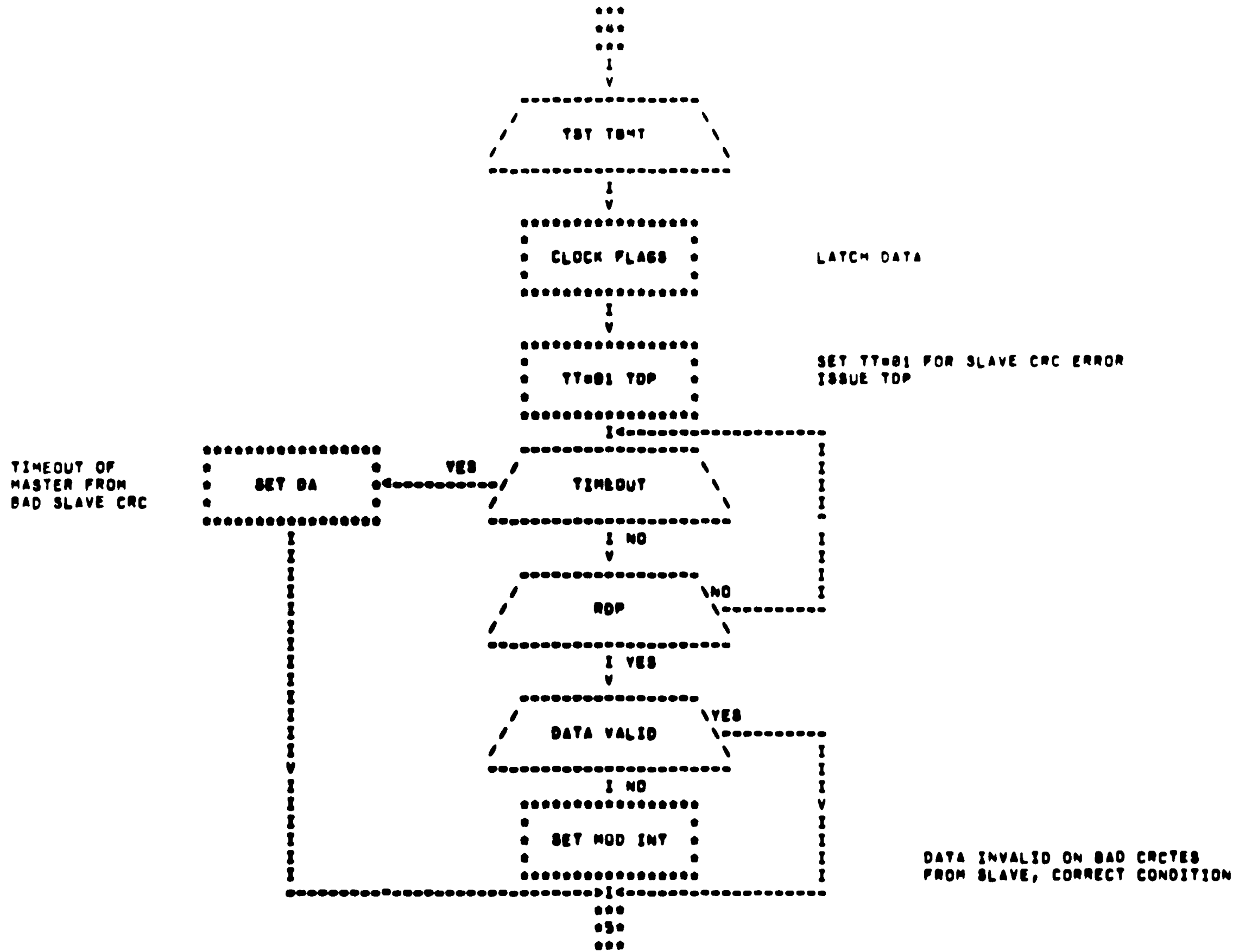
| | |
|---------|----------------------------|
| PAGE 01 | MAINT INTR., TEST TIMEOUT |
| PAGE 02 | TEST SEQ COMPARE AND ERROR |
| PAGE 03 | TEST DATA VAILO AND TBMT |
| PAGE 04 | FORCED MASTER CRC ERROR |
| PAGE 05 | FORCED SLAVE CRC ERROR |
| PAGE 06 | M8898 LOOP DATA TEST |

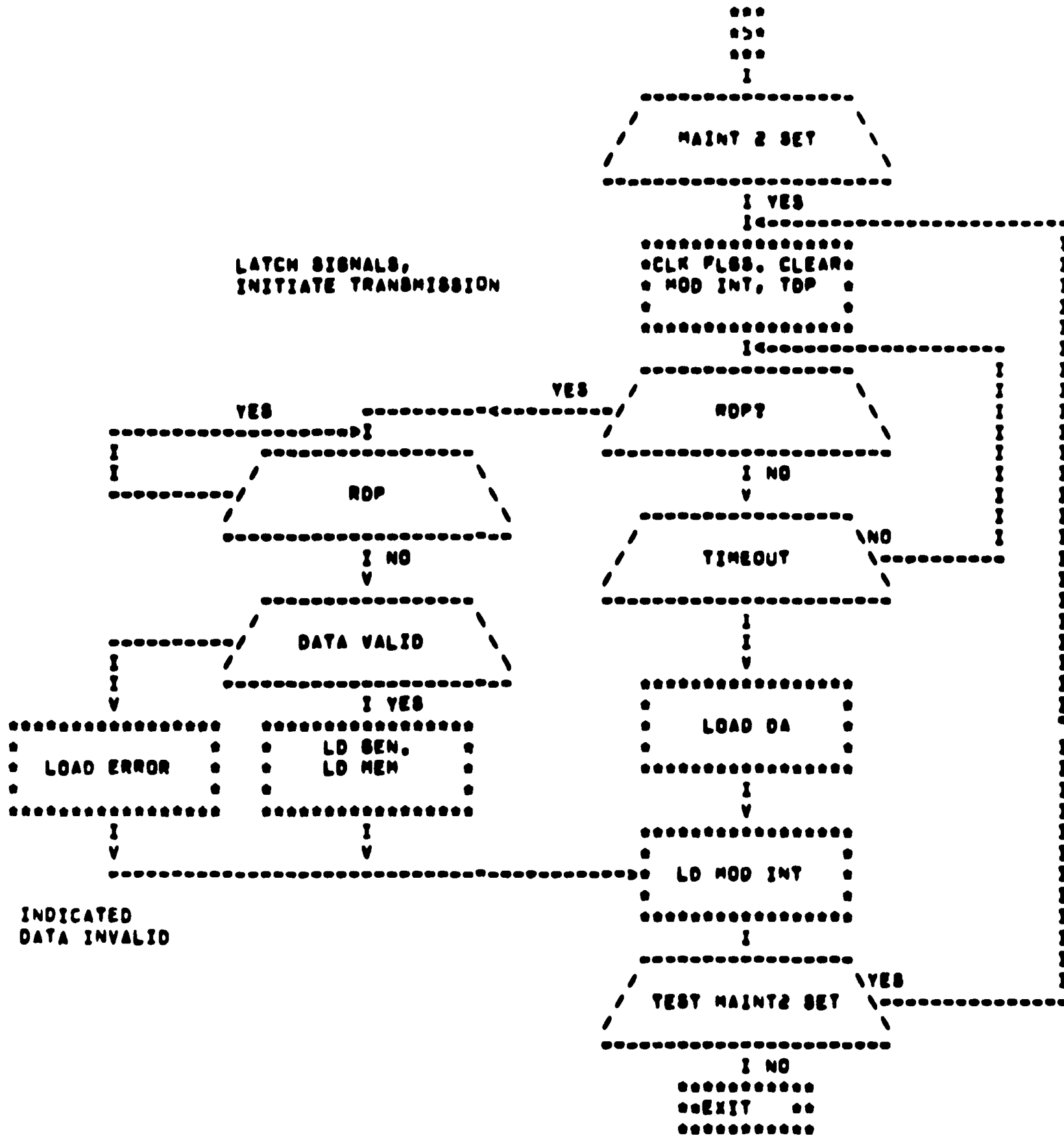




Hi







9.2 M8896 MICRODIAGNOSTIC

9.2.1 M8896 MICRODIAGNOSTIC STRUCTURE

THE M8896 MICRODIAGNOSTIC IS CONTROLLED BY MAINTENANCE BITS 0 AND 1. THESE BITS ARE PASTED TO M8896 WHICH THEN ENTERS THE MICRODIAGNOSTIC WHICH PERFORMS TWO BASIC CHECKS OF THE M8896. THESE CHECKS ARE TEST OF THE M8896 POLLING SCHEME AND THE ABILITY TO READ ALL MODULE ADDRESS AND CONTENTS OF THE FILE BOX.

9.2.2 M8896 MICRODIAGNOSTIC CODE

ICR11 DIAGNOSTIC CODE (M8896)

| LOCATION | INSTRUCTION | CODE | COMMENT |
|----------|----------------|----------|--|
| 0 | NOP | 1100XXXX | NOP |
| 1 | NOP | 1100XXXX | NOP |
| 2 | TST DATA VALID | 00000111 | TEST DATA VALID |
| 3 | CJMP .+2 | 11110101 | TRUE, CONT |
| 4 | JMP .-2 | 11100010 | NO, HANG |
| 5 | TST MAINT | 00001001 | MAINT SET? |
| 6 | CJMP .+2 | 11111000 | YES |
| 7 | CLR PC | 110XXXXX | NO, RETURN |
| 10 | TST LMD | 00000000 | LMD SET? (INDICATING SYNC WITH PDP11 DIAGNOSTIC) |
| 11 | CJMP .+2 | 11111011 | YES, CONT |
| 12 | JMP .+4 | 11101110 | NO, JUST TOP |
| 13 | SET MODINT | 01100001 | SET MOD INTERRUPT |
| 14 | INC MOD ADDR | 010XXXXX | INC INPUT ADDRESS |
| 15 | SEL M ADDR | 00100000 | SEL POLL ADDRESS |
| 16 | TDP | 01110100 | TRANS DATA PRESENT |
| 17 | NOP | 1100XXXX | NOP |
| 0 | JMP .+2 | 11100010 | SKIP CIP |
| 1 | CIP 14 | 10001100 | CHANGE TO 14 |
| 2 | TST DONE | 00001000 | DONE? |
| 3 | CJMP .+2 | 11110101 | YES, CONT |
| 4 | JMP .-2 | 11100010 | NO, WAIT |
| 5 | CLR MODINT | 01100000 | CLEAR MOD INT |
| 6 | TST DATA VALID | 00000111 | DATA VALID? |
| 7 | CJMP .+2 | 11111001 | YES, CONT |
| 10 | JMP .-2 | 11100110 | NO, WAIT |
| 11 | TST MAINT | 00001001 | MAINT SET? |
| 12 | CJMP .-11 | 11110001 | YES, GO TO CIP |
| 13 | NOP | 1100XXXX | NOP |
| 14 | NOP | 1100XXXX | NOP |
| 15 | NOP | 1100XXXX | NOP |
| 16 | NOP | 1100XXXX | NOP |
| 17 | NOP | 1100XXXX | NOP |

| | | | |
|----|----------------|----------|--|
| 0 | TST RMD | 00000001 | RMD SET? (INDICATING SYNC WITH POP11 DIAGNOSTIC) |
| 1 | CJMP .+3 | 11110100 | YES, JUST TDP |
| 2 | SET MOD INT | 01100001 | SET MOD INT |
| 3 | SEL L ADDR | 00100001 | SET INPUT ADDR |
| 4 | TDP | 01110100 | TRANS DATA PRESENT |
| 5 | TST DONE | 00001000 | DONE |
| 6 | CJMP .+2 | 11111000 | YES, CONT |
| 7 | JMP .-2 | 11100101 | NO, WAIT |
| 10 | CLR MODINT | 01100000 | CLR MOD INT |
| 11 | TST DATA VALID | 00000111 | DATA VALLID? |
| 12 | CJMP .+2 | 11111100 | YES, CONT |
| 13 | JMP .-2 | 11101001 | NO, WAIT |
| 14 | TST MAINT | 00001001 | MAINT SET? |
| 15 | CJMP .+2 | 11111111 | YES, CONT |
| 16 | JMP .-16 | 11100000 | NO, LOOP |
| 17 | NOP | 1100XXXX | NOP |

| | | | |
|----|----------------|----------|---------------------|
| 0 | TDP | 01110100 | TRANS DATA PRESENT |
| 1 | TST DONE | 00001000 | DONE? |
| 2 | CJMP .+2 | 11110100 | YES, CONT |
| 3 | JMP .-2 | 11100001 | NO, WAIT |
| 4 | TST DATA VALID | 00000111 | DATA VALID? |
| 5 | CJMP .+2 | 11110111 | YES, CONT |
| 6 | JMP .-2 | 11100100 | NO, WAIT |
| 7 | TST MAINT | 00001001 | MAINT SET? |
| 10 | CJMP .-10 | 11110000 | YES, HANG |
| 11 | TDP | 01110100 | NO, TRANS DATA PRES |
| 12 | TST DONE | 00001000 | DONE? |
| 13 | CJMP .+2 | 11111101 | YES, CONT |
| 14 | JMP .-2 | 11101010 | NO, WAIT |
| 15 | CLR PC | 1101XXXX | RETURN |
| 16 | | | |
| 17 | | | |

FLOW CHART

M8896 DIAGNOSTIC MICRO-FLOW

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TABLE OF CONTENTS

.

| | |
|---------|-----------------------------------|
| PAGE 01 | INPUT MODULE ADDRESS TEST |
| PAGE 03 | OUTPUT MODULE ADDRESS WRAP AROUND |
| PAGE 04 | EXIT ROUTINE |

B3

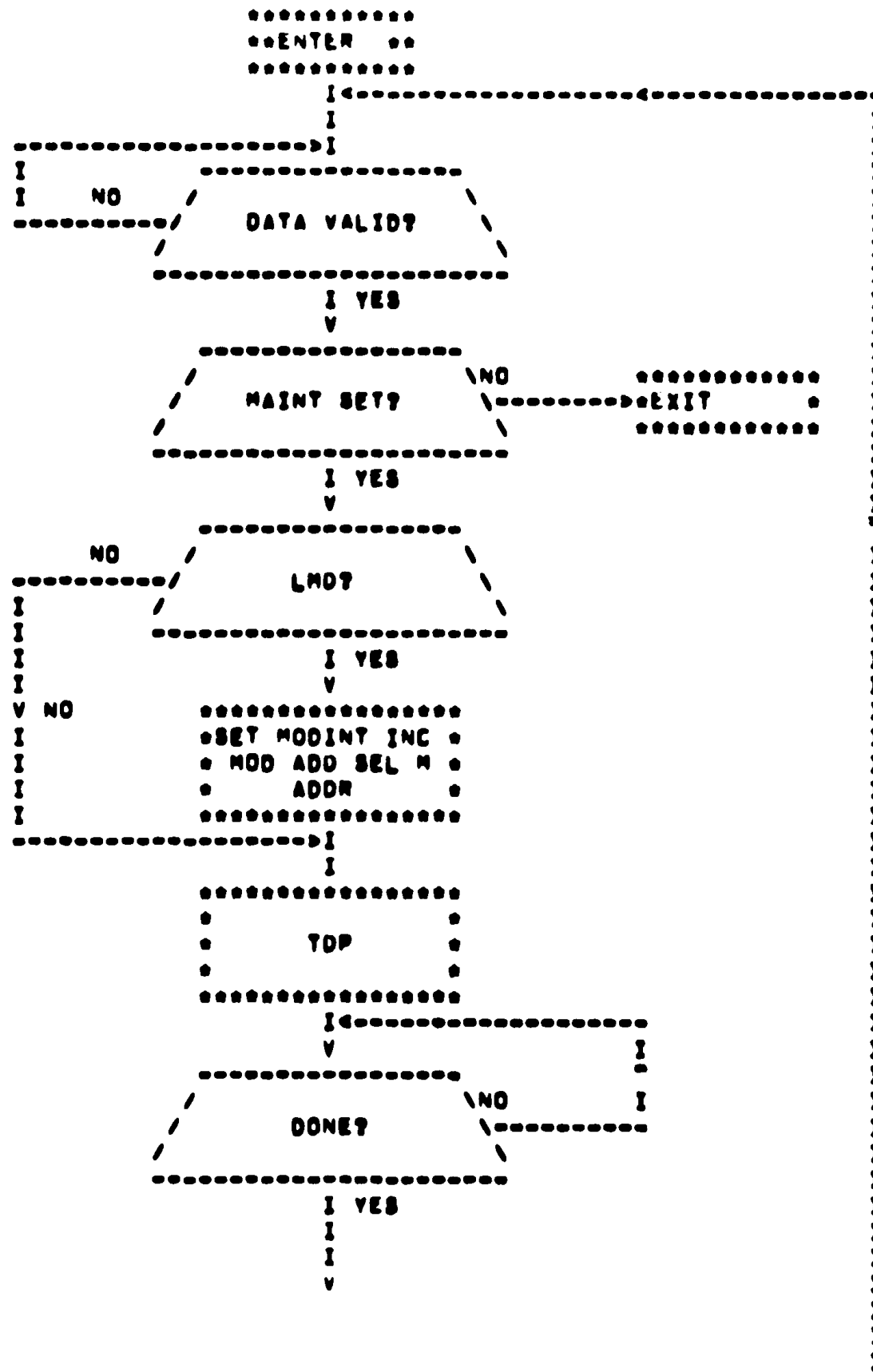
DON'T ALLOW ANY TESTS
TIL DATA IS VALID

MOD INT INDICATES THAT
M8896 PERFORMED MICRO-
DIAGNOSTIC

LMD IS USED TO
SYNC MICRO CODE
WITH DIAG. IN CPU
SINCE CPU IS SLOWER

DATA IS SET, SEND
BACK TO MASTER

WAIT FOR TRANSMISSION
TO FINISH BEFORE
CONTINUING

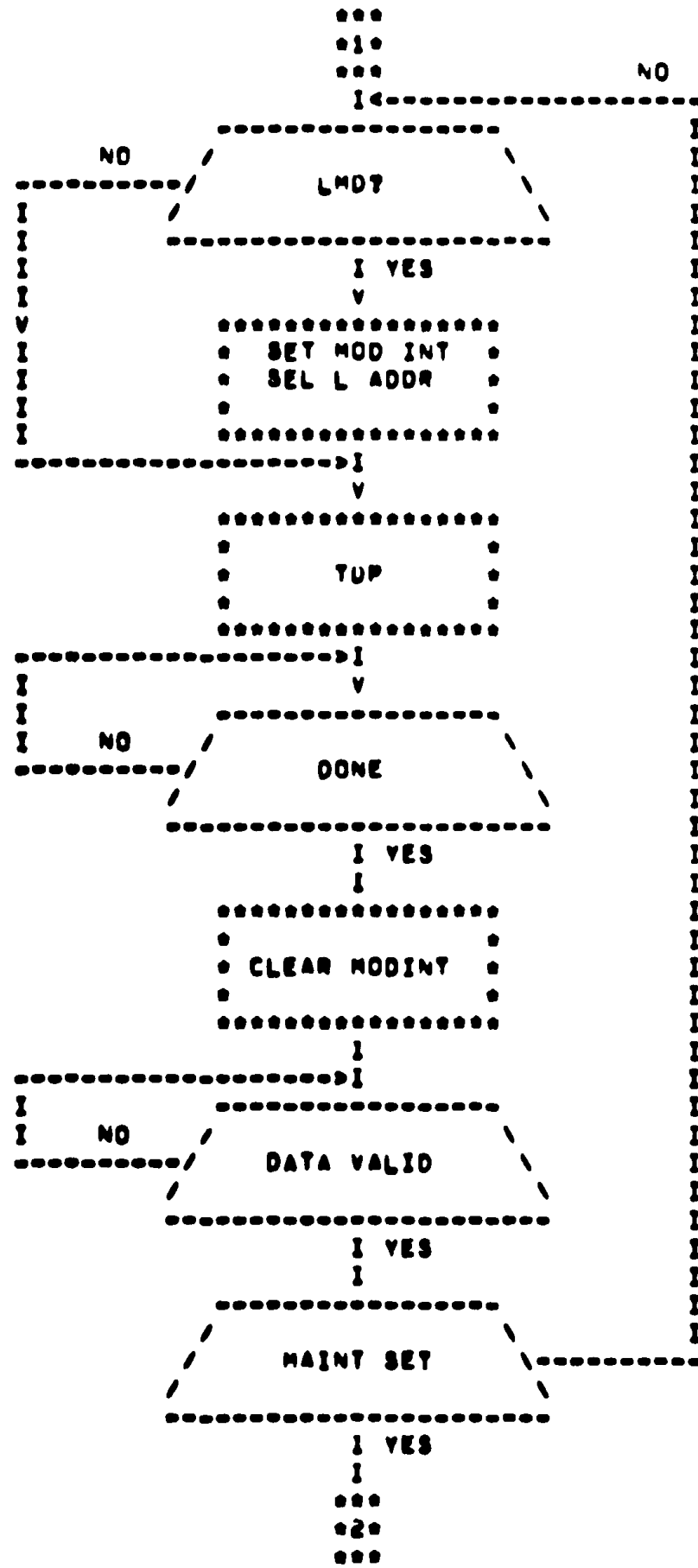


LMD IS USED TO SYNC
 MICROCODE WITH CPU.

SEND BACK OUTPUT ADDRESS

WAIT FOR TRANSMISSION
 COMPLETE

DATA MUST BE VALID
 BEFORE TEST



RETURN FOR NEXT

| | |
|------|---|
| 24 | SWITCH REGISTER CONTROL SETTINGS |
| 76 | TRAP CATCHER |
| 86 | STARTING ADDRESS(ES) |
| 114 | BASIC DEFINITIONS |
| 224 | COMMON TAGS |
| 263 | ERROR POINTER TABLE |
| 283 | ERROR DEFINITIONS |
| 656 | ICSR/ICAR BIT EQUIVALENTS |
| 711 | ADDRESS MAP OF ICR |
| 853 | INITIAL SETUP FOR PROGRAM |
| 972 | TEST OF CSR |
| 1111 | ICR VECTOR ADDRESS AND PRIORITY LEVEL |
| 1568 | TEST OF MICRO-DIAGNOSTIC IN M8896 |
| 1862 | TEST OF TTY LOOP BACK |
| 2172 | END OF PASS ROUTINE |
| 2333 | TEST OF M8896 MICRO-DIAGNOSTICS |
| 2607 | CHECK OF ICR11 ERROR GENERATION CAPABILITIES |
| 3073 | SCOPE LOOP ROUTINES |
| 3104 | TYPE ROUTINE |
| 3203 | ERROR HANDLER ROUTINE |
| 3315 | ERROR MESSAGE TIMEOUT ROUTINE |
| 3367 | BINARY TO OCTAL (ASCII) AND TYPE |
| 3445 | CONVERT BINARY TO DECIMAL AND TYPE ROUTINE |
| 3513 | POWER DOWN AND UP ROUTINES |
| 3555 | TRAP DECODER |
| 3571 | TRAP TABLE |
| 3595 | EXIT REQUEST ROUTINES(POWER FAIL AND CONTROL C) |
| 3700 | ICR-11 INTERRUPT SERVICE ROUTINE |
| 3858 | ASCII MESSAGES |
| 3909 | FIELD TEST LOAD ROUTINES/ABS LOADER |

1
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55
56

000001
160000

```
;  
;ICR-11 DIAGNOSTIC  
;  
.TITLE MAINDEC-11-DZIRA-A  
;COPYRIGHT (C) 1975  
;DIGITAL EQUIPMENT CORP.  
;MAYNARD, MASS. 01754  
;  
;PROGRAM BY DAN DENNIS  
;  
;THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC SYSMAC  
;PACKAGE (MAINDEC-11-DZQAC-01), AUG 29, 1975.  
;  
SYN=1  
SSMR=160000 ;HALT ON ERROR, LOOP ON TEST, INHIBIT ERROR TYP0UT  
  
.EVEN  
  
;SBTTL SWITCH REGISTER CONTROL SETTINGS  
  
;SW00 - FILE  
  
;SW01 - BOX  
  
;SW02 - UNDER  
  
;SW03 - TEST  
  
;SW04 -0- TEST ALL FILES ON SYSTEM  
; -1- TEST FILE SPECIFIED BY SW03-00  
  
;SW05 -0-  
; -1- LOOP ON TEST SPECIFIED BY SW07,06  
  
;SW06 - TEST SW07 = 0 SW06 = 0 CSR TEST  
; SW07 = 0 SW06 = 1 M0094 TEST  
;SW07 - NUMBER SW07 = 1 SW06 = 0 M0096 TEST  
; SW07 = 1 SW06 = 1 REMOTE TTY TEST  
  
;SW08 -0-  
; -1- LOOP ON M0096 DATA LOOP BACK TEST  
; (USES SW00-07 FOR DATA PATTERN)  
; NOTE: SW06,07 SHOULD BE 0,1 OR 1,0  
; SW06,07 AS 0,0 WILL DEFAULT TO 0,1  
; SW06,07 AS 1,1 WILL DEFAULT TO 1,0  
  
;SW09 -0- HALT AT END OF PASS  
; -1- LOOP ON DIAGNOSTIC  
  
;SW10 -0- PRINT ON LOCAL CONSOLE  
; -1- PRINT ON LOCAL AND REMOTE TERMINAL  
  
;SW11 -0-  
; -1-
```

```

57
58           JSW12  -0-   QUICK VERIFY
59           /      -1-   LONG TEST
60
61           JSW13  -0-
62           /      -1-   SUPPRESS ERROR TYPEOUT
63
64           JSW14  -0-
65           /      -1-   SCOPE LOOP
66
67           JSW15  -0-
68           /      -1-   HALT ON ERROR
69
70
71
72

```

.SBTTL TRAP CATCHER

```

73
74           .00
75           000000
76           ;=ALL UNUSED LOCATIONS FROM 0 = 776 CONTAIN A ".+2,HALT"
77           ;=SEQUENCE TO CATCH ILLEGAL TRAPS AND INTERRUPTS
78           ;=LOCATION 0 CONTAINS 0 TO CATCH IMPROPERLY LOADED VECTORS
79           .0174
80           000174 000000  DISPREG: ,WORD 0           ;=SOFTWARE DISPLAY REGISTER
81           000176 000000  SWREG:   ,WORD 0           ;=SOFTWARE SWITCH REGISTER
82

```

.SBTTL STARTING ADDRESS(ES)

```

83
84           000200 000137 002070  JMP      @START           ;=JUMP TO STARTING ADDRESS OF PROGRAM
85
86
87           .0204
88
89           000204 000137 005554  JMP      @TEST2
90
91           .0210
92
93           000210 000137 003002  JMP      @START1
94
95           .0214
96
97           000214 000137 011330  JMP      @TEST3
98
99           .0220
100
101          000220 000137 007032  JMP      @TTVSTR
102
103          ;START IF POWER FAIL TEST WANTED
104
105          .0224
106
107          000224 000137 002064  JMP      @SETPHF
108

```

.SBTTL BASIC DEFINITIONS

109
110
111
112

```

113                                     ;*INITIAL ADDRESS OF THE STACK POINTER *** 1100 ***
114      001100      STACK= 1100
115                                     .EQUIV EMT,ERROR      ;*BASIC DEFINITION OF ERROR CALL
116                                     .EQUIV IOT,SCOPE      ;*BASIC DEFINITION OF SCOPE CALL
117      177776      PS= 177776      ;*PROCESSOR STATUS WORD
118                                     .EQUIV PS,PSW
119      177774      SYLMT= 177774      ;*STACK LIMIT REGISTER
120      177772      PIRO= 177772      ;*PROGRAM INTERRUPT REQUEST REGISTER
121      177570      OSHR= 177570      ;*HARDWARE SWITCH REGISTER
122      177570      DDISP= 177570      ;*HARDWARE DISPLAY REGISTER
123
124                                     ;*GENERAL PURPOSE REGISTER DEFINITIONS
125      000000      R0= X0      ;*GENERAL REGISTER
126      000001      R1= X1      ;*GENERAL REGISTER
127      000002      R2= X2      ;*GENERAL REGISTER
128      000003      R3= X3      ;*GENERAL REGISTER
129      000004      R4= X4      ;*GENERAL REGISTER
130      000005      R5= X5      ;*GENERAL REGISTER
131      000006      R6= X6      ;*GENERAL REGISTER
132      000007      R7= X7      ;*GENERAL REGISTER
133                                     .EQUIV R6,SP      ;*STACK POINTER
134                                     .EQUIV R7,PC      ;*PROGRAM COUNTER
135
136                                     ;*PRIORITY LEVEL DEFINITIONS
137      000000      PR0= 0      ;*PRIORITY LEVEL 0
138      000040      PR1= 40      ;*PRIORITY LEVEL 1
139      000100      PR2= 100      ;*PRIORITY LEVEL 2
140      000140      PR3= 140      ;*PRIORITY LEVEL 3
141      000200      PR4= 200      ;*PRIORITY LEVEL 4
142      000240      PR5= 240      ;*PRIORITY LEVEL 5
143      000300      PR6= 300      ;*PRIORITY LEVEL 6
144      000340      PR7= 340      ;*PRIORITY LEVEL 7
145
146                                     ;*"SWITCH REGISTER" SWITCH DEFINITIONS
147      100000      SW19= 100000
148      040000      SW14= 40000
149      020000      SW13= 20000
150      010000      SW12= 10000
151      004000      SW11= 4000
152      002000      SW10= 2000
153      001000      SW09= 1000
154      000400      SW08= 400
155      000200      SW07= 200
156      000100      SW06= 100
157      000040      SW05= 40
158      000020      SW04= 20
159      000010      SW03= 10
160      000004      SW02= 4
161      000002      SW01= 2
162      000001      SW00= 1
163                                     .EQUIV SW09,SW9
164                                     .EQUIV SW08,SW8
165                                     .EQUIV SW07,SW7
166                                     .EQUIV SW06,SW6
167                                     .EQUIV SW05,SW5
168                                     .EQUIV SW04,SW4

```



```

169 .EQUIV SW03,SW3
170 .EQUIV SW02,SW2
171 .EQUIV SW01,SW1
172 .EQUIV SW00,SWP
173
174 J=DATA BIT DEFINITIONS (BIT00 TO BIT15)
175 100000 BIT15= 100000
176 040000 BIT14= 40000
177 020000 BIT13= 20000
178 010000 BIT12= 10000
179 004000 BIT11= 4000
180 002000 BIT10= 2000
181 001000 BIT09= 1000
182 000400 BIT08= 400
183 000200 BIT07= 200
184 000100 BIT06= 100
185 000040 BIT05= 40
186 000020 BIT04= 20
187 000010 BIT03= 10
188 000004 BIT02= 4
189 000002 BIT01= 2
190 000001 BIT00= 1
191 .EQUIV BIT09,BIT9
192 .EQUIV BIT08,BIT8
193 .EQUIV BIT07,BIT7
194 .EQUIV BIT06,BIT6
195 .EQUIV BIT05,BIT5
196 .EQUIV BIT04,BIT4
197 .EQUIV BIT03,BIT3
198 .EQUIV BIT02,BIT2
199 .EQUIV BIT01,BIT1
200 .EQUIV BIT00,BIT0
201
202 J=BASIC "CPU" TRAP VECTOR ADDRESSES
203 000004 ERRVEC= 4 //TIME OUT AND OTHER ERRORS
204 000010 RESVEC= 10 //RESERVED AND ILLEGAL INSTRUCTIONS
205 000014 TBITVEC=14 //T BIT
206 000014 TRTVEC= 14 //TRACE TRAP
207 000014 BPTVEC= 14 //BREAKPOINT TRAP (BPT)
208 000020 IOTVEC= 20 //INPUT/OUTPUT TRAP (IOT) **SCOPE**
209 000024 PWRVEC= 24 //POWER FAIL
210 000030 EMTVEC= 30 //EMULATOR TRAP (EMT) **ERROR**
211 000034 TRAPVEC=34 //TRAP TRAP
212 000060 TKVEC= 60 //TTY KEYBOARD VECTOR
213 000064 TPVEC= 64 //TTY PRINTER VECTOR
214 000240 PIRQVEC=240 //PROGRAM INTERRUPT REQUEST VECTOR
215 .=30
216 000030 014500 EDISPT
217 000032 000000 0
218

```


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269
270
271
272
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274 001162
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278
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281
282
283
284 001162 022136
285 001164 000000
286 001166 000000
287 001170 000000
288
289
290
291 001172 022155
292 001174 000000
293 001176 000000
294 001200 000000
295
296
297
298 001202 022173
299 001204 000000
300 001206 000000
301 001210 000000
302
303
304
305 001212 022213
306 001214 000000
307 001216 000000
308 001220 000000
309
310
311
312 001222 022265
313 001224 000000

```
*****  
.SBTTL  ERROR POINTER TABLE  
*THIS TABLE CONTAINS THE INFORMATION FOR EACH ERROR THAT CAN OCCUR.  
*THE INFORMATION IS OBTAINED BY USING THE INDEX NUMBER FOUND IN  
*LOCATION SITE#B, THIS NUMBER INDICATES WHICH ITEM IN THE TABLE IS PERTINENT.  
*NOTE1:  IF SITE#B IS 0 THE ONLY PERTINENT DATA IS (SERRPC).  
*NOTE2:  EACH ITEM IN THE TABLE CONTAINS 4 POINTERS EXPLAINED AS FOLLOWS:  
  
*      EM          ;;POINTS TO THE ERROR MESSAGE  
*      DM          ;;POINTS TO THE DATA HEADER  
*      DT          ;;POINTS TO THE DATA  
*      DP          ;;POINTS TO THE DATA FORMAT  
  
SERRTB:  
  
;  
;  
  
      .SBTTL  ERROR DEFINITIONS  
ERROR 1 - OUTPUT IS BUSY (BIT 15) IS SET  
  
      EM1  
      0  
      0  
      0  
  
ERROR 2 - RESET NOT READ AS 0  
  
      EM2  
      0  
      0  
      0  
  
ERROR 3 - TTY ENABLE NOT SET  
  
      EM3  
      0  
      0  
      0  
  
ERROR 4 - TTY ENABLE NOT CLEAR  
  
      EM4  
      0  
      0  
      0  
  
ERROR 5 - TIMEOUT FLOP INOPERATIVE  
  
      EM5  
      0
```

| | | | |
|-----|--------|--------|--|
| 314 | 001226 | 000000 | 0 |
| 315 | 001230 | 000000 | 0 |
| 316 | | | |
| 317 | | | JERROR 6 - SEQUENCE COMPARE FLOP INOPERATIVE |
| 318 | | | |
| 319 | 001232 | 022307 | EM6 |
| 320 | 001234 | 000000 | 0 |
| 321 | 001236 | 000000 | 0 |
| 322 | 001240 | 000000 | 0 |
| 323 | | | |
| 324 | | | JERROR 7 - TRMT INTERRUPT DID NOT INTERRUPT |
| 325 | | | |
| 326 | 001242 | 022327 | EM7 |
| 327 | 001244 | 000000 | 0 |
| 328 | 001246 | 000000 | 0 |
| 329 | 001250 | 000000 | 0 |
| 330 | | | |
| 331 | | | JERROR 10 - ERRONOUS CAUSING ERROR |
| 332 | | | |
| 333 | 001252 | 022344 | EM10 |
| 334 | 001254 | 000000 | 0 |
| 335 | 001256 | 000000 | 0 |
| 336 | 001260 | 000000 | 0 |
| 337 | | | |
| 338 | | | JERROR 11 - ERROR BIT DID NOT INTERRUPT |
| 339 | | | |
| 340 | 001262 | 022362 | EM11 |
| 341 | 001264 | 000000 | 0 |
| 342 | 001266 | 000000 | 0 |
| 343 | 001270 | 000000 | 0 |
| 344 | | | |
| 345 | | | JERROR 12 - MODULE INTERRUPT DID NOT CLEAR WITH RIF |
| 346 | | | |
| 347 | 001272 | 022402 | EM12 |
| 348 | 001274 | 000000 | 0 |
| 349 | 001276 | 000000 | 0 |
| 350 | 001300 | 000000 | 0 |
| 351 | | | |
| 352 | | | JERROR 13 - ERROR INTERRUPT BIT DID NOT CLEAR WITH ADDRESSING ICAR |
| 353 | | | |
| 354 | 001302 | 022422 | EM13 |
| 355 | 001304 | 000000 | 0 |
| 356 | 001306 | 000000 | 0 |
| 357 | 001310 | 000000 | 0 |
| 358 | | | |
| 359 | | | JERROR 14 - DATA VALID WAS TRUE WHEN IT WASN'T SUPPOSE TO BE |
| 360 | | | |
| 361 | 001312 | 022442 | EM14 |
| 362 | 001314 | 000000 | 0 |
| 363 | 001316 | 000000 | 0 |
| 364 | 001320 | 000000 | 0 |
| 365 | | | |
| 366 | | | JERROR 15 - TRMT WAS NOT SET |
| 367 | | | |
| 368 | 001322 | 022462 | EM15 |
| 369 | 001324 | 000000 | 0 |

| | | | |
|-----|--------|--------|--|
| 370 | 001326 | 000000 | 0 |
| 371 | 001330 | 000000 | 0 |
| 372 | | | |
| 373 | | | ERROR 16 - TBMT WOULD NOT INTERRUPT |
| 374 | | | |
| 375 | 001332 | 022477 | EM16 |
| 376 | 001334 | 000000 | 0 |
| 377 | 001336 | 000000 | 0 |
| 378 | 001340 | 000000 | 0 |
| 379 | | | |
| 380 | | | ERROR 17 - BMT WILL NOT INTERRUPT |
| 381 | | | |
| 382 | 001342 | 022513 | EM17 |
| 383 | 001344 | 000000 | 0 |
| 384 | 001346 | 000000 | 0 |
| 385 | 001350 | 000000 | 0 |
| 386 | | | |
| 387 | | | ERROR 20 - INPUT MODULE ADDRESS ERROR |
| 388 | | | |
| 389 | 001352 | 023214 | EM20 |
| 390 | 001354 | 025416 | DM1 |
| 391 | 001356 | 025620 | DT1 |
| 392 | 001360 | 000000 | 0 |
| 393 | | | |
| 394 | | | ERROR 21 - MODULE INTERRUPT WILL NOT INTERRUPT |
| 395 | | | |
| 396 | 001362 | 023233 | EM21 |
| 397 | 001364 | 000000 | 0 |
| 398 | 001366 | 000000 | 0 |
| 399 | 001370 | 000000 | 0 |
| 400 | | | |
| 401 | | | ERROR 22 - MODULE ADDRESS WRAP AROUND INCORRECT |
| 402 | | | |
| 403 | 001372 | 023246 | EM22 |
| 404 | 001374 | 025416 | DM1 |
| 405 | 001376 | 025620 | DT1 |
| 406 | 001400 | 000000 | 0 |
| 407 | | | |
| 408 | | | ERROR 23 - TTY SEND RECEIVE ERROR |
| 409 | | | |
| 410 | 001402 | 023266 | EM23 |
| 411 | 001404 | 025416 | DM1 |
| 412 | 001406 | 025620 | DT1 |
| 413 | 001410 | 000000 | 0 |
| 414 | | | |
| 415 | | | ERROR 24 - BMT INTERRUPTED WITH OUTPUT BUSY |
| 416 | | | |
| 417 | 001412 | 023315 | EM24 |
| 418 | 001414 | 000000 | 0 |
| 419 | 001416 | 000000 | 0 |
| 420 | 001420 | 000000 | 0 |
| 421 | | | |
| 422 | | | ERROR 25 - NO INTERRUPT FROM MULTIPLE INTERRUPTS |
| 423 | | | |
| 424 | 001422 | 023331 | EM25 |
| 425 | 001424 | 000000 | 0 |

| | | | |
|-----|--------|--------|---|
| 426 | 001426 | 000000 | 0 |
| 427 | 001430 | 000000 | 0 |
| 428 | | | |
| 429 | | | ERROR 26 - MULTIPLE MODULE INTERRUPTS OCCURED |
| 430 | | | |
| 431 | 001432 | 023346 | EM26 |
| 432 | 001434 | 000000 | 0 |
| 433 | 001436 | 000000 | 0 |
| 434 | 001440 | 000000 | 0 |
| 435 | | | |
| 436 | | | ERROR 27 - MODULE INTERRUPT ENABLE TOGGLE DID NOT CAUSE INTERRUPT |
| 437 | | | |
| 438 | 001442 | 023363 | EM27 |
| 439 | 001444 | 000000 | 0 |
| 440 | 001446 | 000000 | 0 |
| 441 | 001450 | 000000 | 0 |
| 442 | | | |
| 443 | | | ERROR 30 - ERROR INTERRUPT ENABLE TOGGLE DID NOT CAUSE INTERRUPT |
| 444 | | | |
| 445 | 001452 | 023363 | EM30 |
| 446 | 001454 | 000000 | 0 |
| 447 | 001456 | 000000 | 0 |
| 448 | 001460 | 000000 | 0 |
| 449 | | | |
| 450 | | | ERROR 31 - BMT INTERRUPT ENABLE TOGGLE DID NOT CAUSE INTERRUPT |
| 451 | | | |
| 452 | 001462 | 023363 | EM31 |
| 453 | 001464 | 000000 | 0 |
| 454 | 001466 | 000000 | 0 |
| 455 | 001470 | 000000 | 0 |
| 456 | | | |
| 457 | | | ERROR 32 - OUTPUT NOT BUSY WITH MOV INSTRUVTION |
| 458 | | | |
| 459 | 001472 | 023400 | EM32 |
| 460 | 001474 | 000000 | 0 |
| 461 | 001476 | 000000 | 0 |
| 462 | 001500 | 000000 | 0 |
| 463 | | | |
| 464 | | | ERROR 33 - DATA AVAILABLE NOT SET ON TTY TEST |
| 465 | | | |
| 466 | 001502 | 023420 | EM33 |
| 467 | 001504 | 000000 | 0 |
| 468 | 001506 | 000000 | 0 |
| 469 | 001510 | 000000 | 0 |
| 470 | | | |
| 471 | | | ERROR 34 - MODULE INTERRUPT NOT POSTED |
| 472 | | | |
| 473 | 001512 | 023233 | EM34 |
| 474 | 001514 | 000000 | 0 |
| 475 | 001516 | 000000 | 0 |
| 476 | 001520 | 000000 | 0 |
| 477 | | | |
| 478 | | | ERROR 35 - OUTPUT BUSY STUCK |
| 479 | | | |
| 480 | 001522 | 023447 | EM35 |
| 481 | 001524 | 000000 | 0 |

| | | | |
|-----|--------|--------|---|
| 482 | 001526 | 000000 | 0 |
| 483 | 001530 | 000000 | 0 |
| 484 | | | |
| 485 | | | ERROR 36 - TTY INTERRUPT SEND RECIEVE ERROR |
| 486 | | | |
| 487 | 001532 | 023466 | EM36 |
| 488 | 001534 | 025416 | DM1 |
| 489 | 001536 | 025620 | DT1 |
| 490 | 001540 | 000000 | 0 |
| 491 | | | |
| 492 | | | ERROR 37 - FORCED MASTER ERROR FAILURE |
| 493 | | | |
| 494 | 001542 | 023527 | EM37 |
| 495 | 001544 | 000000 | 0 |
| 496 | 001546 | 000000 | 0 |
| 497 | 001550 | 000000 | 0 |
| 498 | | | |
| 499 | | | ERROR 40 - FORCED MASTER ERROR DID NOT CAUSE TIMEOUT |
| 500 | | | |
| 501 | 001552 | 023541 | EM40 |
| 502 | 001554 | 000000 | 0 |
| 503 | 001556 | 000000 | 0 |
| 504 | 001560 | 000000 | 0 |
| 505 | | | |
| 506 | | | ERROR 41 - SLAVE RESPONDED ON FORCED MASTER ERROR |
| 507 | | | |
| 508 | 001562 | 023560 | EM41 |
| 509 | 001564 | 000000 | 0 |
| 510 | 001566 | 000000 | 0 |
| 511 | 001570 | 000000 | 0 |
| 512 | | | |
| 513 | | | ERROR 42 - FORCED SLAVE ERROR FAILURE |
| 514 | | | |
| 515 | 001572 | 023601 | EM42 |
| 516 | 001574 | 000000 | 0 |
| 517 | 001576 | 000000 | 0 |
| 518 | 001600 | 000000 | 0 |
| 519 | | | |
| 520 | | | ERROR 43 - FORCED SLAVE CRC ERROR CAUSED TIMEOUT |
| 521 | | | |
| 522 | 001602 | 023613 | EM43 |
| 523 | 001604 | 000000 | 0 |
| 524 | 001606 | 000000 | 0 |
| 525 | 001610 | 000000 | 0 |
| 526 | | | |
| 527 | | | ERROR 44 - FORCED SLAVE CRC ERROR DID NOT CAUSE ERROR |
| 528 | | | |
| 529 | 001612 | 023627 | EM44 |
| 530 | 001614 | 000000 | 0 |
| 531 | 001616 | 000000 | 0 |
| 532 | 001620 | 000000 | 0 |
| 533 | | | |
| 534 | | | ERROR 45 - TIMEOUT ERROR IN M0000 LOOP TEST |
| 535 | | | |
| 536 | 001622 | 023644 | EM45 |
| 537 | 001624 | 000000 | 0 |

| | | | |
|-----|--------|--------|--|
| 538 | 001626 | 000000 | 0 |
| 539 | 001630 | 000000 | 0 |
| 540 | | | |
| 541 | | | JERROR 46 - DATA VALID WAS FALSE IN M0098 LOOP TEST |
| 542 | | | |
| 543 | 001632 | 023662 | EM46 |
| 544 | 001634 | 000000 | 0 |
| 545 | 001636 | 000000 | 0 |
| 546 | 001640 | 000000 | 0 |
| 547 | | | |
| 548 | | | JERROR 47 - ICAR IN LOOP TEST WAS BAD |
| 549 | | | |
| 550 | 001642 | 023703 | EM47 |
| 551 | 001644 | 025532 | DM3 |
| 552 | 001646 | 025642 | DT3 |
| 553 | 001650 | 000000 | 0 |
| 554 | | | |
| 555 | | | JERROR 50 - BAD DATA IN MODULE ADDRESS |
| 556 | | | |
| 557 | 001652 | 023716 | EM50 |
| 558 | 001654 | 025434 | DM2 |
| 559 | 001656 | 025630 | DT2 |
| 560 | 001660 | 000000 | 0 |
| 561 | | | |
| 562 | | | JERROR 51 - TEN CONSECUTIVE LINE ERRORS IN INPUT MODULE RANGE TEST |
| 563 | | | |
| 564 | 001662 | 023735 | EM51 |
| 565 | 001664 | 000000 | 0 |
| 566 | 001666 | 000000 | 0 |
| 567 | 001670 | 000000 | 0 |
| 568 | | | |
| 569 | | | JERROR 52 - TEN CONSECUTIVE LINE ERRORS IN MODULE WRAP AROUND TEST |
| 570 | | | |
| 571 | 001672 | 024016 | EM52 |
| 572 | 001674 | 000000 | 0 |
| 573 | 001676 | 000000 | 0 |
| 574 | 001700 | 000000 | 0 |
| 575 | | | |
| 576 | | | JERROR 53 - TBMT WAS TRUE AFTER TTY TRANSMISSION |
| 577 | | | |
| 578 | 001702 | 024105 | EM53 |
| 579 | 001704 | 000000 | 0 |
| 580 | 001706 | 000000 | 0 |
| 581 | 001710 | 000000 | 0 |
| 582 | | | |
| 583 | | | JERROR 54 - TBMT WAS FALSE AFTER TTY TRANSMISSION TIME |
| 584 | | | |
| 585 | 001712 | 024124 | EM54 |
| 586 | 001714 | 000000 | 0 |
| 587 | 001716 | 000000 | 0 |
| 588 | 001720 | 000000 | 0 |
| 589 | | | |
| 590 | | | JERROR 55 - RIF BIT NOT SET |
| 591 | | | |
| 592 | 001722 | 024142 | EM55 |
| 593 | 001724 | 000000 | 0 |

| | | | |
|-----|--------|--------|--|
| 594 | 001726 | 000000 | 0 |
| 595 | 001730 | 000000 | 0 |
| 596 | | | |
| 597 | | | ERROR 56 - RIF BIT NOT CLEAN WITH MODULE |
| 598 | | | |
| 599 | 001732 | 024162 | EM56 |
| 600 | 001734 | 000000 | 0 |
| 601 | 001736 | 000000 | 0 |
| 602 | 001740 | 000000 | 0 |
| 603 | | | |
| 604 | | | ERROR 57 - TTY INTERRUPT TEST MUNG |
| 605 | | | |
| 606 | 001742 | 024176 | EM57 |
| 607 | 001744 | 000000 | 0 |
| 608 | 001746 | 000000 | 0 |
| 609 | 001750 | 000000 | 0 |
| 610 | | | |
| 611 | | | ERROR 60 - MAINTENANCE BIT 3 STUCK ON AFTER ISSUE |
| 612 | | | |
| 613 | 001752 | 024226 | EM60 |
| 614 | 001754 | 000000 | 0 |
| 615 | 001756 | 000000 | 0 |
| 616 | 001760 | 000000 | 0 |
| 617 | | | |
| 618 | | | ERROR 61 - POWER FAIL BIT IS ON |
| 619 | | | |
| 620 | 001762 | 024245 | EM61 |
| 621 | 001764 | 000000 | 0 |
| 622 | 001766 | 000000 | 0 |
| 623 | 001770 | 000000 | 0 |
| 624 | | | |
| 625 | | | ERROR 62 - ICR11 CSR IN ERROR |
| 626 | | | |
| 627 | 001772 | 024265 | EM62 |
| 628 | 001774 | 025416 | DM1 |
| 629 | 001776 | 025620 | DT1 |
| 630 | 002000 | 000000 | 0 |
| 631 | | | ERROR 63 - UNEXPECTED MODULE INTERRUPT FROM ICR DURING REMOTE TTY TEST |
| 632 | | | |
| 633 | 002002 | 024336 | EM63 |
| 634 | 002004 | 000000 | 0 |
| 635 | 002006 | 000000 | 0 |
| 636 | 002010 | 000000 | 0 |
| 637 | | | |
| 638 | | | ERROR 64 - SPURIOUS INTERRUPT IN REMOTE TTY TEST |
| 639 | | | |
| 640 | 002012 | 024316 | EM64 |
| 641 | 002014 | 000000 | 0 |
| 642 | 002016 | 000000 | 0 |
| 643 | 002020 | 000000 | 0 |
| 644 | | | |
| 645 | | | |
| 646 | | | |
| 647 | | | |
| 648 | | | IR4 IS USED THROUGHOUT THIS TO KEEP TRACK OF WHICH FILE BOX IS UNDER |
| 649 | | | TEST. ALL PASS COUNTS, ERRORS AND LINE ERRORS ARE BUFFERED FOR EACH |


```

706 002064 005237 002032      SETPWF: INC      PWFPLG      JPOWER FAIL TEST REQUIRED
707
708                                .SRTTL  ADDRESS MAP OF ICH
709
710
711 002070      START:
712 002070 012706 001100      MOV      @SCTAG,R6      JFIRST LOCATION TO BE CLEARED
713 002074 005026      CLR      (R6)+         JICLEAR MEMORY LOCATION
714 002076 022706 001126      CMP      @SDDAT,R6     JIDONE?
715 002102 001374      BNE     ,-6           JILOOP BACK IF NO
716 002104 012706 001100      MOV      @STACK,SP     JISETUP THE STACK POINTER
717 002110 012737 015056 000030  MOV      @SEHNR,@SEMTVEC JIEMT VECTOR FOR ERROR ROUTINE
718 002116 012737 000340 000032  MOV      @340,@SEMTVEC+2 JILEVEL 7
719 002124 012737 016154 000034  MOV      @STNAP,@STRAPVEC JITRAP VECTOR FOR TRAP CALLS
720 002132 012737 000340 000036  MOV      @340,@STRAPVEC+2 JILEVEL 7
721 002140 012737 016020 000024  MOV      @SPHNRN,@SPWRVEC JIPOWER FAILURE VECTOR
722 002146 012737 000340 000026  MOV      @340,@SPWRVEC+2 JILEVEL 7
723 002154 013746 000004      MOV      @04,-(SP)     JISAVE ERROR VECTOR
724 002160 013746 000006      MOV      @06,-(SP)
725 002164 012737 002200 000004  MOV      @648,4        JISET UP TIME OUT VECTOR
726 002172 005777 176740      TST     @SWH           JITRY TO REFERENCE HARDWARE SWR
727 002176 000407      BR      @58           JIBRANCH IF NO TIMEOUT TRAP OCCURS
728 002200 012737 000176 001136 648:  MOV      @SWREG,SWR     JIPOINT TO SOFTWARE SWR
729 002206 012737 000174 001140      MOV      @DISPREG,DISPLAY JIPOINT TO SOFTWARE DISPLAY REG
730 002214 022626      CMP      (SP)+,(SP)+   JIRESTORE STACK
731 002216 012637 000006 658:  MOV      (SP)+,@06     JIRESTORE ERROR VECTOR
732 002222 012637 000004      MOV      (SP)+,@04
733
734                                IDETERMINE WHAT PDP11 WE ARE RUNNING ON FOR TIMING CONSTANTS
735
736 002226 012737 000006 000004  FIND11: MOV      @0,004
737 002234 012737 000002 000012  MOV      @RTI,@012
738 002242 000262      SEV
739 002244 074000      XOR     R0,R0
740 002246 102512      BVS    28
741 002250 013700 002050      MOV      MFR20,R0      JMUST BE 11/00,11/45 RECAL CONSTANTS
742 002254 010037 014416      MOV      R0,FR20
743 002260 060037 014416      ADD     R0,FR2E
744 002264 060037 014416      ADD     R0,FR20
745 002270 013700 002046      MOV      MFR100,R0
746 002274 010037 014412      MOV      R0,FR100
747 002300 060037 014412      ADD     R0,FR100
748 002304 060037 014412      ADD     R0,FR100
749 002310 013700 002044      MOV      MFR200,R0
750 002314 010037 014414      MOV      R0,FR200
751 002320 060037 014414      ADD     R0,FR200
752 002324 060037 014414      ADD     R0,FR200
753 002330 013700 002042      MOV      MFR500,R0
754 002334 010037 014410      MOV      R0,FR500
755 002340 060037 014410      ADD     R0,FR500
756 002344 060037 014410      ADD     R0,FR500
757 002350 013700 002040      MOV      MFR10K,R0
758 002354 010037 014406      MOV      R0,FR1000
759 002360 060037 014406      ADD     R0,FR1000
760 002364 060037 014406      ADD     R0,FR1000
761 002370 013700 002036      MOV      MFR11K,R0
    
```

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762 002374 010037 014420      MOV      R0,FRM110
763 002400 060037 014420      ADD      R0,FRM110
764 002404 060037 014420      ADD      R0,FRM110
765
766                                ;NOW SEE IF RUNNING ON 11/70, IF SO CHANGE CONSTANTS BY 50%
767
768 002410 013746 000004      MOV      004,-(SP)      ;SAVE TIMEOUT VECTOR
769 002414 013746 000006      MOV      006,-(SP)      ;SAVE
770 002420 012737 002460 000004      MOV      038,004      ;SETUP IF NOT 11/70
771 002426 005737 177760      TST     00177760      ;TRY TO ADDRESS 11/70 MEM SIZE REG
772 002432 006337 014416      ASL     FR20          ;SUCCESSFUL, SHIFT ALL CONSTANTS BY TWO
773 002436 006337 014412      ASL     FR100
774 002442 006337 014410      ASL     FR200
775 002446 006337 014410      ASL     FR500
776 002452 006337 014406      ASL     FR1000
777 002456 000401      BR      ,+4
778 002460 022626      381    POP28P          ;RESET STACK
779 002462 012637 000006      MOV     (SP)+,006      ;RESTORE 6
780 002466 012637 000004      MOV     (SP)+,004      ;RESTORE 4
781 002472 000417      BR      18
782 002474 013737 002050 014416 281    MOV     MFR20,FR20      ;11/05 11/20 CONSTANTS
783 002502 013737 002044 014414      MOV     MFR200,FR200
784 002510 013737 002046 014412      MOV     MFR100,FR100
785 002516 013737 002040 014406      MOV     MFR10K,FR1000
786 002524 013737 002036 014420      MOV     MFR11K,FRM110
787 002532 005037 000012      181    CLR     0012
788 002536 005037 014464      CLR     PRM11
789 002542 005037 014462      CLR     PRM1          ;CLEAR PRINT TO REMOTE END
790 002546 104413 022656      TYPE,HEADER
791 002552 012700 171774      MOV     0171774,R0      ;START OF ICSR,ICAR
792 002556 005037 002034      CLR     ICRCNT          ;CLEAR ICR COUNT
793 002562 005002      CLR     R2
794 002564 005003      CLR     R3              ;SET TABLE
795 002566 012737 002710 000004      MOV     0FILNFD,004     ;SET TIMEOUT VECTOR
796 002574 005010      FILNFD: CLR (R0)       ;TRY TO ADDRESS FILE
797
798                                ;
799                                ;THERE'S SOMETHING OUT THERE, DETERMINE IF IT'S ICS OR
800                                ;ICR
801                                ;
801 002576 010037 002024      MOV     R0,ICSR
802 002602 062737 000002 002024      ADD     02,ICSR        ;CREATE ICSR
803 002610 052777 000040 177206      BIS     040,0ICSR      ;TRY TO SET BIT 5
804 002616 032777 000040 177200      BIT     040,0ICSR      ;BIT 5 SET?
805 002624 001004      BNE     58              ;
806 002626 032777 020000 177170      BIT     020000,0ICSR   ;IT DIDN'T WRITE BUT IT
807 002634 001026      BNE     FILNFD+2       ;MAY BE BAD; CHECK BIT 13
808 002636 005237 002034      581    INC     ICRCNT      ;INDICATE SUCCESS
809 002642 104413 022547      TYPE,FILE
810 002646 010246      MOV     R2,-(SP)       ;SAVE R2 FOR TYPEOUT
811
812                                ;FILE BOX
812 002650 104402      TYPOS   ;GO TYPE--OCTAL ASCII
813 002652      .BYTE  2              ;TYPE 2 DIGIT(S)
814 002653      .BYTE  0              ;SUPPRESS LEADING ZEROS
815
816                                ;ICAR
816 002654 104413 022563      TYPE,ICARMO
817 002660 010046      MOV     R0,-(SP)       ;SAVE R0 FOR TYPEOUT

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| | | | | | | | |
|-----|--------|--------|--------|--------|--|---------------------------|------------------------------------|
| 018 | 002662 | 104401 | | | TYPOC | | ;;GO TYPE--OCTAL ASCII(ALL DIGITS) |
| 019 | 002664 | 104413 | 022572 | | TYPE,ICSHMD | | |
| 020 | | | | | | | ;;ICSR |
| 021 | 002670 | 062700 | 000002 | | ADD | 02,MB | |
| 022 | 002674 | 010046 | | | MOV | MB,-(SP) | ;;SAVE MB FOR TYPEOUT |
| 023 | 002676 | 104401 | | | TYPOC | | ;;GO TYPE--OCTAL ASCII(ALL DIGITS) |
| 024 | 002700 | 162700 | 000002 | | SUB | 02,MB | |
| 025 | | | | | | | |
| 026 | | | | | | | ;;ADDRESS |
| 027 | 002704 | 005203 | | | INC | M3 | ;;INDICATE SUCCESS IN LIST |
| 028 | 002706 | 000401 | | | BR | .+4 | ; |
| 029 | 002710 | 022626 | | | FILNFD: POP2SP | | ;;POP STACK |
| 030 | 002712 | 006303 | | | 18: ASL | M3 | ;;INDICATE NO ICR |
| 031 | 002714 | 162700 | 000010 | | SUB | 010,MB | ;;UPDATE FOR NEW ICR |
| 032 | 002720 | 005202 | | | INC | R2 | ;;INCREMENT FILE # |
| 033 | 002722 | 022702 | 000014 | | CHP | 014,R2 | ;;DONE? |
| 034 | 002726 | 001322 | | | BNE | FILFND | ;;NO |
| 035 | 002730 | 010337 | 014436 | | MOV | R3,SYSHAP | ;;STORE FILE LIST |
| 036 | 002734 | 104413 | 023010 | | TYPE, | STANMS | |
| 037 | 002740 | 012737 | 000006 | 000004 | MOV | 06,004 | ;;MOVE .+2 BACK |
| 038 | 002746 | 005737 | 002034 | | TST | ICRCNT | ;;ANY FILES FOUND |
| 039 | 002752 | 001011 | | | BNE | FILLST+2 | |
| 040 | 002754 | 005737 | 002052 | | GOOF: TST | BOXCNT | |
| 041 | 002760 | 001006 | | | BNE | CONTSY | |
| 042 | 002762 | 104413 | 022601 | | TYPE,NOBOX | | ;;BOX ASKED TO TEST DOES NOT EXIST |
| 043 | 002766 | 000000 | | | HALT | | ;;HALT |
| 044 | 002770 | 000137 | 002766 | | JMP | .-2 | ; |
| 045 | | | | | | | |
| 046 | 002774 | 000000 | | | FILLST: 0 | | ;;LIST FOR FILE INDICATION |
| 047 | 002776 | | | | CONTSY: | | |
| 048 | 002776 | 104413 | 022000 | | TYPE,CRLF | | |
| 049 | | | | | | | |
| 050 | | | | | .SBTTL | INITIAL SETUP FOR PROGRAM | |
| 051 | | | | | | | |
| 052 | | | | | | | |
| 053 | | | | | | | |
| 054 | | | | | | | |
| 055 | | | | | | | |
| 056 | 003002 | 012706 | 001100 | | START1: MOV | 0STACK,SP | ;;SET STACK POINTER |
| 057 | 003006 | 005037 | 002056 | | CLR | 0W9FF | ;;CLEAR THAT SW 9 IS SET |
| 058 | 003012 | 032777 | 001000 | 176116 | BIT | 0SW9,0SWR | ;;TEST IF SW 9 IS SET |
| 059 | 003020 | 001402 | | | BEO | .+6 | |
| 060 | 003022 | 005237 | 002056 | | INC | 0W9FF | ;;INDICATE PRESENCE OF SW 9 |
| 061 | | | | | ; | | |
| 062 | | | | | ;;INITIAL CLEAR OF ALL FILE BOX(ES) INFORMATION I.E. PASS COUNTS, ERROR COUNTS | | |
| 063 | | | | | ;;LINE ERROR COUNTS | | |
| 064 | | | | | | | |
| 065 | | | | | | | |
| 066 | 003026 | 012700 | 017210 | | MOV | 0INFLST,MB | ;;BEGINNING OF BUFFER |
| 067 | 003032 | 012701 | 000106 | | MOV | 070.,R1 | ;;BUFFER LENGTH |
| 068 | 003036 | 005020 | | | CLR | (0)+ | ;;CLEAR LOCATION IN BUFFER |
| 069 | 003040 | 005301 | | | DEC | R1 | ;;DEC BUFFER LENGTH |
| 070 | 003042 | 001375 | | | BNE | .-4 | ;;CONTINUE TILL DONE |
| 071 | | | | | | | |
| 072 | | | | | | | |
| 073 | 003044 | 005037 | 017202 | | STARTA: CLR | TIMTRP | ;;CLEAR TIMEOUT INDICATOR |

```

074 003050 005037 002060          CLR      SHTFP          ;INDICATE FIRST BOX FOR PASS SUMMARY
075 003054 005037 017204          CLR      WRKFLP        ;PRINT REMOTELY "TESTING"
076 003060 005037 014474          CLR      PWRFLP        ;POWER FAIL INDICATOR
077 003064 005037 002030          CLR      ICRRUN
078 003070 012737 020000 014376    MOV      @20000,XMASK  ;SET UP MASK
079 003076 013737 014436 002774    MOV      SYMAP,FILLST ;GET SYSTEM CONFIG.
080 003104 005037 014400          CLR      FILUTS        ;FILE BOX UNDER TEST
081 003110 012704 017210          MOV      @INFLST,R4    ;INITIAL ADDRESS OF INFORMATION BUFF
082 003114 012737 000015 014402    MOV      @15,FILCNT   ;SET MAXIMUM FILE TO 15(BASE 8)
083 003122 012737 171774 002026    MOV      @171774,ICAR ;INITIAL ICAR
084 003130 012737 171776 002024    MOV      @171776,ICSR ;INITIAL ICSR
085 003136 012737 171000 002022    MOV      @171000,ICMOD ;INITIAL MODULE ADDRESS
086
087 003144 005037 002052          START2: CLR      BOXCNT ;CLEAR THAT BOXES EXIST
088 003150 005037 014426          CLR      MICFLP       ;RUNNING MICRODIAGNOSTIC INDICATOR
089 003154 012737 000001 014454    MOV      @1,PASLG     ;SET FOR QUICK VERIFY
090 003162 032777 010000 175746    BIT      @SW12,@SWR   ;LONG PASS WANTED
091 003170 001403          BEQ      @28         ;NO, THEN 28
092 003172 062737 000143 014454    ADD     @99.,PASLG    ;YES THEN SET LONG PASS
093
094          ;WRITE LOCATIONS "230-1000" WITH "+214", PC+2, IOT TRAP
095          ;SINCE EACH PASS WILL OVER WRITE SOME LOCATIONS
096
097 003200 012700 000230          20:    MOV      @230,R0
098 003204 012701 000232          MOV      @232,R1
099 003210 010120          10:    MOV      R1,(R0)+
100 003212 012720 000004          MOV      @4,(R0)+
101 003216 022121          CMP      (R1)+,(R1)+
102 003220 022700 001000          CMP      @1000,R0
103 003224 003371          BGT      @18
104 003226 012737 177777 014424    MOV      @-1,FIRST   ;SET TO PRINT FILE BOX ID ONLY ON FIRST ERROR
105 003234 012737 000340 177776    MOV      @340,@PSW
106
107
108
109
110 003242 032777 000020 175666    ONEBOX: BIT      @SW4,@SWR ;SINGLE BOX OR ALL TO BE TESTED?
111 003250 001430          BEQ      @TEST1     ;ALL THEN TEST1
112 003252 017700 175660          MOV      @SWR,R0    ;GET BOX TO BE TESTED
113 003256 012701 010000          MOV      @10000,R1  ;SET MASK TO FIRST BOX
114 003262 042700 177760          BIC      @177760,R0 ;CLEAR ALL BUT BOX SWITHES
115 003266 001412          BEQ      @18
116 003270 020027 000015          CMP      R0,@15     ;IS BOX LEGAL
117 003274 002404          BLY     @28         ;YES, CONT AT 28
118 003276 104413 024533          TYPE,   NOEXIST    ;BOX ASKED TO TEST DOES NOT EXIST
119 003302 000000          HALT
120 003304 000776          BR      @-2
121 003306 006201          20:    ASR      R1
122 003310 005300          DEC     R0
123 003312 001375          BNE     @28
124 003314 005037 002774          10:    CLR      FILLST
125 003320 050137 002774          BIS     R1,FILLST
126 003324 012737 000001 002034    MOV      @1,ICRCNT  ;SET ICRCNT TO ONE
127
128
129

```

```

930 003332 012737 000340 177776 TEST11 MOV 0340,00PSW ;INHIBIT INTERRUPTS
931 003340 006237 014376 281 ASR XMASK ;ROTATE RIGHT TO FIND FILE BOX
932 003340 033737 014376 002774 BIT XMASK,FILLST ;FILE PRESENT
933 003352 001022 ONE 18 ;FILE PRESENT?
934 003354 162737 000010 002024 SUB 010,ICSR ;UPDATE ICSR
935 003362 162737 000010 002026 SUB 010,ICAR ;UPDATE ICAR
936 003370 062737 000040 002022 ADD 040,ICMOD ;UPDATE FILE BOX ADDRESS
937 003376 062704 000012 ADD 012,R4 ;MOVE INFORMATION POINTER
938 003402 005237 014400 INC FILUTS ;FILE UNDER TEST
939 003406 005337 014402 DEC FILCNT ;RUN OUT
940 003412 001352 ONE 28
941 003414 000137 002754 JMP GOOF
942 003420 000240 181 NOP
943 ;
944 ;FILE BOX,ICAR,ICSR FOUND - START TEST
945 ;
946 003422 005764 000000 TST PASCNT(4) ;DOING FIRST PASS FOR THIS FILE
947 003426 001402 BEQ .+6 ;PRINT "TESTING....."
948 003430 000137 004014 JMP VECTST ;NO, THEN JUST GET VECTOR
949 003434 012737 000001 002052 MOV 01,BOXCNT ;SET THAT BOX PRESENT
950 003442 005037 014462 CLR PRMT ;
951 003446 012737 000001 014464 MOV 01,PRMT1 ;PRINT TO REMOTE END
952 003454 104413 022630 TYPE,TESTIN ;PRINT "TESTING...."
953 003460 013700 014400 MOV FILUTS,R0 ;
954 003464 010046 MOV R0,-(SP) ;SAVE R0 FOR TYPEOUT
955 ;FILE BOX
956 003466 104402 TYPOS ;GO TYPE--OCTAL ASCII
957 003470 002 .BYTE 2 ;TYPE 2 DIGIT(S)
958 003471 000 .BYTE 0 ;SUPPRESS LEADING ZEROS
959 003472 005000 CLR R0 ;
960 003474 005300 DEC R0 ;
961 003476 001376 BNE .-2 ;
962 ;
963 ;
964 ;
965 ;
966 003500 000137 004014 JMP VECTST ;
967 ;
968 ;
969 .BTTL TEST OF CSR ;
970 ;
971 003504 012737 017775 017774 LPTST1 MOV 00BUFREG-1,BUFRES ;RESET BUFFER FOR MESSAGES
972 003512 012737 000001 014464 MOV 01,PRMT1 ;ALLOW REMOTE PRINTING
973 003520 005037 014462 CLR PRMT ;
974 ;
975 ;TEST OF POWER FAIL BIT ;
976 ;
977 003524 012737 003524 014372 RWBIT1 MOV 0RWBIT,SCOLOP ;
978 ;
979 003532 032777 002000 176264 BIT 0PHRFL,0ICSR ;IS PHR FAIL ON
980 003540 001401 BEQ 18 ;
981 ;
982 ;
983 ;////////////////////////////////////
984 ;
985 ;

```

```
986 003542 104061          ERROR 01          IPWR FALL BIT IN CSR IS SET
987
988
989
990
991
992 003544 104412          181      SCOPEX
993
994          ITEST THAT MAINT BIT 3 CLEARS ITSELF OUT
995
996 003546 012737 003546 014372 381      MOV      038,SCOLOP
997 003554 052777 040000 176242          DIS      @MAINT3,@ICSR
998 003562 032777 040000 176234          BIT      @MAINT3,@ICSR
999
1000 003570 001401          BEQ      28
1001
1002
1003
1004
1005
1006 003572 104060          ERROR 60          IMAINT3 BIT OF CSR SHOULD CLEAR CSR AND ITSELF OUT
1007          IMMEN ISSUED
1008
1009
1010
1011
1012
1013 003574 104412          281      SCOPEX
1014
1015
1016 003576 005037 001124          MAINT3: CLR      $GDDAT          ISET EXPECTED
1017 003602 012737 003576 014372          MOV      @MAINT3,SCOLOP      ISET SCOPE
1018 003610 013700 014406          MOV      $R1000,R0
1019 003614 005777 176204          708:    TST      @ICSR          IIS OUTPUT BUSY?
1020 003620 100003          BPL      ,+10          JNO, CONT
1021 003622 005300          DEC      R0          IYES, INC TIMEOUT
1022 003624 001373          BNE      708
1023
1024 003626 104035          ERROR 35          IOUTPUT BUSY
1025
1026 003630 017700 176172          MOV      @ICAR,R0
1027
1028 003634 052777 040000 176162          DIS      @MAINT3,@ICSR      IISSUE MAINT RESET
1029 003642 017737 176156 001126          MOV      @ICSR,$GDDAT      ISEE IF CSR IS CLEAR AFTER RESET (MAINT3)
1030 003650 001401          BEQ      18
1031
1032
1033
1034
1035
1036 003652 104062          ERROR 62          IMAINT RESET DID NOT CLEAR ICR CSR
1037
1038
1039
1040
1041 003654 104412          181      SCOPEX
```



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1042
1043
1044
1045
1046
1047
1048 003656 212700 003776 BITTST: MOV 0BITLST,R0 IGET LIST
1049 003662 012701 000007 MOV 07,R1 ISET LENGTH
1050 003666 012002 481 MOV (0),R2 IGET BIT
1051 003670 012737 003670 014372 181 MOV #18,SCOLOP ISET SCOPE LOOP
1052 003676 005077 176122 CLR 0ICSR ICLEAR CSR
1053 003702 005037 001124 CLR 8GDDAT ICLEAR EXPECTED
1054 003706 005037 001126 CLR 8DDAT
1055 003712 050237 001124 BIS #2,8GDDAT ISET EXPECTED
1056 003716 050277 176102 BIS #2,0ICSR ISET BIT IN CSR
1057 003722 030277 176076 BIT #2,0ICSR
1058 003726 001003 RNE 20
1059 003730 040237 001126 BIC #2,8DDAT
1060
1061
1062
1063
1064 003734 104062 ERROR 62 IBIT WAS NOT SET IN ICR CSR
1065
1066
1067
1068
1069
1070 003736 104412 281 SCOPEX
1071
1072 003740 040237 001124 BIC #2,8GDDAT ICLEAR BIT
1073 003744 040277 176054 BIC #2,0ICSR
1074 003750 030277 176050 BIT #2,0ICSR ITEST IF BIT IS CLEAR
1075 003754 001003 BEQ 38
1076 003756 050237 001126 BIS #2,8DDAT
1077
1078
1079
1080
1081
1082 003762 104062 ERROR 62 IBIT WAS NOT CLEAR IN ICR CSR
1083
1084
1085
1086
1087
1088 003764 104412 381 SCOPEX
1089
1090 003766 005301 DEC #1 IDONE TESTING
1091 003770 001336 BNE 48
1092
1093
1094
1095 003772 000137 004346 JMP TENTST
1096
1097

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1098
1099 003776 000001          BITLST: XRIF
1100 004000 000002          ERREN
1101 004002 000004          MODEN
1102 004004 000010          BMTEN
1103 004006 000020          PWFEN
1104 004010 000040          TTVEN
1105 004012 001000          TBMTEN
1106
1107
1108          .SBTTL  ICR VECTOR ADDRESS AND PRIORITY LEVEL
1109
1110          ;
1111          ;VECTOR AND PRIORITY LEVEL
1112          ;
1113
1114          004014          VECTST=.
1115
1116 004014 005237 014426          INC      MICFLP
1117 004020 005037 004146          CLR      CONTSW
1118 004024 012737 004150 000020 VECT1:  MOV    @VECFND,@020      ;MOVE VECTOR ROUTINE TO IOT TRAP
1119 004032 012737 000340 177776      MOV    @340,@0PSW      ;PROCESS STATUS WORD = PRIOR = 7
1120 004040 012703 000007          MOV    @7,R3           ;PRIORITY LEVEL IN R3
1121 004044 013700 014410 181      MOV    @R500,R0
1122 004050 052777 000004 175746      BIS    @MODEN,@ICSR    ;MODULE INTERRUPT BIT
1123 004056 052777 020000 175740      BIS    @MAINT2,@ICSR   ;MAINTENANCE BIT 0
1124 004064 005300          DEC     R0
1125 004066 001376          BNE     =-2
1126 004070 052777 040000 175726      BIS    @MAINT3,@ICSR   ;NO INTERRUPT = RESET
1127 004076 005303          DEC     R3             ;DECREMENT PRIORITY LEVEL
1128 004100 100404          BMI     VECT2          ;
1129 004102 162737 000040 177776      SUB    @40,@0PSW
1130 004110 000755          BR      18            ;LOOP = LOWER PRIORITY
1131 004112 005737 004146          VECT2:  TST    CONTSW
1132 004116 001402          BEQ     =+6
1133 004120 000137 004024          JMP     VECT1
1134 004124 104413 022072          TYPE,VECMES          ;TYPE THAT ICR WILL NOT INTERRUPT
1135 004130 000000          HALT          ;HALT, CONT WILL FORCE SCOPE LOOP
1136 004132 104413 024775          TYPE,  CONTOP
1137 004136 005237 004146          INC     CONTSW        ;SET CONTSW
1138 004142 000137 004024          JMP     VECT1
1139
1140 004146 000000          CONTSW: 0
1141
1142          ;
1143          ;VECTOR AND PRIORITY LEVEL FOUND, CONTINUE TESTING
1144          ;
1145          ;
1146          ;
1147 004150 052777 040000 175646 VECFND:  BIS    @MAINT3,@ICSR
1148 004156 010337 017172          MOV    R3,PRI1VL      ;SAVE PRIORITY LEVEL FOUND
1149 004162 005203          INC    R3             ;BUMP UP TO FORM BR LEVEL
1150 004164 011605          MOV    (SP),R5        ;GET VECTOR ADDRESS
1151 004166 162705 000004          SUB    @4,R5
1152 004172 010537 014404          MOV    R5,VECTOR
1153 004176 022626          POP2SP          ;POP STACK
    
```

| | | | | | | | | |
|------|--------|--------|--------|--------|------------|-----------|------------------------------------|----------------------------------|
| 1154 | 004200 | 022626 | | | POP28P | | | |
| 1155 | 004202 | 005764 | 000000 | | TST | PASCNT(4) | I DOING FIRST PAS FOR THIS FILE | |
| 1156 | 004206 | 001013 | | | BNE | 18 | I NO, CONT DON'T PRINT INFORMATION | |
| 1157 | 004210 | 104413 | 022004 | | TYPE, | VECHO | I PRINT VECTOR | |
| 1158 | 004214 | 010546 | | | MOV | R5,-(SP) | I SAVE R5 FOR TYPEOUT | |
| 1159 | 004216 | 104401 | | | TYPOC | | I GO TYPE--OCTAL ASCII(ALL DIGITS) | |
| 1160 | 004220 | 104413 | 022034 | | TYPE,PRIOR | | I PRIORITY | |
| 1161 | 004224 | 010346 | | | MOV | R3,-(SP) | I SAVE R3 FOR TYPEOUT | |
| 1162 | 004226 | 104401 | | | TYPOC | | I GO TYPE--OCTAL ASCII(ALL DIGITS) | |
| 1163 | 004230 | 005001 | | | CLR | R1 | | |
| 1164 | 004232 | 005301 | | | DEC | R1 | | |
| 1165 | 004234 | 001376 | | | BNE | .-2 | | |
| 1166 | 004236 | 012737 | 000340 | 177776 | 181 | MOV | 0340,00PSW | I PRIORITY LEVEL = 7 |
| 1167 | | | | | | | | |
| 1168 | 004244 | 012700 | 000230 | | VECRET: | MOV | 0230,R0 | I WRITE OVER WITH .+2, HALT |
| 1169 | 004250 | 012701 | 000232 | | | MOV | 0232,R1 | |
| 1170 | 004254 | 010120 | | | 988: | MOV | R1,(R0)+ | |
| 1171 | 004256 | 012720 | 000000 | | | MOV | 00,(R0)+ | |
| 1172 | 004262 | 022121 | | | | CMF | (R1)+,(R1)+ | |
| 1173 | 004264 | 022700 | 001000 | | | CMF | 01000,R0 | |
| 1174 | 004270 | 003371 | | | | BGT | 988 | |
| 1175 | | | | | | | | |
| 1176 | | | | | | | | |
| 1177 | 004272 | 012777 | 016714 | 010104 | | MOV | 0ICRSRV,0VECTOR | I MOVE ICR SERVICE ROUTINE |
| 1178 | 004300 | 013700 | 014404 | | | MOV | VECTOR,R0 | I MOV |
| 1179 | 004304 | 005720 | | | | TST | (R0)+ | |
| 1180 | 004306 | 012710 | 000340 | | | MOV | 0340,(R0) | I MOV 340 IN PSW PICKUP |
| 1181 | 004312 | 006337 | 017172 | | | ASL | PRILVL | |
| 1182 | 004316 | 006337 | 017172 | | | ASL | PRILVL | |
| 1183 | 004322 | 006337 | 017172 | | | ASL | PRILVL | |
| 1184 | 004326 | 006337 | 017172 | | | ASL | PRILVL | |
| 1185 | 004332 | 006337 | 017172 | | | ASL | PRILVL | I ALIGN PRIORITY LEVEL |
| 1186 | | | | | | | | |
| 1187 | | | | | | | | |
| 1188 | | | | | | | | |
| 1189 | 004336 | 005037 | 014472 | | | CLR | REMOTE | |
| 1190 | 004342 | 000137 | 003504 | | | JMP | LPTST | |
| 1191 | | | | | | | | |
| 1192 | | | | | | | | |
| 1193 | | | | | | | | |
| 1194 | | | | | | | | |
| 1195 | | | | | | | | |
| 1196 | 004346 | | | | | | | |
| 1197 | 004346 | 012700 | 017776 | | | MOV | 00BUF0EG,R0 | I CLEAR OUT ERROR STORAGE BUFFER |
| 1198 | 004352 | 012720 | 100601 | | | 998: | 0100601,(0)+ | |
| 1199 | 004356 | 020027 | 021750 | | | CMF | R0,00BUFEND | I DONE WITH BUFFER |
| 1200 | 004362 | 001373 | | | | BNE | 998 | |
| 1201 | 004364 | 005037 | 014462 | | | CLR | PRRMT | I DON'T BUFFER |
| 1202 | 004370 | 012737 | 000001 | 014464 | | MOV | 01,PRRMT1 | I SET PRINT TO REMOTE END |
| 1203 | 004376 | 005237 | 014426 | | | INC | 0ICFLP | |
| 1204 | 004402 | 013737 | 014454 | 014456 | | MOV | 0ASLG,0ASRUN | |
| 1205 | | 004410 | | | | | | |
| 1206 | 004410 | 012737 | 004410 | 014372 | | LOOP1: | MOV | 078,0COLOP |
| 1207 | 004416 | 052777 | 000040 | 175400 | 781 | BIS | 0TTYEN,0ICSR | I SET TTY ENABLE |
| 1208 | 004424 | 032777 | 000040 | 175372 | | BIS | 0TTYEN,0ICSR | I IS IT SET |
| 1209 | 004432 | 001001 | | | | BNE | 00 | |

1210

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1211      ;
1212      ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\
1213      ;
1214  004434  104003      ERROR 3          ;TTY ENABLE NOT SET
1215
1216      ;
1217      ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\
1218      ;
1219
1220  004436  104412      481      SCOPEX
1221
1222  004440  042777  000040  175356      BIC      @TTYEN,@ICSR      ;CLEAR TTY ENABLE
1223  004446  032777  000040  175350      BIT      @TTYEN,@ICSR      ;IS IT CLEAR
1224  004454  001401      BEQ      58
1225
1226      ;
1227      ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\
1228      ;
1229  004456  104004      ERROR 4          ;TTY ENABLE NOT CLEAR
1230
1231      ;
1232      ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\
1233      ;
1234
1235  004460  104412      581      SCOPEX
1236
1237      ;
1238      ;TEST THAT OUTPUT BUSY IS CLEAR
1239      ;
1240  004462  012737  004462  014372      681      MOV      @68,SCOLOP
1241
1242  004470  005777  175330      TST      @ICSR          ;CHECK BIT 15, OUTPUT BUSY
1243  004474  100001      BPL      18
1244
1245      ;
1246      ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\
1247      ;
1248  004476  104001      ERROR 1          ;OUTPUT BUSY IS SET WITH NO PRIOR TRANSMISSION
1249
1250      ;
1251      ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\
1252      ;
1253
1254  004500  104412      181      SCOPEX
1255
1256  004502  052777  040000  175314      BIS      @MAINT3,@ICSR
1257      ;
1258      ;CHECK THAT RIF BIT WILL SET
1259      ;
1260
1261  004510  012737  004510  014372      738:     MOV      @738,SCOLOP
1262  004516  052777  000001  175300      BIS      @XRIF,@ICSR
1263  004524  032777  000001  175272      BIT      @XRIF,@ICSR
1264  004532  001001      BNE      718
1265
1266      ;
    
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1267
1268
1269 004534 104055
1270
1271
1272
1273
1274 004536 104412
1275
1276
1277
1278
1279
1280 004540 012737 004540 014372 7481 MOV 0748,SCOLOP
1281 004546 052777 000001 175250 018 BIS 0XRIF,0ICSR
1282 004554 017700 175242 018 MOV 0ICMOD,R0
1283 004560 032777 000001 175236 018 BIT 0XRIF,0ICSR
1284 004566 001401 018 BEO 728
1285
1286
1287
1288
1289 004570 104056
1290
1291
1292
1293
1294 004572 104412
1295
1296
1297
1298
1299
1300
1301 004574 104415
1302 004576 012737 004576 014372 8081 BMTTST: CKCNC
1303 004604 005037 017206 018 MOV 0108,SCOLOP ISET SCOPE LOOP
1304 004610 013700 014414 018 CLR INTPLG ICLEAR INTERRUPT OCCURANCE FLAG
1305 004614 005777 175204 7081 MOV FR200,R0
1306 004620 100003 018 TST 0ICSR IIS OUTPUT BUSY
1307 004622 005300 018 BPL .+10 IIF NO CONT
1308 004624 001373 018 DEC R0 IINC WATCHDOG
1309 018 BNE 708 INOT TIMED OUT THEN 708
1310
1311
1312
1313 004626 104035
1314
1315
1316
1317
1318 004630 104412
1319
1320 004632 013700 014416 018 MOV FR20,R0
1321 004636 005077 175162 018 CLR 0ICSR ICLEAR ICR CSR
1322 004642 052777 000010 175154 018 BIS 0BMTEN,0ICSR ISET BMT INTERRUPT ENABLE
  
```

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1323 004650 013737 017172 177776      MOV     PRILVL,00PSW      ILOWER PRIORITY LEVEL
1324 004656 005300                      DEC     R0
1325 004660 001376                      BNE     .-2
1326 004662 005737 017206      TST     INTFLG          I010 INTERRUPT OCCUR?
1327 004666 001001                      BNE     98              IYES, OKAY GO TO 98
1328
1329
1330
1331
1332 004670 104017                      I
                                I////////////////////////
                                I
                                I      ERROR 17              I BMT WOULD NOT INTERRUPT
1333
1334
1335
1336
1337 004672 104412                      98:    SCOPEX          ISCOPE LOOP
1338
1339
1340
1341
1342
1343
1344 004674 042777 000010 175122      148:   BIC     @BMTEN,@ICSR      ICLEAR BMT ENABLE
1345 004702 052777 000001 175114      BIS     @XRF,@ICSR        ISET RIF BIT
1346 004710 005777 175106      TST     @ICHOD            ICLEAR RIF BIT
1347 004714 005037 017206      CLR     INTFLG           ICLEAR INT FLG
1348 004720 012737 004674 014372      MOV     @148,@COLOP
1349 004726 005077 175072      CLR     @ICSR            ICLEAR ICSR
1350 004732 052777 000010 175064      BIS     @BMTEN,@ICSR     ISET BMT ENABLE
1351 004740 013737 017172 177776      MOV     PRILVL,00PSW     ILOWER PSW
1352 004746 013700 014416      MOV     FR20,R0
1353 004752 005300                      DEC     R0
1354 004754 001376                      BNE     .-2
1355 004756 012737 000340 177776      MOV     @340,00PSW
1356 004764 005737 017206      TST     INTFLG          I010 INTERRUPT OCCUR
1357 004770 001001                      BNE     158             IYES OK,GO TO 158
1358
1359
1360
1361
1362 004772 104031                      I
                                I////////////////////////
                                I
                                I      ERROR 31              I BMT WOULD NOT INTERRUPT
1363
1364
1365
1366
1367 004774 104412                      158:   SCOPEX
1368
1369
1370 004776 012737 004776 014372      88:    MOV     @88,@COLOP
1371
1372 005004 032777 000100 175012      BIT     @XRESET,@ICSM    IRESET IS READ AS "0"
1373 005012 001401                      BEQ     28
1374
1375
1376
1377
1378 005014 104002                      I
                                I////////////////////////
                                I
                                I      ERROR 2              IRESET READ AS "1"
    
```

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1379
1380
1381
1382
1383 005016 104412
1384
1385
1386
1387
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1390
1391
1392
1393
1394 005020 012737 000001 014464          MOV      01,PRRMT1      ;ALLOW PRINT TO REMOTE END
1395 005026 012737 000001 014462          MOV      01,PRRMT      ;BUFFER ERRORS THAT OCCUR
1396 005034 012737 005034 014372  INTST:  MOV      0INTST,SCOLOP  ;SET SCOPE LOOP
1397 005042 052777 040000 174754          BIS      0MAINT3,0ICSR  ;ISSUE MAINT RESET
1398 005050 005077 174750          CLR      0ICSR          ;CLEAR ICR CSR
1399 005054 005037 017206          CLR      INTPLG
1400 005060 013737 017172 177776          MOV      PRILVL,00PSW   ;ALLOW INTERRUPTS
1401 005066 052777 000004 174730          BIS      0MODEN,0ICSR  ;SET MOD INT ENABLE
1402 005074 052777 020000 174722          BIS      0MAINT2,0ICSR ;SET MAINT BIT TO START MICROCODE
1403 005102 013700 014410          MOV      PRSWE,R0
1404 005106 005300          DEC      R0
1405 005110 001376          BNE
1406 005112 005737 017206          TST      INTPLG        ;INTERRUPT OCCUR?
1407 005116 001001          BNE      10
1408
1409
1410
1411
1412 005120 104021
1413
1414
1415
1416
1417
1418
1419
1420 005122 104412
1421
1422 005124 023727 017206 000001          CMP      INTPLG,01      ;DID MULTIPLE INTERRUPTS OCCUR
1423 005132 001001          BEQ      20
1424
1425
1426
1427
1428 005134 104026
1429
1430
1431
1432
1433 005136 104412
1434
```



```
1435  
1436  
1437  
1438  
1439 005140 013700 014416          MOV     FR20,R0  
1440 005144 005037 017206          CLR     INTPLG  
1441 005150 042777 000004 174646    BIC     @MODEN,@ICSR      ;TOGGLE MODULE INTERRUPT ENABLE  
1442 005156 052777 000004 174640    BIS     @MODEN,@ICSR  
1443 005164 005300                DEC     R0  
1444 005166 001376                BNE     ,=2  
1445 005170 005737 017206          TST     INTPLG  
1446 005174 001001                BNE     35  
1447  
1448  
1449  
1450  
1451 005176 104027                ;  
1452  
1453  
1454  
1455  
1456 005200 104412                ;  
1457  
1458 005202 042777 000004 174614    BIC     @MODEN,@ICSR  
1459 005210 052777 000001 174606    BIS     @RIP,@ICSR      ;SET RIP BIT  
1460 005216 005777 174600          TST     @ICMOD ;CLEAR RIP BIT  
1461 005222 052777 040000 174574    BIS     @MAINTS,@ICSR   ;INITIALIZE ICR CONTROLLER  
1462 005230 005077 174570          CLR     @ICSR          ;EXIT MICROCODE  
1463  
1464  
1465  
1466  
1467  
1468  
1469  
1470  
1471 005234 012737 005234 014372    INTST1: MOV     @INTST1,SCOLOP ;SET SCOPE LOOP  
1472 005242 012737 000340 177776    MOV     @340,@PSW      ;INHIBIT INTERRUPTS  
1473 005250 005077 174550          CLR     @ICSR          ;CLEAR ICR CSR  
1474 005254 013700 014414          MOV     FR20,R0  
1475 005260 005777 174540          48:    TST     @ICSR      ;OUTPUT BUSY?  
1476 005264 100003                BPL     58             ;NO, CONTINUE  
1477 005266 005300                DEC     R0  
1478 005270 001373                BNE     48  
1479  
1480  
1481  
1482  
1483 005272 104035                ;  
1484  
1485  
1486  
1487 005274 104412                ;  
1488  
1489 005276 052777 020000 174520    BIS     @MAINT2,@ICSR   ;SET MICROCODE MAINT BIT  
1490 005304 005037 017206          CLR     INTPLG        ;CLEAR INTERRUPT OCCURANCE FLAG
```

```

1491 005310 013737 017172 177776      MOV     PR1VL,00PSW      IALLOW INTERRUPTS
1492 005316 013700 014416      MOV     FR20,R0
1493 005322 052777 000014 174474      BIS     @MODEN+@M1TEN,@ICSR      ISET BMT AND MODULE INTERRUPT ENABLES
1494 005330 005300      DEC     R0
1495 005332 001376      BNE     .-2
1496 005334 005737 017206      TST     INTPLG          IDID INTERRUPT OCCUR?
1497 005340 001001      BNE     18
1498
1499
1500      /
1501      /
1502 005342 104025      ERROR 25              INO INTERRUPT WITH MULTIPLE ENABLES
1503      /
1504      /
1505
1506 005344 104412      18:      SCOPEX
1507
1508      IINTERUPT OCCURED! LET'S BOUNCE MOD ENABLE
1509      IWO RIF
1510
1511 005346 013700 014416      MOV     FR20,R0
1512 005352 005037 017206      CLR     INTPLG
1513 005356 042777 000004 174440      BIC     @MODEN,@ICSR      IBOUNCE MODULE INTERRUPT ENABLE
1514 005364 052777 000004 174432      BIS     @MODEN,@ICSR
1515 005372 005300      DEC     R0
1516 005374 001376      BNE     .-2
1517 005376 005737 017206      TST     INTPLG          IINTERUPT OCCUR?
1518 005402 001401      BEQ     28
1519
1520      /
1521      /
1522
1523 005404 104027      ERROR 27              IBOUNCED MODULE INTERRUPT ENABLE--NO INTERRUPT
1524      /
1525      /
1526
1527 005406 104412      28:      SCOPEX
1528
1529 005410 013700 014416      MOV     FR20,R0
1530 005414 005037 017206      CLR     INTPLG
1531 005420 042777 000014 174376      BIC     @MODEN+@M1TEN,@ICSR      IBOUNCE BMT ENABLE
1532 005426 052777 000010 174370      BIS     @M1TEN,@ICSR
1533 005434 005300      DEC     R0
1534 005436 001376      BNE     .-2
1535 005440 005737 017206      TST     INTPLG          IINTERUPT OCCUR?
1536 005444 001001      BNE     38
1537
1538      /
1539      /
1540
1541 005446 104031      ERROR 31              IBOUNCED BMT INTERRUPT ENABLE - NO INTERRUPT
1542      /
1543      /
1544
1545 005450 104412      38:      SCOPEX
1546
    
```

| | | | | | | | |
|------|--------|--------|--------|--------|-----|--------------------|--------------------------------|
| 1547 | 005452 | 042777 | 000014 | 174344 | BIC | 0MOUEN+0MYEN,0ICSR | ICLEAR ENABLES |
| 1548 | 005460 | 052777 | 000001 | 174336 | BIS | 0XRIF,0ICSR | ISET RIF BIT |
| 1549 | 005466 | 005777 | 174330 | | TST | 0ICMOD | ICLEAR RIF BIT |
| 1550 | 005472 | 052777 | 040000 | 174324 | BIS | 0MAINT3,0ICSR | IRESET MICROCODE IN CONTROLLER |
| 1551 | 005500 | 005077 | 174320 | | CLR | 0ICSR | |
| 1552 | 005504 | 005337 | 014456 | | DEC | PASRUN | IDEC PASS COUNT |
| 1553 | 005510 | 001402 | | | BEG | .+6 | IDONE, .+6 |
| 1554 | 005512 | 000137 | 004410 | | JMP | LOOP1 | ILOOP BACK |
| 1555 | 005516 | 032777 | 000040 | 173412 | BIT | 0SN5,0SWR | ILOOP ON TEST SET |
| 1556 | 005524 | 001002 | | | BNE | .+6 | IYES, SEE IF THIS ONE |
| 1557 | 005526 | 000137 | 011330 | | JMP | TEST3 | IYES, SEE IF THIS ONE |
| 1558 | 005532 | 017700 | 173400 | | MOV | 0SNH,R0 | IYES, SEE IF THIS ONE |
| 1559 | 005536 | 042700 | 177477 | | BIC | 0177477,R0 | IYES, SEE IF THIS ONE |
| 1560 | 005542 | 001002 | | | BNE | .+6 | IYES, SEE IF THIS ONE |
| 1561 | 005544 | 000137 | 003504 | | JMP | LPTST | IYES, SEE IF THIS ONE |
| 1562 | 005550 | 000137 | 011330 | | JMP | TEST3 | IYES, SEE IF THIS ONE |

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.80TTL TEST OF MICRO-DIAGNOSTIC IN M8896
 ;
 ;THIS SECTION USES THE MAINTENANCE MICROCODE OF THE REMOTE
 ;CONTROL BOARD (M8896). M8896 IS RUNNING ITS OWN CODE.
 ;MICROCODE IS KEYED ON ICR CSR BITS 8 AND 11
 ;

| | | | | | | | | |
|------|--------|--------|--------|--------|---------|--------|----------------------|--|
| 1572 | 005554 | 012737 | 000340 | 177776 | TEST2: | MOV | 0340,00PSW | IINHIBIT INTERRUPTS |
| 1573 | 005562 | 000240 | | | | NOP | | |
| 1574 | 005564 | 000240 | | | | NOP | | |
| 1575 | 005566 | 000240 | | | | NOP | | |
| 1576 | 005570 | 005037 | 014466 | | | CLR | REMPRE | |
| 1577 | 005574 | 005637 | 014452 | | | CLR | PRIND | |
| 1578 | 005600 | 012737 | 000001 | 014462 | | MOV | 01,PRRMT | IBUFFER ERRORS |
| 1579 | 005606 | 012737 | 000001 | 014464 | | MOV | 01,PRRMT1 | IDON'T ALLOW PRINT TO REMOTE |
| 1580 | 005614 | 104419 | | | | CHKCNC | | |
| 1581 | 005616 | 013737 | 014454 | 014456 | | MOV | PASLG,PASRUN | |
| 1582 | 005624 | 016437 | 000002 | 014442 | | MOV | ERRTOT(4),ERTTL | ISAVE PRESENT ERROR LEVEL FOR SCOPE PURPOSES |
| 1583 | | 005632 | | | LOOP2=. | | | |
| 1584 | 005632 | 005037 | 014422 | | | CLR | FLAG1 | ICLEAR FIRST GOOD FLAG |
| 1585 | 005636 | 012737 | 000012 | 014460 | 18: | MOV | 010,ERRLOP | |
| 1586 | 005644 | 012737 | 005644 | 014372 | 958: | MOV | 0958,SCOLOP | |
| 1587 | 005652 | 052777 | 004400 | 174144 | | BIS | 0MAINT0+MAINT1,0ICSR | ISET MAINT BITS |
| 1588 | 005660 | 012705 | 004000 | | | MOV | 04000,R5 | ISET MAINT1 BIT IN R5 |
| 1589 | 005664 | 000240 | | | | NOP | | |

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;
 ;TEST FOR MODULE INPUT RANGE
 ;

| | | | | | | | | |
|------|--------|--------|--------|--|------|-----|-----------|--------------------------|
| 1593 | 005666 | 012701 | 000050 | | | MOV | 040,,R1 | |
| 1594 | 005672 | 012702 | 017532 | | | MOV | 0ADDY0,R2 | |
| 1595 | 005676 | 013700 | 014410 | | 628: | MOV | 0R500,R0 | ISET TIMEOUT FOR TESTING |
| 1596 | 005702 | 005777 | 174116 | | | TST | 0ICSR | IOP OUTPUT BUSY |
| 1597 | 005706 | 100003 | | | | BPL | .+10 | |
| 1598 | 005710 | 005300 | | | | DEC | R0 | |
| 1599 | 005712 | 001373 | | | | BNE | .+10 | |

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1601
1602

;
 ;////////////////////////////////////

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1603
1604 205714 104035          )          ERROR 35          IOUT
1605
1606
1607          )
1608          )
1609 005716 013700 014410          MOV      FR50P,R0
1610 005722 010077 174074          MOV      R0,PICMOD
1611 005726 032777 000200 174070 6081  BIT      @MODINT,PICSR  ;MODINT INDICATES M8896 HAS EXECUTED PROPER CODE
1612 205734 001014          BNE      018
1613 205736 005300          DEC      R0          ;INC WATCHDOG
1614 005740 001372          BNE      608
1615
1616 005742 052777 000001 174054          BIS      @XRIF,PICSR  ;SET RIF
1617 005750 005777 174046          TST      @ICMOD
1618 005754 040577 174044          BIC      R5,PICSR  ;CLEAR MAINT 1 TO STALL 96 MICROCODE
1619
1620          )
1621          )
1622          )
1623 005760 104034          )          ERROR 34          ;MODULE INTERRUPT NOT POSTED BY M8896
1624
1625          )
1626          )
1627          )
1628 005762 000137 006344          JMP      158
1629
1630
1631 005766 017722 174032          0181  MOV      @PICSR,(2)+  ;STORE RESULTS
1632 005772 017722 174030          MOV      @ICAR,(2)+
1633 005776 052777 000001 174020          BIS      @XRIF,PICSR  ;SET RIF
1634 006004 005777 174012          TST      @ICMOD
1635 006010 005301          DEC      R1          ;DONE?
1636 006012 001331          BNE      628          ;LOOP
1637
1638          )
1639          ;ALL READS ARE DONE LET'S CLEAR MAINT BIT AND VERIFY
1640          ;THAT EVERY THING IS ALL DONE
1641          )
1642
1643 006014 040577 174004          BIC      R5,PICSR  ;CLEAR MAINT1 TO STALL '96 MICROCODE
1644 006020 012705 000046          MOV      @30.,R5
1645 006024 012702 017542          MOV      @ADDTAB+10,R2
1646 006030 012200          0081  MOV      (2)+,R0
1647 006032 032700 010000          BIT      @ERRBIT,R0  ;GET READ
1648 006036 001402          BEQ      028          ;ERR BIT SET
1649 006040 005264 000004          INC      @ERRCNT(4)  ;NO, CCNT
1650 006044 012200          0281  MOV      (2)+,R0  ;YES, INDICATE IT
1651 006046 005305          DEC      R5          ;GET ICAR
1652 006050 001454          BEQ      118          ;DONE
1653          ;YES, EXIT
1654 006052 042700 177760          BIC      @177760,R0  ;CLEAR UNWANTED BITS
1655 006056 005737 014422          TST      FLAG1
1656 006062 001012          BNE      98          ;FIRST GOOD READ?
1657 006064 010001          MOV      R0,R1
1658 006066 010037 001124          MOV      R0,@GDDAT  ;NO, THEN 98
1659          ;R1 IS FIRST ADDR
1660          ;@GDDAT IS LAST RECV ADDR

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| | | | | | | | |
|------|--------|--------|--------|--------|-------|---------------|--|
| 1659 | 006072 | 010037 | 014432 | | MOV | RB,HGH | ISTORE AS HIGH VALUE |
| 1660 | 006076 | 010037 | 014434 | | MOV | RB,LOW | ISTORE AS LOW VALUE |
| 1661 | 006102 | 005237 | 014422 | | INC | FLAG1 | ISSET FIRST RECEPTION FLAG |
| 1662 | 006106 | 000431 | | | BR | 108 | IBRANCH |
| 1663 | | | | | | | |
| 1664 | 006110 | 020001 | | 981 | CMP | RB,R1 | ISIS NEW READ TO FIRST READ |
| 1665 | 006112 | 001433 | | | BEQ | 118 | IYES, 118 |
| 1666 | 006114 | 020037 | 014434 | | CMP | RB,LOW | ISIS NEW LOW |
| 1667 | 006120 | 002002 | | | SGE | 998 | INO, DON'T SWAP |
| 1668 | 006122 | 010037 | 014434 | | MOV | RB,LOW | IYES, SWAP |
| 1669 | 006126 | 020037 | 014432 | 998: | CMP | RB,HGH | ISIS NEW HIGH |
| 1670 | 006132 | 003402 | | | BLE | 988 | INO, DON'T SWAP |
| 1671 | 006134 | 010037 | 014432 | | MOV | RB,HGH | IYES, SWAP |
| 1672 | 006140 | 010003 | | 988: | MOV | RB,R3 | ISETS CHECK IF GOOD |
| 1673 | 006142 | 163703 | 001124 | | SUB | SGDDAT,R3 | ITHAT POLL ADDRESSES |
| 1674 | 006146 | 022703 | 000001 | | CMP | R1,R3 | IOCCUR IN SUCCESSION |
| 1675 | 006152 | 001407 | | | BEQ | 108 | IYES THEN 108 |
| 1676 | 006154 | 005700 | | | TST | RB | IPEAT? |
| 1677 | 006156 | 001405 | | | BEQ | 108 | IYES |
| 1678 | 006160 | 005237 | 001124 | | INC | SGDDAT | |
| 1679 | 006164 | 010037 | 001126 | | MOV | RB,SGDDAT | |
| 1680 | | | | | | | |
| 1681 | | | | | | | |
| 1682 | | | | | | | |
| 1683 | | | | | | | |
| 1684 | 006170 | 104020 | | | | | |
| 1685 | | | | | | | |
| 1686 | | | | | | | |
| 1687 | | | | | | | |
| 1688 | | | | | | | |
| 1689 | 006172 | 010037 | 001124 | 108: | MOV | RB,SGDDAT | IMOVE THIS ADDRESS TO |
| 1690 | 006176 | 000137 | 000030 | 968: | JMP | 008 | ILOOP BACK |
| 1691 | | | | | | | |
| 1692 | | | | | | | |
| 1693 | | | | | | | |
| 1694 | | | | | | | |
| 1695 | | | | | | | |
| 1696 | 006202 | 042777 | 004405 | 173614 | 118: | BIC | MAINT1+MAINTB+XRIF+MODEN,0ICSR ICLEAR MAINT BITS RIP MOD INT ENA |
| 1697 | 006210 | 005737 | 014466 | | TST | REMPRE | IREMOTE PRESENT |
| 1698 | 006214 | 001043 | | | BNE | 128 | IYES CONT |
| 1699 | 006216 | 005764 | 000000 | | TST | PASCNT(4) | IFIRST PASS |
| 1700 | 006222 | 001040 | | | BNE | 128 | INO, DON'T PRINT RESULTS |
| 1701 | 006224 | 005737 | 014432 | | TST | PRIIND | IFARE WE LOOPING ON THIS TEST |
| 1702 | 006230 | 001035 | | | BNE | 128 | IYES, DON'T PRINT |
| 1703 | 006232 | 013702 | 014432 | 148: | MOV | HGH,R2 | ISET UP TO PRINT |
| 1704 | 006236 | 013701 | 014434 | | MOV | LOW,R1 | |
| 1705 | 006242 | 013764 | 014432 | 000006 | MOV | HGH,PERMGH(4) | |
| 1706 | 006250 | 013764 | 014434 | 000010 | MOV | LOW,PERLOW(4) | |
| 1707 | 006256 | 005037 | 017204 | | CLR | WRKFLP | |
| 1708 | 006262 | 032777 | 020000 | 172646 | BIT | 08W13,08WR | |
| 1709 | 006270 | 001030 | | | BNE | 138 | |
| 1710 | 006272 | 104413 | 023124 | | TYPE, | RESULT | |
| 1711 | 006276 | 010146 | | | MOV | R1,-(SP) | ISAVE R1 FOR TYPEOUT |
| 1712 | 006300 | 104401 | | | TYPOC | | IS60 TYPE--OCTAL ASCII(ALL DIGITS) |
| 1713 | 006302 | 104413 | 023173 | | TYPE, | FINRES | |
| 1714 | 006306 | 010246 | | | MOV | R2,-(SP) | ISAVE R2 FOR TYPEOUT |

```

1715 206310 104401          TYP0C          ;JGO TYPE=OCTAL ASCII(ALL DIGITS)
1716 006312 104413 022000  TYPE,      CRLF
1717 006316 005237 014466  INC        REMPHE
1718 006322 000413          BR          138
1719 006324 023764 014432 000006 128:  CMP      MGH,PERMGH(4) ;RESULTS PRINTED ONLY
1720 206332 001337          RNE        148          ;IF DIFFERENT FROM 1ST PASS
1721 206334 023764 014434 000010  CMP      LOW,PERLOW(4)
1722 206342 001333          BNE        148
1723 006344 042777 004405 173452 158:  BIC      @MAINT0+MAINT1+XRIF+MODEN,@ICSR
1724
1725          ;TEST OF ADDRESS WRAP AROUND CAPABILITY IN M8896
1726
1727
1728 206352 013737 002022 001124 138:  MOV      ICM00,SGDDAT ;SET UP GOOD DATA
1729 206360 012702 000020          MOV      @20,R2 ;SET UP COUNT
1730 206364 012737 000012 014460 ADNR1:  MOV      @10,,ERRLOP
1731 006372 012737 006372 014372 ADNR2:  MOV      @ADNR2,SCOLOP
1732 006400 052777 000007 173416          BIS      @XRIF+MODEN+ERREN,@ICSR
1733 006406 013700 014414          MOV      FR200,R0 ;SET TIMEOUT
1734 206412 005777 173406 708:  TST      @ICSN ;IS OUTPUT BUSY
1735 206416 100003          BPL      .+10 ;IF NO CONT
1736 206420 005300          DEC      R0 ;INC WATCHDOG
1737 206422 001373          BNE      708 ;NOT TIMED OUT THEN 708
1738
1739
1740          ;
1741          ;
1742 006424 104035          ERROR 35 ;OUTPUT BUSY ERROR
1743
1744          ;
1745          ;
1746          ;
1747 206426 052777 004000 173378 ADDWRP: BIS      @MAINT1,@ICSN ;SET MAINT BIT FOR NEXT TEST
1748 006434 000240          NOP
1749 206436 000240          NOP
1750 006440 000240          NOP
1751 006442 010077 172456          MOV      R0,@SGDDAT ;SEND TRANSMISSION
1752 006446 013700 014410          MOV      FR500,R0 ;SET TIMEOUT
1753 006452 032777 000200 173344 608:  BIT      @MODINT,@ICSR ;MOD INT KEYS M8896 HAS EXECUTED CODE
1754 006460 001003          BNE      .+10
1755 206462 005300          DEC      R0 ;INC WATCH DOG
1756 206464 201372          BNE      608
1757
1758          ;
1759          ;
1760          ;
1761 006466 104034          ERROR 34 ;MODULE INTERRUPT NOT POSTED BY M8896
1762
1763          ;
1764          ;
1765          ;
1766 006470 000240          NOP
1767 006472 013700 014414          MOV      FR200,R0 ;SET TIMEOUT
1768 006476 005777 173322 708:  TST      @ICSN ;IS OUTPUT BUSY
1769 006502 100003          BPL      .+10 ;IF NO CONT
1770 006504 005300          DEC      R0 ;INC WATCHDOG

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1771 006506 001373          BNE      708          ;NOT TIMED OUT THEN 708
1772
1773
1774
1775
1776 006510 104035          ERROR   35          ;OUTPUT BUSY ON
1777
1778
1779
1780
1781
1782 006512 032777 010000 173304  BIT     @ERNBIT,@ICSR  ;ERROR SET
1783 006520 001415          BEQ     978
1784 006522 005264 000004          INC     ERRCNT(4)      ;INDICATE ERROR ON LINE
1785 006526 017700 173274          MOV     @ICAR,R0
1786 006532 042777 004000 173264  BIC     @MAINT1,@ICSR
1787 006540 013700 014410          MOV     PR500,R0
1788 006544 005300          DEC     R0
1789 006546 001376          BNE     ,-2
1790 006550 000137 006646          JMP     18
1791
1792
1793 006554 017737 173246 001126 978:  MOV     @ICAR,@SDDAT  ;READ ICAR
1794 006562 042777 004000 173234  BIC     @MAINT1,@ICSR ;CLEAR MAINT BIT
1795 006570 013701 014410          MOV     PR500,R1
1796 006574 005301          DEC     R1
1797 006576 001376          BNE     ,-2
1798 006600 042737 177760 001126  BIC     @177760,@SDDAT ;CLEAR BITS
1799 006606 006337 001126          ASL     @SDDAT         ;SHIFT LEFT TO ALIGN
1800 006612 053737 002022 001126  BIS     @CMOD,@SDDAT   ;BIT SET IN OFFSET
1801 006620 023737 001126 001124  CMP     @SDDAT,@SDDAT  ;DID WE GET RIGHT ADDRESS
1802 006626 001401          BEQ     28
1803
1804
1805
1806
1807 006630 104022          ERROR   22          ;ADDRESS THAT CAME BACK IS NOT CORRECT
1808
1809
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1813 006632 062737 000002 001124 28:  ADD     @2,@SDDAT     ;SETUP FOR NEXT ADDRESS
1814 006640 005302          DEC     R2
1815 006642 001250          BNE     @DNH1         ;LOOP BACK
1816
1817
1818 006644 000240          NOP
1819
1820          ;TEST IS DONE RELEASE
1821
1822 006646 052777 000400 173150 18:  BIS     @MAINT0,@ICSR ;SET MAINT BIT
1823 006654 013700 014410          MOV     PR500,R0
1824 006660 005300          DEC     R0
1825 006662 001376          BNE     ,-2
1826 006664 042777 000400 173132  BIC     @MAINT0,@ICSR ;CLEAR MAINT BIT

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| | | | | | | | |
|------|--------|--------|--------|--------|---------|-------------------|---|
| 1827 | 006672 | 013700 | 014410 | | MOV | FR500,R0 | |
| 1828 | 006676 | 005300 | | | DEC | R0 | |
| 1829 | 006700 | 001376 | | | BNE | .-2 | |
| 1830 | 006702 | 052777 | 040000 | 173114 | BIS | 0MAINT3,0ICSR | I RESET M8896 |
| 1831 | 006710 | 013700 | 014410 | | MOV | FR500,R0 | |
| 1832 | 006714 | 005300 | | | DEC | R0 | I WAIT |
| 1833 | 006716 | 001376 | | | BNE | .-2 | |
| 1834 | 006720 | 017700 | 173102 | | MOV | 0ICAR,R0 | I CLEAR ANY ERRORS PENDING IDUE TO RELEASE |
| 1835 | | | | | | | |
| 1836 | 006724 | 005237 | 014452 | | INC | PRIND | |
| 1837 | 006730 | 005337 | 014456 | | DEC | PASRUN | |
| 1838 | 006734 | 001402 | | | BEQ | .+6 | |
| 1839 | 006736 | 000137 | 005632 | | JMP | LOOP2 | |
| 1840 | 006742 | 026437 | 000002 | 014442 | CMP | ERTOT(4),ERTTL | I IS ERROR COUNT SAME AS WHEN WE ENTERED |
| 1841 | 006750 | 001406 | | | BEQ | 998 | I YES EXIT |
| 1842 | 006752 | 032777 | 040000 | 172156 | BIT | 0SW14,0SWR | I NO, THEN CHECK FOR POSSIBLE SCOPE LOOP |
| 1843 | 006760 | 001402 | | | BEQ | .+6 | |
| 1844 | 006762 | 000137 | 005632 | | JMP | LOOP2 | |
| 1845 | 006766 | 032777 | 000040 | 172142 | BIT | 0SW5,0SWR | I LOOP ON TEST SET |
| 1846 | 006774 | 001411 | | | BEQ | 38 | I NO, CONT |
| 1847 | 006776 | 017700 | 172134 | | MOV | 0SWR,R0 | I GET SWR |
| 1848 | 007002 | 042700 | 177477 | | BIC | 0177477,R0 | I CLEAR UNWANTED BITS |
| 1849 | 007006 | 022700 | 000200 | | CMP | 0200,R0 | I TEST 2 DESIRED |
| 1850 | 007012 | 001002 | | | BNE | .+6 | |
| 1851 | 007014 | 000137 | 005554 | | JMP | TEST2 | |
| 1852 | 007020 | 000240 | | 381 | NOP | | |
| 1853 | 007022 | 000240 | | | NOP | | |
| 1854 | 007024 | 000240 | | | NOP | | |
| 1855 | 007026 | 000137 | 007036 | | JMP | TTYTST | I GO TO NEXT TEST |
| 1856 | | | | | | | |
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| 1860 | | | | | | | |
| 1861 | | | | | | | |
| 1862 | | | | | | | |
| 1863 | | | | | | | |
| 1864 | 007032 | 005064 | 000000 | | TTYSTR: | CLR | PASCNT(4) |
| 1865 | 007036 | 032777 | 002000 | 172072 | TTYTST: | BIT | 0SW10,0SWR |
| 1866 | 007044 | 001402 | | | BEQ | .+6 | I RUNNING REMOTELY? |
| 1867 | 007046 | 000137 | 010304 | | JMP | ENDPAS | I NO, DO TTY TEST |
| 1868 | 007052 | 012706 | 001100 | | MOV | 01100,SP | I YES, CAN'T DO TTY TEST |
| 1869 | 007056 | 005037 | 014464 | | CLR | PRRMT1 | I SET STACK |
| 1870 | 007062 | 005037 | 014462 | | CLR | PRRMT | I DON'T ALLOW REMOTE TYPE |
| 1871 | 007066 | 005737 | 014472 | | TST | REMOTE | I DON'T BUFFER ERRORS |
| 1872 | 007072 | 001402 | | | BEQ | .+6 | I DID OPERATOR SET UP TEST WRONG? |
| 1873 | 007074 | 000137 | 010304 | | JMP | ENDPAS | I NO, CONT |
| 1874 | 007100 | 005764 | 000000 | | TST | PASCNT(4) | I YES, DON'T DO TEST |
| 1875 | 007104 | 001002 | | | BNE | TTYL | I FIRST PASS |
| 1876 | 007106 | 104413 | | | TYPE | | I YES, DON'T TYPE HEADER |
| 1877 | 007110 | 025035 | | | TSTTTY | | |
| 1878 | | 007112 | | | | | |
| 1879 | 007112 | 012737 | 000001 | 014466 | MOV | 01,REMPRE | |
| 1880 | 007120 | 052777 | 000041 | 172676 | BIS | 0TTYEN+XRIF,0ICSR | I CLEAR ANY PENDING DA |
| 1881 | 007126 | 017700 | 172670 | | MOV | 0ICMOD,R0 | |
| 1882 | 007132 | 005000 | | | CLR | R0 | I WAIT |


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1003 007134 005200          INC      R0
1004 007136 001376          BNE     .-2
1005 007140 017700 172656    MOV     @ICMOD,R0          ICLEAR AGAIN
1006 007144 005000          CLR     R0                IWAIT
1007 007146 005200          INC     R0
1008 007150 001376          BNE     .-2
1009 007152 042777 000000 172644  BIC     @TTYEN,@ICSR      ICLEAR ENABLE
1010 007160 012737 000340 177776 188    MOV     @340,@PSW        IINHIBIT INTERRUPTS
1011 007166 005037 014460          CLR     ERRLOP
1012 007172 005037 001124 588    CLR     @GDDAT          IGDDAT USED FOR PATTERN
1013 007176 012737 007176 014372 388    MOV     @38,@SCLOP
1014 007204 052777 001041 172612    BIS     @TTYEN+@TMTEN+@XRF,@ICSR    ISET BITS IN CSR
1015 007212 013700 014410          MOV     @R500,R0
1016 007216 032777 100000 172602    BIT     @XTMT,@ICAR      ITRANSMITTER BUFFER EMPTY?
1017 007224 001003          BNE     .+10
1018 007226 005300          DEC     R0
1019 007230 001372          BNE     .-12
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1021
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1025 207232 104015          /
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1035 207234 042777 001000 172562    BIC     @TMTEN,@ICSR      ICLEAR ENABLE
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1939  
1940 007312 104411          9681 SCOTTY  
1941 007314 042777 001000 172502 BIC 0TBMTEN,0ICSH  
1942 007322 017700 172474 MOV 0ICMOD,R0  
1943  
1944 007326 013700 014420 MOV FRM110,R0  
1945 007332 032777 010000 172464 998: BIT 0ERNBIT,0ICSH ;ERROR BIT SET?  
1946 007340 001402 BEQ 978 ;NO,THEN978  
1947 007342 005264 000004 INC ERRCNT(4) ;YES, THEN ACCOUNT FOR IT  
1948 007346 032777 010000 172452 978: BIT 00A,0ICAR ;DA SET?  
1949 007354 001016 BNE 988  
1950 007356 005300 DEC R0 ;INC WATCHDOG  
1951 007360 001364 BNE 998  
1952  
1953 007362 005737 014460 TST REMPRES ;IT MAY BE OPERATOR ERROR, DON'T FLAG  
1954 007366 001012 BNE 988+2 ;VET  
1955 007370 005237 014460 INC ERRLOP  
1956  
1957 007374 013700 014420 MOV FRM110,R0 ;SET TO DELAY 110 MSEC  
1958 007400 005300 DEC R0 ;TO ALLOW ANY LATE DA'S  
1959 007402 001376 BNE 0-2  
1960 007404 017700 172412 MOV 0ICMOD,R0 ;CLEAR DA IF THERE  
1961  
1962  
1963  
1964  
1965  
1966 007410 104033          ;  
;/////////////////////////////////////  
; ERROR 33 ;DA NOT SET IN TTY LOOP TEST  
1967  
1968  
1969  
1970  
1971  
1972 007412 104411          9881 SCOTTY  
1973  
1974  
1975 007414 052777 001000 172402 BIS 0TBMTEN,0ICSH  
1976 007422 032777 100000 172376 BIT 0TBMT,0ICAR ;TRANSMITTER EMPTY?  
1977 007430 001001 BNE 958 ;YES, CONT  
1978  
1979  
1980  
1981  
1982 007432 104054          ;  
;/////////////////////////////////////  
; ERROR 54 ;TBMT NOT SET  
1983  
1984  
1985  
1986  
1987 007434 104411          958: SCOTTY  
1988  
1989 007436 042777 001000 172360 BIC 0TBMTEN,0ICSR  
1990 007444 052777 000001 172352 BIS 0XRIF,0ICSR ;SET RIF BIT  
1991 007452 017737 172344 001126 MOV 0ICMOD,0BDDAT ;READ TTY  
1992  
1993 007460 023737 001124 001126 CMP 0BDDAT,0BDDAT ;READ OKAY  
1994 007466 001425 BEQ 28 ;YES CONT?
```

```

1995
1996 007470 005737 001124          TST      3GDUAT          IIS GOOD DATA 27
1997 007474 001016          BNE      48             INO PRINT ERROR
1998 007476 023727 001126 000377      CMP      3GDUAT,0377    IIS BAD DATA 3777
1999 007504 001012          BNE      48             INO, PRINT ERROR
2000                                IGOOD DATA = 0      BAD DATA = 337
2001                                IAPPEARS LIKE PLUG OT IN END
2002                                IOPERATOR ERROR, TELL AND SKIP TEST
2003
2004 007506 005764 000000          TST      PASCNT(4)     IFIRST PASST
2005 007512 001005          BNE      005           INO, SKIP MESSAGE
2006 007514 012737 000001 014472      MOV      01,REMOTE     ISET OPERATOR ERROR INDICATOR
2007 007522 104413 024567          TYPE,    NOPLUG        ITYPE MESSAGE
2008 007526 000137 010304 0001      JMP      ENDPAS        IEND PASS
2009
2010 007532 005737 014460 481      TST      ERRLOP
2011 007536 001001          BNE      28
2012
2013
2014
2015
2016 007540 104023          I
                I//////////
                I
                I          ERROR 23          IINCORRECT DATA REC'D FROM TTY
2017
2018
2019
2020
2021 007542 104411          I
                I//////////
                I
2022 007544 005037 014466 281      SCOTTY
                CLR      REMPRES
2023
2024 007550 005237 001124          INC      3GDUAT
2025 007554 005037 014460          CLR      ERRLOP
2026 007560 032737 000400 001124      BIT      0400,3GDUAT   IDONE WHOLE TEST (0-377)
2027 007566 001603          BEQ      38             INO, CONT
2028 007570 000137 007574          JMP      TTYINT        I00 INTERRUPT TEST
2029
2030
2031 I TTY INTERRUPT TEST      TEST OF REMOTE TTY UNDER INTERRUPT CONTROL
2032 I
2033
2034 007574 005037 014426      TTYINT1 CLR      MICFLP          ICLEAR MICRO CODE FLOP
2035 007600 005037 017174          CLR      DATSNT        ION DATA ON IT'S WAY FLOP
2036 007604 005237 017176          INC      TTYFLP        ISET TTY FLOP
2037 007610 005037 001124          CLR      3GDUAT        ICLEAR PATTERN
2038 007614 005077 172204          CLR      0ICSR         ICLEAR ICR CSR
2039 007620 052777 000040 172176      TTY21  BIS      0TTYEN,0ICSR   IENABLE TTY
2040 007626 013700 014410          MOV      R500,R0
2041 007632 005777 172166          TST      0ICSR
2042 007636 100003          BPL      .+10
2043 007640 005300          DEC      R0
2044 007642 001373          BNE      .-10
2045
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2049 007644 104035          I
                I//////////
                I
                I          ERROR 35          IOUTPUT BUSY STUCK
2250
    
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2051
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2054 007646 013777 001124 172146      MOV      36DUAT,0ICMOD      ISTART THE TRANSMISSION
2055
2056 007654 052777 000006 172142 TTY11  BIS      0MODEN+ERRREN,0ICSR      ISET INTERRUPT ENABLES
2057 007662 013737 017172 177776      MOV      PRILVL,00PSW      IALLOW INTERRUPTS
2058 007670 005000
2059 007672 032737 000400 001124 201  CLR      R0
2060 007700 001003      BIT      0400,36DDAT      IDONE
2061 007702 005200      BNE      10
2062 007704 001372      INC      R0
2063      BNE      20
2064
2065
2066
2067 007706 104057      ERROR  57      ITTY TEST MUNG
2068
2069
2070
2071
2072      007710      TTYEND=.
2073
2074 007710 012737 000340 177776 101  MOV      0300,00PSW      IINHIBIT INTERRUPTS
2075 007716 005077 172102      CLR      0ICSR      ICLEAR CSR
2076 007722 005037 017176      CLR      TTYFLP      ICLEAR TTY FLAG
2077 007726 032777 000040 171202      BIT      0SW5,0SWR      ILOOP ON TEST SW SET
2078 007734 001411      BEQ      50      INO, CONT
2079 007736 017700 171174      MOV      0SWR,R0 IGET SWR
2080 007742 042700 177477      BIC      0177477,R0
2081 007746 022700 000300      CMP      0300,R0
2082 007752 001002      BNE      .+6
2083 007754 000137 007112      JMP      TTYL      IYES
2084 007760 005764 000000      501  TST      PASCNT(4)      IFIRST PASS
2085 007764 001404      BEQ      60
2086 007766 005037 002032      CLR      PWRFLG      ICLEAR PWR FLG
2087 007772 000137 010304      JMP      ENDPAS
2088 007776 005737 002032      601  TST      PWRFLG      IPERFORM POWER FAIL TEST
2089 010002 001002      BNE      .+6      IYES, GO DO IT
2090 010004 000137 010304      JMP      ENDPAS      INO, PRINT END PASS
2091
2092
2093      ITEST OF POWER FAIL BIT ON ICR
2094 010010 104413 025245      TYPE,  PWRMS1      IPRINT "POWER DOWN.....
2095 010014 005037 014464      CLR      PRRMT1      IDONT PRINT TO REMOTE END
2096 010020 005037 014462      CLR      PRRMT
2097 010024 032777 002000 171772      BIT      0PWRFL,0ICSR      ISENSE POWER FAIL
2098 010032 001774      BEQ      .+6      IWAIT FOR IT
2099 010034 104413 025161      TYPE,  PWRMS2 IPRINT POWER FAIL SENSED
2100 010040 052777 040000 171756      BIS      0MAINT3,0ICSR
2101 010046 104413 025332      TYPE,  PWRMS2
2102 010052 032777 010000 171744 401  BIT      0ERNBIT,0ICSR      IIS IT UP
2103 010060 001010      BNE      30      INO, CLEAR ERROR AND TRY AGAIN
2104 010062 052777 040000 171734      BIS      0MAINT3,0ICSR      ISYSTEM RESET
2105 010070 012737 000001 014464      MOV      01,PRRMT1      IALLOW REMOTE PRINT
2106 010076 000137 010304      JMP      ENDPAS      IGO DO END PRINT

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2107 010102 005777 171720
 2108 010106 013700 014414
 2109 010112 005300
 2110 010114 001376
 2111 010116 000755
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 2122 010120 104413 024405
 2123 010124 013700 014400
 2124 010130 010046
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 2126 010132 104402
 2127 010134 002
 2128 010135 000
 2129 010136 104413 024436
 2130 010142 016401 000000
 2131 010146 016402 000002
 2132 010152 016403 000004
 2133 010156 005064 000000
 2134 010162 005064 000002
 2135 010166 005064 000004
 2136 010172 005237 002060
 2137 010176 104413 024442
 2138 010202 010146
 2139 010204 104404
 2140 010206 004737 010254
 2141 010212 104413 024463
 2142 010216 010246
 2143 010220 104404
 2144 010222 004737 010254
 2145 010226 104413 024507
 2146 010232 010346
 2147 010234 104404
 2148 010236 004737 010254
 2149 010242 104413 022000
 2150 010246 104413 022000
 2151 010252 000207
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 2156 010254 032777 002000 170654
 2157 010262 001407
 2158 010264 012700 000010
 2159 010270 005001
 2160 010272 005301
 2161 010274 001376
 2162 010276 005300

381

TSY P1CAN
 MOV FR200,RP
 DEC R0
 BNE .-2
 BR 48

ICLEAR ERRCR

;

ROUTINE TO PRINT SUMMARY

SUMPR1: TYPE, RUNSUM
 MOV FILUTS,R0
 MOV R0,-(SP)

IGET FILE UNDER TEST
 IISAVE R0 FOR TYPEOUT
 IIFILE BOX
 IIGO TYPE--OCTAL ASCII
 IITYPE 2 DIGIT(S)
 IISUPPRESS LEADING ZEROS

TYPOS
 .BYTE 2
 .BYTE 0
 TYPE, RUNCON
 MOV PASCNT(4),R1
 MOV ERRTOT(4),R2
 MOV ERRCNT(4),R3
 CLR PASCNT(4)
 CLR ERRTOT(4)
 CLR ERRCNT(4)
 INC BRTFF
 TYPE, PASHES
 MOV R1,-(SP)
 TYPOS
 JSR PC,WATROU
 TYPE, ERMES
 MOV R2,-(SP)
 TYPOS
 JSR PC,WATROU
 TYPE, TREHH
 MOV R3,-(SP)
 TYPOS
 JSR PC,WATROU
 TYPE, CRLF
 TYPE, CRLF
 RTS PC

IINDICATE PAS REPORT START

IISAVE R1 FOR TYPEOUT
 IIGO TYPE--DECIMAL ASCII WITH SIGN

IISAVE R2 FOR TYPEOUT
 IIGO TYPE--DECIMAL ASCII WITH SIGN

IISAVE R3 FOR TYPEOUT
 IIGO TYPE--DECIMAL ASCII WITH SIGN

ROUTINE TO WAIT BETWEEN DISPLAYING RUN SUMMARY

WATROU: BIT #SW10,#SWH
 BEQ Z8
 MOV #10,R0
 CLR R1
 181 DEC R1
 BNE .-2
 DEC R0

| | | | | | | | | | |
|------|--------|--------|--------|--------|---------|----------|-------|----------------------------|--------------------------------|
| 2163 | 010300 | 001374 | | | | BNE | 15 | | |
| 2164 | 010302 | 000207 | | | 251 | RTS | PC | | |
| 2165 | | | | | | | | | |
| 2166 | | | | | | | | | |
| 2167 | | | | | | | | | |
| 2168 | | | | | | | | | |
| 2169 | | | | | | | | | |
| 2170 | | | | | | | | .SBTTL | END OF PASS ROUTINE |
| 2171 | | | | | | | | | |
| 2172 | | | | | | | | | |
| 2173 | 010304 | 004737 | 010720 | | | ENDPASS: | JSR | PC,PRYMS | I PRINT ANY ERRORS RUFFERED |
| 2174 | 010310 | 005264 | 000000 | | | | INC | PASCNT(4) | I INC PASS COUNT |
| 2175 | 010314 | 005037 | 014462 | | | | CLR | PRRMT | I ALLOW PRINT TO REMOTE TTY |
| 2176 | 010320 | 012737 | 000001 | 014464 | | | MOV | 01,PRRMT1 | I |
| 2177 | 010326 | 032777 | 000020 | 170602 | 181 | | BIT | 0SW4,0SWR | I TESTING ONE FILE BOX? |
| 2178 | 010334 | 001502 | | | | | BEQ | SYSTST | I NO, THEN CHECK ENTIRE SYSTEM |
| 2179 | | 010336 | | | | ENDPS10: | | | |
| 2180 | 010336 | 032777 | 001000 | 170572 | | | BIT | 0SW9,0SWR | I LOOP ON DIAGNOSTIC |
| 2181 | 010344 | 001440 | | | | | BEQ | PRYSUM | I NO, THEN PRINT SUMMARY |
| 2182 | 010346 | 032777 | 002000 | 170562 | | | BIT | 0SW10,0SWR | I REMOTE TTY REQUESTED |
| 2183 | 010354 | 001432 | | | | | BEQ | 28 | I NO, THEN GO TO 28 |
| 2184 | 010356 | 005737 | 017204 | | | | TST | WRKFLP | I IS "TESTING" DISPLAYED |
| 2185 | 010362 | 001002 | | | | | BNE | 38 | I YES, THEN GO FLASH IT |
| 2186 | 010364 | 104413 | 025146 | | | | TYPE, | WRKMS | I PRINT TESTING |
| 2187 | 010370 | 032777 | 010000 | 170540 | 381 | | BIT | 0SW12,0SWR | |
| 2188 | 010376 | 001404 | | | | | BEQ | 58 | |
| 2189 | 010400 | 104413 | 025146 | | | | TYPE, | WRKMS | |
| 2190 | 010404 | 000137 | 003504 | | | | JMP | LPTST | |
| 2191 | 010410 | 005237 | 017204 | | 581 | | INC | WRKFLP | I BLINK WORKING IF RT02 |
| 2192 | 010414 | 112737 | 000216 | 017200 | | | MOVB | 0210,BLINK | I IF NOT SEND NULLS |
| 2193 | 010422 | 032737 | 000001 | 017204 | | | BIT | 01,WRKFLP | |
| 2194 | 010430 | 001402 | | | | | BEQ | 68 | |
| 2195 | 010432 | 005237 | 017200 | | | | INC | BLINK | |
| 2196 | 010436 | 104413 | 017200 | | 481 | | TYPE, | BLINK | |
| 2197 | 010442 | 000137 | 003504 | | 281 | | JMP | LPTST | I LOOP |
| 2198 | 010446 | 004737 | 010120 | | | PRYSUM: | JSR | PC,SUMPRT | I PRINT SUMMARY |
| 2199 | 010452 | 000240 | | | | WAIT2: | NOP | | |
| 2200 | 010454 | 012777 | 011116 | 003722 | | | MOV | 0ICMNT,0VECTOR | I SET UP FOR ICR TTY AND |
| 2201 | 010462 | 012737 | 011316 | 000060 | | | MOV | 0TTYNT,0060 | I CONSOLE TTY INTERRUPTS, |
| 2202 | 010470 | 052777 | 000040 | 171326 | | | BIS | 0TTYEN,0ICSR | |
| 2203 | 010476 | 017700 | 171320 | | | | MOV | 0ICMOD,00 | |
| 2204 | 010502 | 042777 | 000040 | 171314 | | | BIC | 0TTYEN,0ICSR | |
| 2205 | 010510 | 104413 | 024736 | | | | TYPE, | WAITIN | |
| 2206 | 010514 | 052777 | 000026 | 171302 | WAIT1: | | BIS | 0ERREN+0MODEN+0PHFEN,0ICSR | I ALLOW ICR INTERRUPTS |
| 2207 | 010522 | 052777 | 000100 | 170412 | | | BIS | 0100,0STKS | I ALLOW TTY INTERRUPTS |
| 2208 | 010530 | 005037 | 177776 | | | | CLR | 00PSW | I CLEAR PSW |
| 2209 | 010534 | 000001 | | | | | WAIT | | |
| 2210 | 010536 | 000000 | | | | | HALT | | |
| 2211 | 010540 | 000776 | | | | | BR | 0-2 | |
| 2212 | 010542 | 022737 | 000001 | 002034 | SYSTST: | | CMP | 01,ICRCNT | I ONE BOX ON SYSTEM |
| 2213 | 010550 | 001002 | | | | | BNE | 18 | I NO, MORE THEN 18 |
| 2214 | 010552 | 000137 | 010336 | | | | JMP | ENDPS1 | |
| 2215 | 010556 | 032777 | 001000 | 170352 | 181 | | BIT | 0SW9,0SWR | I LOOPING |
| 2216 | 010564 | 001013 | | | | | BNE | 28 | I YES DO NOT PRINT SUMMARY |
| 2217 | 010566 | 005737 | 002056 | | | | TST | 0SW9 | I WAS SW 9 EVER SET |
| 2218 | 010572 | 001406 | | | | | BEQ | 58 | I NO, ALLOW PRINT |

| | | | | | | | | | |
|------|--------|--------|--------|--------|-----|-------------|---------------------|--|---------------------------------|
| 2219 | 010574 | 005737 | 002030 | | | TST | ICRHUN | | IFIRST SUMMARY |
| 2220 | 010600 | 001403 | | | | BEQ | 58 | | IYES, ALLOW PRINT |
| 2221 | 010602 | 005737 | 002060 | | | TST | 8HTFP | | IIN MIDDLE OF BOXES |
| 2222 | 010606 | 001402 | | | | BEQ | 28 | | IYES, DONT PRINT YET |
| 2223 | 010610 | 004737 | 010120 | 581 | | JBR | PC,SUMPRY | | IPRINT SUMMARY FOR THIS BOX |
| 2224 | 010614 | 005237 | 002030 | 281 | | INC | ICRHUN | | IINC RUN COUNT |
| 2225 | 010620 | 023737 | 002030 | 002034 | | CMP | ICRRUN,ICRCNT | | IDONE ALL BOXES |
| 2226 | 010626 | 001421 | | | | BEQ | 38 | | |
| 2227 | 010630 | 062737 | 000040 | 002022 | | ADD | 040,ICMOD | | ISET TO NEXT FILE BOX MODULE |
| 2228 | 010636 | 162737 | 000010 | 002024 | | SUB | 010,ICSR | | ISET TO NEXT ICR CSR |
| 2229 | 010644 | 162737 | 000010 | 002026 | | SUB | 010,ICAR | | ISET TO NEXT ICR ADDR BUFFER |
| 2230 | 010652 | 062704 | 000012 | | | ADD | 012,R6 | | IMOVE FILE BOX ID POINTER |
| 2231 | 010656 | 005337 | 014402 | | | DEC | FILCNT | | IDECREASE FILE COUNT |
| 2232 | 010662 | 005237 | 014400 | | | INC | FILUTS | | IBUMP FILE UNDER TEST |
| 2233 | 010666 | 000137 | 003144 | | | JMP | START2 | | |
| 2234 | 010672 | 032777 | 001000 | 170236 | 381 | BIT | 08W9,08WR | | ILOOP SWITCH SET |
| 2235 | 010700 | 001005 | | | | BNE | 48 | | IYES, CONT |
| 2236 | 010702 | 005764 | 000000 | | | TST | PASCNT(4) | | IPASS COUNT 0, INDICATING PRINT |
| 2237 | 010706 | 001002 | | | | BNE | .+6 | | INO, THEN FORCE LOOP |
| 2238 | 010710 | 000137 | 010452 | | | JMP | WAIT2 | | INO, SET UP TO LOAD OR RERUN |
| 2239 | 010714 | 000137 | 003044 | | 481 | JMP | STANTA | | ILOOP ON DIAGNOSTIC |
| 2240 | | | | | | | | | |
| 2241 | | | | | | | | | |
| 2242 | | | | | | | | | |
| 2243 | | | | | | | | | |
| 2244 | | | | | | | | | |
| 2245 | | | | | | | | | |
| 2246 | | | | | | | | | |
| 2247 | | | | | | | | | |
| 2248 | | | | | | | | | |
| 2249 | 010720 | 032777 | 002000 | 170210 | | PRTHES1 BIT | 00110,08WR | | IREMOTE REQUESTED |
| 2250 | 010726 | 001001 | | | | BNE | .+4 | | IYES, CONT |
| 2251 | 010730 | 000207 | | | 181 | RTS | PC | | INO, EXIT |
| 2252 | 010732 | 012700 | 017776 | | | MOV | 00UFBEQ,R0 | | ISET UP START |
| 2253 | 010736 | 022710 | 100601 | | | CMP | 0100001,(0) | | IANYTHING THERE |
| 2254 | 010742 | 001772 | | | | BEQ | 18 | | INO, EXIT |
| 2255 | | | | | | | | | |
| 2256 | 010744 | 052777 | 001040 | 171052 | 281 | BIS | 0TTYEN+YBMTEN,0ICSR | | ITHIS IS JUST A SIMPLE |
| 2257 | 010752 | 032777 | 010000 | 171046 | | BIT | 0DA,0ICAR | | ITYPE ROUTINE TO THE ICR TTY |
| 2258 | 010760 | 001407 | | | | BEQ | 78 | | |
| 2259 | 010762 | 017702 | 171034 | | | MOV | 0ICMOD,R2 | | |
| 2260 | 010766 | 020227 | 000203 | | | CMP | R2,0203 | | |
| 2261 | 010772 | 001002 | | | | BNE | .+6 | | |
| 2262 | 010774 | 000137 | 016270 | | | JMP | XCKPW1 | | |
| 2263 | 011000 | 013702 | 014420 | | 781 | MOV | FRM110,R2 | | |
| 2264 | 011004 | 032777 | 100000 | 171014 | 581 | BIT | 0XTBMT,0ICAR | | |
| 2265 | 011012 | 001004 | | | | BNE | 68 | | |
| 2266 | 011014 | 005302 | | | | DEC | R2 | | |
| 2267 | 011016 | 001372 | | | | BNE | 58 | | |
| 2268 | 011020 | 000137 | 016270 | | | JMP | XCKPW1 | | |
| 2269 | 011024 | 042777 | 001000 | 170772 | 681 | BIC | 0TBMTEN,0ICSR | | |
| 2270 | 011032 | 112001 | | | | MOV0 | (0)+,R1 | | |
| 2271 | 011034 | 010177 | 170762 | | | MOV | R1,0ICMOD | | |
| 2272 | 011040 | 121027 | 000015 | | | CMP0 | (0),#15 | | |
| 2273 | 011044 | 001404 | | | | BEQ | 38 | | |
| 2274 | 011046 | 121027 | 000201 | | | CMP0 | (0),#201 | | |

I
ROUTINE TO PRINT THE ERROR BUFFER THAT WAS STORED WHILE THE
DIAGNOSTIC WAS IN MAINTENENCE MODE INHIBITING THE USE OF THE REMOTE
TERMINAL
I

| | | | | | | | | | |
|------|--------|--------|--------|--------|-----|---------|---------------------------------|---------------|---|
| 2275 | 011052 | 001334 | | | | BNE | 28 | | |
| 2276 | 011054 | 000414 | | | | BR | 48 | | |
| 2277 | 011056 | 012702 | 000004 | | 381 | MOV | R4,R2 | | |
| 2278 | 011062 | 005001 | | | | CLR | R1 | | |
| 2279 | 011064 | 005201 | | | | INC | R1 | | |
| 2280 | 011066 | 001376 | | | | BNE | ,=2 | | |
| 2281 | 011070 | 005302 | | | | DEC | R2 | | |
| 2282 | 011072 | 001374 | | | | BNE | ,=6 | | |
| 2283 | 011074 | 020027 | 021773 | | | CMP | R0,0BUFFIN-1 | | |
| 2284 | 011100 | 001321 | | | | BNE | 28 | | |
| 2285 | 011102 | 005037 | 017204 | | | CLR | WRKFLP | | |
| 2286 | 011106 | 042777 | 000040 | 170710 | 481 | BIC | 0TTYEN,0ICSR | | |
| 2287 | 011114 | 000207 | | | | RTS | PC | | |
| 2288 | | | | | | | | | |
| 2289 | | | | | | | | | |
| 2290 | 011116 | 022626 | | | | ICRWT1 | POP2SP | | ICR INTERRUPTS HERE (FROM QUESTION R OR L?) |
| 2291 | 011120 | 032777 | 002000 | 170676 | | BIT | 0PWRFL,0ICSR | | IPWR FAIL INTERRUPT |
| 2292 | 011126 | 001405 | | | | BEO | 18 | | INO, CONTINUE |
| 2293 | 011130 | 012737 | 000001 | 014474 | | MOV | R1,PWRFLP | | IINDICATE POWER FAIL |
| 2294 | 011136 | 000137 | 016530 | | | JMP | RSTRT | | IGO TYPE MESSAGE |
| 2295 | 011142 | 032777 | 000200 | 170654 | 181 | BIT | 0MODINT,0ICSR | | IMOD INT? |
| 2296 | 011150 | 001445 | | | | BEO | ICRWT2 | | INO, CONT (CHECK ERROR) |
| 2297 | 011152 | 032777 | 002000 | 167756 | | BIT | 0SW10,0SWR | | IIS REMOTE TTY ON SYSTEM |
| 2298 | 011160 | 001441 | | | | BEO | ICRWT2 | | INO, THEN GO SKIP DA |
| 2299 | 011162 | 032777 | 010000 | 170636 | | BIT | 0DA,0ICAR | | IDO SET |
| 2300 | 011170 | 001435 | | | | BEO | ICRWT2 | | INO, GO CHECK ERROR |
| 2301 | 011172 | 052777 | 000041 | 170624 | | BIS | 0TTYEN+XRIF,0ICSR | | IGET TO READ ICR TTY |
| 2302 | 011200 | 017700 | 170616 | | | MOV | 0ICMOD,R0 | | |
| 2303 | 011204 | 042777 | 000040 | 170612 | | BIC | 0TTYEN,0ICSR | | |
| 2304 | 011212 | 042700 | 000240 | | | ICRWT31 | BIC | 0200,R0 | ILOOK FOR 'R' OR 'L' |
| 2305 | 011216 | 022700 | 000114 | | | CMP | 0'L,R0 | | |
| 2306 | 011222 | 001407 | | | | BEO | ICRWT1 | | I'L' GO LOAD |
| 2307 | 011224 | 022700 | 000122 | | | CMP | 0'R,R0 | | |
| 2308 | 011230 | 001002 | | | | BNE | ,=6 | | |
| 2309 | 011232 | 000137 | 016634 | | | JMP | RST1 | | I'R' GO START |
| 2310 | 011236 | 000137 | 010514 | | | JMP | WAIT1 | | IWAIT FOR NEXT |
| 2311 | 011242 | 005037 | 014462 | | | ICRWT11 | CLR | PRRMT | IPRINT 'LOADING' |
| 2312 | 011246 | 012737 | 000001 | 014464 | | MOV | R1,PRRMT1 | | |
| 2313 | 011254 | 104413 | 024657 | | | TYPE, | LOADIN | | |
| 2314 | 011260 | 000137 | 033000 | | | JMP | GOLOAD | | IGO TO ABS LOADER |
| 2315 | 011264 | 032777 | 010000 | 170532 | | ICRWT21 | BIT | 0ERNBIT,0ICSR | ICHECK FOR ERROR |
| 2316 | 011272 | 001402 | | | | BEO | 28 | | |
| 2317 | 011274 | 017700 | 170526 | | | MOV | 0ICAR,R0 | | |
| 2318 | 011300 | 052777 | 000001 | 170516 | 281 | BIS | 0XRIF,0ICSH | | ICLEAR INT, EXIT |
| 2319 | 011306 | 005777 | 170510 | | | TST | 0ICMOD | | |
| 2320 | 011312 | 000137 | 010514 | | | JMP | WAIT1 | | |
| 2321 | | | | | | | | | |
| 2322 | | | | | | | | | |
| 2323 | | | | | | | | | |
| 2324 | 011316 | 022626 | | | | TTYWT1 | POP2SP | | IConsole TTY INTERRUPTS HERE |
| 2325 | 011320 | 017700 | 167620 | | | MOV | 0STKB,R0 | | |
| 2326 | 011324 | 000137 | 011212 | | | JMP | ICRWT3 | | |
| 2327 | | | | | | | | | |
| 2328 | | | | | | | | | |
| 2329 | | | | | | | | | |
| 2330 | | | | | | .BOTTL | TEST OF M8094 MICRO-DIAGNOSTICS | | |


```
2331      )
2332      )LET'S START TEST OF MICRO-CODE
2333      )ON THE M8894 - MAINTENANCE BIT 2, BIT 13 OF ICSR
2334
2335      )
2336      )
2337      )THIS SECTION RUNS IN SYNCH WITH THE MICROCODE IN THE M8894
2338      )
2339 011330 012737 000001 014464 TEST31 MOV 01,PRRMT1 ;BUFFER ERRORS
2340 011336 005037 014462          CLR PRRMT ;REMOTE PRINT
2341 011342 104415          CKCNC
2342 011344 005764 000000          TST PASCNT(4) ;FIRST PASS?
2343 011350 001002          BNE .+6 ;NO, CONT
2344 011352 104413          TYPE ;TYPE HEADER
2345 011354 022227          M8894
2346 011356 012737 000001 014462 MOV 01,PRRMT ;NO REMOTE PRINT
2347 011364 012737 011364 014372 TEST3L: MOV 0TEST3L,SCOLOP ;SET SCOPE LOOP
2348 011372 013737 014454 014456 MOV PASLG,PASRUN ;GET RUN LENGTH
2349          LOOP30.
2350 011400 052777 040000 170416      BIS 0MAINT3,0ICSR ;ISSUE MICRO INIT
2351 011406 012737 000340 177776      MOV 0340,00PSW ;SET LEVEL TO 7
2352 011414 052777 020000 170402      BIS 0MAINT2,0ICSR ;SET MAINT BIT
2353 011422 052777 000001 170374      BIS 01,0ICSR ;SET RIF BIT
2354 011430 005777 170366          TST 0ICMOD ;CLEAR RIF BIT
2355 011434 013700 014410          MOV PR500,R0 ;WAIT 10 US
2356 011440 005300          DEC R0
2357 011442 001376          BNE .-2
2358 011444 013737 017172 177776      MOV PR1VL,00PSW ;SET PRIORITY LEVEL
2359 011452 005037 017206          CLR INTFLG ;CLEAR INTERRUPT OCCURRENCE FLAG
2360 011456 013700 014416          MOV PR20,R0
2361 011462 052777 000004 170334      BIS 0MODEN,0ICSR ;ENABLE MODULE TO INTERRUPT
2362 011470 042777 020000 170326      BIC 0MAINT2,0ICSR ;CLEAR MAINT. MODE
2363 011476 005300          DEC R0
2364 011500 001376          BNE .-2
2365 011502 005737 017206          TST INTFLG ;TEST IF INTERRUPT OCCURRED
2366 011506 001001          BNE 18 ;YES
2367          ;NO, INTERRUPT
2368
2369      )
2370      )////////////////////////////////////////////////////
2371      )
2372 011510 104005          ERROR 5 ;INTERRUPT FROM MICRO CODE DID NOT OCCUR
2373          ;TIMEOUT FLOP ON M8894 WAS FALSE
2374          ;WHEN IT SHOULD HAVE BEEN TRUE
2375
2376      )
2377      )////////////////////////////////////////////////////
2378      )
2379 011512 104407          18: SCOP94
2380 011514 032777 000200 170302      BIT 0MODINT,0ICSR ;CHECK THAT MODULE CAUSED
2381 011522 001001          BNE 20 ;INTERRUPT
2382 011524 104010          ERROR 10 ;INTERRUPT WAS NOT CAUSED BY MODULE INTERRUPT
2383 011526 104407          20: SCOP94
2384 011530 052777 000001 170266      BIS 01,0ICSR ;SET RIF BIT
2385 011536 005777 170260          TST 0ICMOD ;CLEAR RIF BIT
2386
```

```
2387 011542 032777 000200 170254 BIT 0MODINT,0ICSR ;CHECK IF MOD INT IS STILL SET
2388 011550 001401 BEQ .+4 ;NO, OK
2389
2390 ;
2391 ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
2392 ;
2393 011552 104012 ERROR 12 ;MOD INT SET AFTER RIF
2394
2395 ;
2396 ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
2397 ;
2398 011554 104407 SCOP94
2399
2400 011556 005037 017206 CLR INTPLG ;CLEAR INTERRUPT OCCURRANCE FLAG
2401 011562 015700 014416 MOV FR20,R0
2402 011566 052777 000004 170230 BIS 0MODEN,0ICSR ;ENABLE MODULE INTERRUPT
2403 011574 052777 020000 170222 BIS 0MAINT2,0ICSR ;SET MAINT MODE
2404 011602 005300 DEC R0
2405 011604 001376 BNE .-2
2406 011606 005737 017206 TST INTPLG ;INTERRUPT OCCUR?
2407 011612 001001 BNE J8
2408 ;NO
2409
2410 ;
2411 ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
2412 ;
2413 011614 104006 ERROR 6 ;INTERRUPT NOT PRESENT
2414 ;SEQUENCE COMPARE FLOP ON M8096 DID
2415 ;NOT TEST TRUE IN MICROCODE
2416
2417 ;
2418 ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
2419 ;
2420
2421 011616 104407 381 SCOP94
2422 011620 032777 000200 170176 BIT 0MODINT,0ICSR ;CHECK FOR MODULE INTERRUPT
2423 011626 001001 BNE TEST3A
2424
2425 ;
2426 ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
2427 ;
2428 ;MODULE INTERRUPT DIDN'T CAUSE INTERRUPT
2429 011630 104010 ERROR 10 ;MODULE INTERRUPT
2430
2431 ;
2432 ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
2433 ;
2434 011632 104407 TEST3A: SCOP94
2435 011634 052777 000001 170162 BIS 01,0ICSR ;SET RIF BIT
2436 011642 005777 170154 TST 0ICMOD ;CLEAR RIF BIT
2437
2438 011646 032777 000200 170150 BIT 0MODINT,0ICSR ;CHECK IF MOD INT IS STILL SET
2439 011654 001401 BEQ .+4 ;NO, OK
2440
2441 ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
2442 ;
```

```
2443
2444 311656 104012          ERROR 12          MOD INT SET AFTER RIF
2445
2446      ;
2447      ;////////////////////////////////////////////////////
2448      ;
2449 011660 104407          SCOP94
2450
2451      ;
2452      ;TEST ERROR BIT IS CAPABLE OF INTERRUPTING
2453      ;
2454
2455 011662 005037 017206      CLR      INTFLG      ICLEAR INTERRUPT OCCURRENCE FLAG
2456 011666 042777 000004 170130  HIC      MODEN,0ICSR  ICLEAR MOD INT ENABLER BIT
2457 011674 052777 000002 170122  RIS      ERREN,0ICSR  ISET ERROR INT ENABLE BIT
2458 011702 013700 014416      MOV      R20,R0
2459 011706 042777 020000 170110  RIC      MAINT2,0ICSR ICLEAR MAINT BIT
2460 011714 005300      DEC      R0
2461 011716 001376      BNE     ,=2
2462 011720 005737 017206      TST     INTFLG      DID INTERRUPT OCCUR
2463 011724 001001      BNE     10          YES, THEN 10
2464
2465      ;
2466      ;////////////////////////////////////////////////////
2467      ;
2468 211726 104011          ERROR 11          ERROR BIT DID NOT INTERRUPT
2469
2470      ;
2471      ;////////////////////////////////////////////////////
2472      ;
2473 211730 104407          10: SCOP94
2474
2475      ;
2476      ;TEST ERROR BIT ACTUALLY CAUSED INTERRUPT
2477      ;
2478
2479 011732 005037 017206      CLR      INTFLG      ICLEAR INTERRUPT OCCURRENCE FLAG
2480 011736 032777 010000 170060  BIT     ERRBIT,0ICSR ITEST ERROR BIT
2481 011744 001001      BNE     20          ISET, THEN 20
2482
2483      ;
2484      ;////////////////////////////////////////////////////
2485      ;
2486 011746 104010          ERROR 10          ERROR BIT WAS NOT CAUSE OF INTERRUPT
2487
2488      ;
2489      ;////////////////////////////////////////////////////
2490      ;
2491 011750 104407          20: SCOP94
2492
2493      ;
2494      ;
2495      ;CHECK THAT BOUNCING ERROR INTERRUPT ENABLE DOES CAUSE
2496      ; ANOTHER INTERRUPT
2497      ;
2498
```



```
2555  
2556  
2557  
2558 012104 104407  
2559  
2560  
2561  
2562  
2563  
2564 012106 005037 017206 CLR INTPLG ;CLEAR INTERRUPT OCCURRENCE FLAG  
2565 012112 052777 000001 167704 BIS 0XRIP,0ICSR ;SET RIF  
2566 012120 005777 167676 TST 0ICMOD ;CLEAR RIF  
2567 012124 052777 001004 167672 BIS 0MODEN+0BMTEN,0ICSR ;SET MOD. INT. ENABLE  
2568 012132 013700 014416 MOV FR20,R0  
2569 012136 042777 020000 167660 BIC 0MAINT2,0ICSR ;SET MAINT BIT  
2570 012144 005300 DEC R0  
2571 012146 001376 BNE .-2  
2572 012150 005737 017206 TST INTPLG ;INTERRUPT TAKE PLACE?  
2573 012154 001001 BNE 58 ;YES, THEN 58  
2574  
2575  
2576  
2577  
2578 012156 104015  
2579  
2580  
2581  
2582  
2583 012160 104407  
2584  
2585  
2586 012162 005037 017206 CLR INTPLG ;CLEAR INTERRUPT OCCURRENCE FLAG  
2587 012166 032777 100000 167632 BIT 0100000,0ICAR ;DID TBMT REALLY CAUSE THE INTERRUPT  
2588 012174 001001 BNE 78  
2589  
2590  
2591  
2592  
2593 012176 104015  
2594  
2595  
2596  
2597  
2598 012200 104407  
2599  
2600 012202 052777 000001 167614 BIS 0XRIF,0ICSR  
2601 012210 005777 167606 TST 0ICMOD  
2602 012214 042777 001000 167602 BIC 0TBMTEN,0ICSR  
2603  
2604 .SBTTL CHECK OF ICR11 ERROR GENERATION CAPABILITIES  
2605  
2606 ;TEST OF ICR11 TO FORCE CRC ERRORS  
2607  
2608 ;MASTER END IS DONE FIRST, MICROCODE IS CAPABLE OF CAUSEING  
2609 ;MASTER TO SEND BAD CRC TO SLAVE AND SLAVE SHOULD NOT RESPOND  
2610
```

```

2611
2612 012222 005037 017206 TEST301 CLR INTPLG ICLEAR INTERRUPT OCCURANCE
2613 012226 012737 000001 017202 MOV #1,TIMTRP
2614 012234 012777 000000 167560 MOV #0,ICMOD ISEND OUT
2615 012242 052777 000006 167554 BIS #MODEN+ERREN,ICSR ISET ERROR ENABLE AND MODULE ENABLE
2616 012250 013700 014410 MOV FR500,R0
2617 012254 052777 020000 167542 BIS #MAINT2,ICSR ISET MAINT BIT FOR MICROCODE
2618 012262 005300 DEC #0 IWAIT FOR INTERRUPT, INC WATCH DOG
2619 012264 001376 BNE .-2
2620
2621 012266 005737 017206 TST INTPLG IDID INTERRUPT OCCUR?
2622 012272 001001 BNE IS
2623
2624
2625
2626
2627 012274 104037
2628
2629
2630
2631
2632 012276 104407
2633
2634 012300 032777 010000 167516 BIT #ERRBIT,ICSR IDID ERROR BIT INTERRUPT INDICATING
2635 012306 001001 BNE IS TIMEOUT OF MASTER
2636
2637
2638
2639
2640
2641 012310 104040
2642
2643
2644
2645
2646 012312 104407
2647
2648 012314 032777 000200 167502 BIT #MODINT,ICSR IDID MODULE INTERRUPT INDICATING
2649 012322 001401 BEQ IS THAT DATA WAS PRESENT
2650
2651
2652
2653
2654 012324 104041
2655
2656
2657
2658
2659 012326 104407
2660
2661
2662
2663
2664
2665
2666 012330 005737 014374 TST TENCN1
    
```

| | | | | | | | | |
|------|--------|--------|--------|--------|-------------|---------------|-------------|---|
| 2667 | 012334 | 001003 | | | BNE | TEST3C | | |
| 2668 | 012336 | 012737 | 000012 | 014374 | MOV | #10,,TENCN1 | | |
| 2669 | 012344 | 005037 | 017206 | | TEST3C1 CLR | INTFLG | ICLEAR | INTERRUPT OCCURANCE |
| 2670 | 012350 | 052777 | 000001 | 167446 | BIS | #RIF,#ICSR | | ISET RIF BIT |
| 2671 | 012356 | 005777 | 167440 | | TST | #ICMOD | ICLEAR | RIF BIT |
| 2672 | 012362 | 017700 | 167440 | | MOV | #ICAN,R0 | ICLEAR | ERROR BIT |
| 2673 | 012366 | 052777 | 000040 | 167430 | BIS | #TYEN,#ICSR | | |
| 2674 | 012374 | 017700 | 167422 | | MOV | #ICMOD,R0 | ICLEAR | DA |
| 2675 | 012400 | 042777 | 000040 | 167416 | BIC | #TYEN,#ICSR | | |
| 2676 | 012406 | 013700 | 014410 | | MOV | FR500,R0 | | |
| 2677 | 012412 | 012777 | 000300 | 167402 | MOV | #500,#ICMOD | ISET | DATA BITS 6,7 |
| 2678 | 012420 | 042777 | 020000 | 167376 | BIC | #MAINT2,#ICSR | ISET | MAINT BIT FOR MICROCODE |
| 2679 | 012426 | 005300 | | | DEC | R0 | IWAIT | FOR INTERRUPT |
| 2680 | 012430 | 001376 | | | BNE | ,=2 | | |
| 2681 | | | | | | | | |
| 2682 | 012432 | 005737 | 017206 | | TST | INTFLG | IDID | INTERRUPT OCCUR |
| 2683 | 012436 | 001005 | | | BNE | 10 | | |
| 2684 | | | | | | | | |
| 2685 | 012440 | 005337 | 014374 | | DEC | TENCN1 | IALLOW | 10 CONSECUTIVE ERRORS TO GO BY |
| 2686 | 012444 | 001401 | | | BEO | 50 | IFOR | NOISE IMMUNITY |
| 2687 | 012446 | 000426 | | | BR | 00 | | |
| 2688 | | | | | | | | |
| 2689 | | | | | | / | | |
| 2690 | | | | | | / | | |
| 2691 | 012450 | 104042 | | | 58: | ERROR 42 | ISLAVE | FORCED ERROR FAILURE |
| 2692 | | | | | | | | |
| 2693 | | | | | | / | | |
| 2694 | | | | | | / | | |
| 2695 | | | | | | | | |
| 2696 | 012452 | 104007 | | | 18: | SCOP94 | | |
| 2697 | | | | | | | | |
| 2698 | 012454 | 032777 | 010000 | 167304 | BIT | #DA,#ICAR | ISEE | IF DA IS SET |
| 2699 | 012462 | 001411 | | | BEO | 20 | IINDICATING | THAT MASTER TIMED OUT |
| 2700 | | | | | | | | |
| 2701 | 012464 | 052777 | 000040 | 167332 | BIS | #TYEN,#ICSR | ICLEAR | DA |
| 2702 | 012472 | 017700 | 167324 | | MOV | #ICMOD,R0 | | |
| 2703 | 012476 | 042777 | 000040 | 167320 | BIC | #TYEN,#ICSR | | |
| 2704 | | | | | | | | |
| 2705 | | | | | | | | |
| 2706 | | | | | | / | | |
| 2707 | | | | | | / | | |
| 2708 | 012504 | 104043 | | | | ERROR 43 | IMASTER | TIMED OUT WITH BAD CRC FROM SLAVE |
| 2709 | | | | | | | | |
| 2710 | | | | | | | | |
| 2711 | | | | | | / | | |
| 2712 | | | | | | / | | |
| 2713 | 012506 | 104037 | | | 28: | SCOP94 | | |
| 2714 | | | | | | | | |
| 2715 | 012510 | 032777 | 000200 | 167306 | BIT | #MODINT,#ICSR | ISET | MODULE INTERRUPT INDICATING |
| 2716 | | | | | | | I | THAT CRC FROM SLAVE WAS BAD AS EXPECTED |
| 2717 | 012516 | 001001 | | | BNE | 40 | | |
| 2718 | | | | | | | | |
| 2719 | | | | | | | | |
| 2720 | | | | | | / | | |
| 2721 | | | | | | / | | |
| 2722 | 012520 | 104044 | | | | ERROR 44 | | |

```
2723  
2724  
2725  
2726  
2727  
2728 012522 104407 48: SCOP94  
2729  
2730 012524 052777 000041 167272 88: BIS @XRIFF+TYVEN,@ICSR  
2731 012532 017700 167264 MOV @ICMOD,R0  
2732 012536 042777 000040 167260 BIC @TYVEN,@ICSR  
2733 012544 017700 167256 MOV @ICAR,R0  
2734  
2735  
2736 ;TEST OF M8098'S ABILITY TO TURN LAST DATA BYTE AROUND AND REPEAT  
2737 ;IT 4 TIMES. ALL PATTERNS OF BITS 0-5  
2738 ;WILL BE SENT AND READ BACK IN THE ICAR AND MODULE ADDRESSES  
2739 ;BITS 7 AND 6 CANNOT BE 11 OR 00  
2740  
2741  
2742 012550 012737 000012 002054 MOV @10.,TENCNT  
2743 012556 005037 014444 TEST3D1 CLR TEMP1 ;CLEAR STARTING PATTERN  
2744 012562 005037 014460 CLR ERRLOP ;ERROR INDICATOR FOR THIS LOOP  
2745 012566 012737 000340 177776 MOV @340,@PSW ;INHIBIT INTERRUPTS  
2746 012574 052777 001000 167222 BIS @TBMTEN,@ICSR ;SET TBMT ENABLE  
2747 012602 012737 000001 014446 MOV @1,TRACK ;SET LOOP INDICATOR  
2748 012610 052737 000100 014444 BIS @BIT0,TEMP1 ;SET BIT 10 FOR FIRST LOOP  
2749 012616 052777 000006 167200 BIS @MODEN+ERREN,@ICSR ;SET ENABLES  
2750 012624 013777 014444 167170 38: MOV TEMP1,@ICMOD ;SEND PATTERN  
2751 012632 052777 020000 167164 BIS @MAINT2,@ICSR ;SET MAINT BIT TO START MICROCODE  
2752 012640 013700 014410 18: MOV FR500,R0  
2753 012644 032777 000200 167152 BIT @MODINT,@ICSR  
2754 012652 001003 BNE .+10  
2755 012654 005300 DEC R0  
2756 012656 001372 BNE 18+4  
2757  
2758  
2759  
2760  
2761 012660 104034 ERROR 34  
2762  
2763  
2764  
2765  
2766 012662 104407 SCOP94  
2767  
2768  
2769  
2770 ;TEST FOR ERRORS WITHIN MICRO CODE  
2771 ;IF DA IS POSTED THEN TIMEOUT WAS DETECTED  
2772 ;IF ERROR INTERRUPT IS POSTED THEN DATA VALID WAS FALSE  
2773  
2774  
2775  
2776 012664 032777 010000 167132 BIT @ERRBIT,@ICSR ;TEST FOR ERROR INTERRUPT  
2777 012672 001404 BEQ 48  
2778
```



```

2835 013070 006200          ASR      R0          IDIVIDE FILE BOX BY 2
2836 013072 042700 177417  PIC      @177417,R0      ICLEAR 15-8, 3-R
2837 013076 050037 001124  BIS      R0,SGDDAT      IBITS 7-8 ARE FORMED
2838 013102 032737 000200 014444  BIT      @BIT7,TEMP1    ITEST BIT 7 OF MESSAGE SENT
2839 013110 001403          BEQ      58             INOT SET, THEN 58
2840 013112 052737 010400 001124  BIS      @10400,SGDDAT   ISET, THEN SET REQ'D BITS
2841 013120 031737 000100 014444 58:    BIT      @BIT6,TEMP1    ITEST BIT 6 OF MESSAGE SENT
2842 013126 001403          BEQ      68             INOT SET, THEN 68
2843 013130 052737 101000 001124  BIS      @101000,SGDDAT  ISET, THEN SET REQ'D BITS
2844 013136 032737 000040 014444 68:    BIT      @BIT5,TEMP1    ITEST BIT 5
2845 013144 001403          BEQ      78             INOT SET, THEN 78
2846 013146 052737 002000 001124  BIS      @2000,SGDDAT   ISET, THEN SET REQ'D BITS
2847 013154 032737 000020 014444 78:    BIT      @BIT4,TEMP1    ITEST BIT 4
2848 013162 001403          BEQ      88             INOT SET, THEN 88
2849 013164 052737 004000 001124  BIS      @4000,SGDDAT   ISET, THEN SET REQ'D BITS
2850 013172 032737 000002 001124 88:    BIT      @BIT3,SGDDAT   ITEST BIT 3
2851 013200 001403          BEQ      98             INOT SET, THEN 98
2852 013202 052737 040000 001124  BIS      @BIT14,SGDDAT  ISET, THEN SET REQ'D BITS
2853 013210 032737 000001 001124 98:    BIT      @BIT0,SGDDAT   ITEST BIT 0
2854 013216 001403          BEQ     108             INOT SET, THEN 108
2855 013220 052737 020000 001124  BIS      @BIT13,SGDDAT  ISET, THEN SET REQ'D BITS
2856
2857
2858
2859
2860
2861 213226 017737 166574 001126 108:  MOV     @ICAR,SBDDAT
2862 213234 042737 110000 001124      PIC     @BIT15+BIT12,SGDDAT
2863 013242 042737 110000 001126      BIC     @BIT15+BIT12,SBDDAT
2864 013250 023737 001124 001126      CMP     SGDDAT,SBDDAT    ICOMPARE READ WITH THAT FORMED
2865 013256 001401          BEQ     118
2866
2867
2868
2869
2870 013260 104047          I//////////
                ERROR 47          IBAD ICAR ON READ
2871
2872
2873
2874
2875 213262 104407          I//////////
                I18: SCOP94
2876
2877
2878
2879 013264 013737 014444 001124      MOV     TEMP1,SGDDAT    IFORM SGDDAT OUT OF TEMP1
2880 013272 013700 014444          MOV     TEMP1,R0        ISGDDAT = TEMP1 BITS 7-8 TWICE
2881 013276 000300          SWAB   R0
2882 013300 050037 001124          BIS     R0,SGDDAT
2883 013304 013737 001124 014450      MOV     SGDDAT,ADDR     INOW CALCULATE MODULE ADDRESS
2884 013312 042737 177760 014450      BIC     @177760,ADDR    IOF WHERE DATA SHOULD BE
2885 013320 006337 014450          ASL    ADDR
2886 013324 053737 002022 014450      BIS     ICMOD,ADDR      IADD IN FILE BOX OFFSET
2887 013332 005137 001124          COM    SGDDAT          ICOMPLIMENT DATA PATTERN
2888 013336 017737 001106 001126      MOV     @ADDR,SBDDAT    IREAD DATA
2889 013344 023737 001124 001126      CMP     SGDDAT,SBDDAT   ICOMPARE
2890 013352 001401          BEQ     128
    
```

```
2891  
2892  
2893  
2894  
2895 013354 104050  
2896  
2897  
2898  
2899  
2900 013356 104407  
2901  
2902  
2903  
2904  
2905  
2906 013360  
2907  
2908 213360 032777 000400 165550  
2909 013366 001434  
2910 013370 117737 165542 017174  
2911 013376 117737 165534 014444  
2912 013404 042737 177477 017174  
2913 013412 001004  
2914 013414 052737 000200 014444  
2915 013422 000412  
2916 013424 022737 000300 017174 848:  
2917 013432 001006  
2918 013434 042737 000300 014444  
2919 013442 052737 000100 014444  
2920 013450 013737 014444 017174 838:  
2921 013456 000412  
2922 013460 005737 014444 818:  
2923 013464 001432  
2924 013466 062737 000001 014444  
2925 013474 032737 000100 014444  
2926 013502 001413  
2927 013504 013777 014444 166310 998:  
2928 013512 042777 001000 166304  
2929 013520 052777 001000 166276  
2930 013526 000137 012640  
2931 013532 005037 014444 148:  
2932 013536 005037 014444  
2933 013542 052737 000200 014444  
2934 013550 000755  
2935 013552 062737 000001 014444 138:  
2936 013560 032737 000100 014444  
2937 013566 001746  
2938 013570 042777 021000 166226 728:  
2939  
2940 013576 005037 017206  
2941 013602 005077 166216  
2942 013606 052777 040000 166210  
2943 013614 005037 017202  
2944 013620 104415  
2945 013622 005337 014456  
2946 013626 001402
```

;
;///
;
ERROR 50 1BAD DATA IN MODULE ADDRESS
;
;///
;
128: SCOP94
;
;TESTS ARE DONE FORM NEXT PATTERN AND LOOP
;
SNLOOP=,
RIT 03WB,03WR ILOOP ON DATA TEST
BEQ 018 INO THEN 018
MOVB 03WB,DATSNT IGET 3WR LOW BYTE
MOVB 03WB,TEMP1
BIC 0177477,DATSNT IGET BITS 6,7
BNE 048 INOT ZERO THEN 048
BIS 00107,TEMP1 IZERO, DEFAULT TO SET BIT 7
BR 038 ICONT
CMP 0300,DATSNT IBITS 6,7 =11
BNE 038 INO THEN 038
BIC 0300,TEMP1
BIS 00106,TEMP1 ISET BIT 6
MOV TEMP1,DATSNT ISET DATA SENT
BR 998
TST TRACK IFIRST OR SECOND LOOP?
BEQ 138 ISECOND, THEN 138
ADD 0010,TEMP1 IINC NEW PATTERN
BIT 0010,TEMP1 IDONE?
BEQ 148 IYES, THEN 148, NEXT LOOP
MOV TEMP1,0ICMOD IMOVE OUT NEXT PATTERN
BIC 0TBMTEN,0ICSR ITOGGLE TBMT ENABLE TO ALLOW
BIS 0TBMTEN,0ICSR IMICRO CODE TO PROGRESS
JMP 18 ILOOP
CLR TEMP1 ICLR PATTERN
CLR TRACK IINDICATE SECOND LOOP
BIS 0017,TEMP1 ICREATE NEXT PATTERN
BR 998 ISEND PATTERN
ADD 0010,TEMP1 IINCREMENT PATTERN
BIT 0010,TEMP1 IDONE?
BEQ 998 INO, THEN SEND NEXT PATTERN
BIC 0TBMTEN+MAINT2,0ICSR IYES,, CLEAR TBMTEN AND MAINT2 TO EXIT MICROCODE
CLR INTPLG
CLR 0ICSR
BIS 0MAINT3,0ICSR
CLR TIMTRP
CKCNC
DEC PASHUN
BEQ .+6

```

2947 013630 000137 011400          JMP      LOOP3
2948
2949
2950 013634 017700 166166          MOV      @ICAR,R2
2951 013640 032777 000040 165270      BIT      @SW5,@SWR
2952 013646 001002          BNE     .+6
2953 013650 000137 013676          JMP      988
2954 013654 017700 165256          MOV      @SWR,R0
2955 013660 042700 177477          RLC     @177477,R0
2956 013664 022700 000100          CMP     @100,R0
2957 013670 001002          BNE     .+6
2958 013672 000137 011364          JMP      TEST3L
2959
2960          ;
2961          ;CHECK THAT A MOV INSTRUCTION TO AN ICR OUTPUT MODULE WILL SET
2962          ;OUTPUT BUSY
2963          ;
2964
2965
2966
2967 013676 012737 013676 014372 9881      MOV      @988,SCOLOP
2968 013704 013700 014414          MOV      @R20,R0
2969 013710 005777 166110      7881      TST     @ICSR          ;IS OUTPUT BUSY
2970 013714 100003          BPL     .+10          ;IF NO CONT
2971 013716 005300          DEC     R2          ;INC WATCHDOG
2972 013720 001373          BNE     788          ;NOT TIMED OUT THEN 788
2973
2974          ;
2975          ;////////////////////////////////////
2976          ;
2977 013722 104035          ERROR   35          ;LINE ACTIVE TOO LONG
2978
2979          ;
2980          ;////////////////////////////////////
2981          ;
2982 013724 104412          SCOPEX
2983 013726 013700 014412          MOV      @R100,R0
2984 013732 052777 000040 166064      BIS     @TTYEN,@ICSR  ;SET TTY ENABLE
2985 013740 012777 000000 166054          MOV      @0,@PICMOD
2986 013746 005777 166052      9881      TST     @ICSR
2987 013752 100403          BMI     978
2988 013754 005300          DEC     R0
2989 013756 001373          BNE     988
2990
2991          ;
2992          ;////////////////////////////////////
2993          ;
2994 013760 104032          ERROR   32          ;LINE DID NOT GO ACTIVE WITH MOV INSTRUCTION
2995
2996          ;
2997          ;////////////////////////////////////
2998          ;
2999 013762 104412      9781      SCOPEX
3000 013764 042777 000040 166032      BIC     @TTYEN,@ICSR  ;CLEAR TTY ENABLE
3001
3002          ;
    
```

```
3003          ;CHECK THAT BMT WILL NOT INTERRUPT WITH LINE BUSY
3004          ;
3005          ;
3006 013772          BMTINT:
3007 013772 012737 013772 014372 1201  MOV    0120,SCOLOP    ; SET SCOPE LOOP
3008 014000 005077 166020          CLR    0ICSR        ;CLEAR ICR CSR
3009 014004 013700 014006          MOV    FR1000,R0
3010 014010 005777 166010 7001  TST    0ICSR        ;IS OUTPUT BUSY
3011 014014 100003          BPL    .+10        ;IF NO CONT
3012 014016 005300          DEC    R0          ;INC WATCHDOG
3013 014020 001373          BNE    700        ;NOT TIMED OUT THEN 700
3014          ;
3015          ;
3016          ;////////////////////////////////////
3017          ;
3018 014022 104035          ;          ERROR 35          ;OUTPUT BUSY STUCK
3019          ;
3020          ;
3021          ;////////////////////////////////////
3022          ;
3023 014024 104412          ;          SCOPEX
3024 014026 005037 017206          CLR    INTFLG      ;CLEAR INTERRUPT FLAG
3025 014032 052777 000040 165764  BIS    0TTYEN,0ICSR ;SET TTY ENABLE
3026 014040 012777 000000 165754  MOV    00,0ICMOD   ;CAUSE LINE TO GO ACTIVE
3027 014046 042777 000040 165750  BIC    0TTYEN,0ICSR ;CLEAR TTY ENABLE
3028          ;          ;WAIT FOR IT TO GO ACTIVE
3029 014054 013700 014412          MOV    FR100,R0
3030 014060 005777 165740 0001  TST    0ICSR
3031 014064 100403          BHI    .+10
3032 014066 005300          DEC    R0
3033 014070 001373          BNE    000
3034          ;
3035          ;
3036          ;////////////////////////////////////
3037          ;
3038 014072 104032          ;          ERROR 32          ;OUTPUT BUSY WOULD NOT GO ACTIVE
3039          ;
3040          ;
3041          ;////////////////////////////////////
3042          ;
3043          ;
3044 014074 013700 014416          MOV    FR20,R0
3045 014100 013737 017172 177776  MOV    PR1LVL,00PSW ;LOWER PSW
3046 014106 052777 000010 165710  BIS    0BMTEN,0ICSR ;ALLOW INTERRUPT IF PENDING
3047 014114 005300          DEC    R0
3048 014116 001376          BNE    .-2
3049 014120 042777 000010 165676  BIC    0BMTEN,0ICSR ;CLEAR BMT ENABLE
3050 014126 012737 000340 177776  MOV    0340,00PSW
3051 014134 005737 017206          TST    INTFLG
3052 014140 001401          BEQ    110          ;INTERRUPT OCCUR
3053          ;          ;NO, OKAY THEN GO TO 110
3054          ;
3055          ;////////////////////////////////////
3056          ;
3057 014142 104024          ;          ERROR 20          ;BMT INTERRUPTED WITH LINE BUSY
3058          ;
```

```

3059      ;
3060      ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
3061      ;
3062      014144 104412      118:      SCOPEX
3063      014146 005037 017206      CLR      INTFLG
3064      014152 000137 005554      JMP      TEST2
3065      ;
3066      ;
3067      ;
3068      ;
3069      ;
3070      ;
3071      ;
3072      ;
3073      ;
3074      ;
3075      014156 104414      XSC090: CKPWF
3076      014160 032777 040000 164750      BIT      @SW14,@SWR      JSW 14 SET
3077      014166 001001      SNE      .+4
3078      014170 000002      RTI
3079      014172 011637 014232      MOV      (SP),SCTMP      JNO EXIT
3080      014176 162737 000004 014232      SUB      @4,SCTMP      JGET SCOPE LOCATION
3081      014204 023737 001116 014232      CMP      @ERRPC,SCTMP      JSUB 4 TO LOOK LIKE ERR LOC
3082      014212 001401      BEQ      .+4
3083      014214 000002      RTI
3084      ;
3085      014216 022626      POP2SP
3086      014220 052777 040000 165576      BIS      @MAINT3,@ICSR      JFIX STACK
3087      014226 000137 011364      JMP      TEST3L      JRESET 94
3088      ;
3089      014232 000000      SCTMP: 0
3090      ;
3091      ;
3092      ;
3093      ;
3094      014234 104414      XSC096: CKPWF
3095      014236 032777 040000 164672      BIT      @SW14,@SWR      JSW 14 SET
3096      014244 001001      SNE      .+4
3097      014246 000002      RTI
3098      014250 022626      POP2SP
3099      014252 000177 000114      JMP      @SCOLOP      JFIX STACK
3100      ;
3101      ;
3102      ;
3103      ;
3104      ;
3105      014256 104414      XSCTTY: CKPWF
3106      014260 032777 040000 164650      BIT      @SW14,@SWR      JCHECK FOR TTY INPUT
3107      014266 001001      SNE      .+4
3108      014270 000002      RTI
3109      014272 011637 014232      MOV      (SP),SCTMP      JSW 14 SET
3110      014276 162737 000004 014232      SUB      @4,SCTMP      JNO EXIT
3111      014304 023737 001116 014232      CMP      @ERRPC,SCTMP      JGET SCOPE LOCATION
3112      014312 001401      BEQ      .+4
3113      014314 000002      RTI
3114      ;
    
```

```

3115 014316 022626          POP2SP          IPIX STACK
3116 014320 000177 000046      JMP          @SCOLOP      ILOOP
3117
3118
3119          I
3120          IREGULAR SCOPE LOOP FOR REMAINDER OF TEST
3121          I
3122 014324 104414          XSCOPE1 CKPWF
3123 014326 032777 040000 164602      BIT          @SW14,@SWR      ISW 14 SET
3124 014334 001001          BNE          .+4
3125 014336 000002          RTI
3126 014340 011637 014232          MOV          (SP),SCTMP      IEND EXIT
3127 014344 162737 000004 014232      SUB          @4,SCTMP        ISET SCOPE LOCATION
3128 014352 023737 001116 014232      CMP          @ERRPC,SCTMP     ISUB 4 TO LOOK LIKE ERR LOC
3129 014360 001401          BEQ          .+4            IEQUAL TO ERR PC
3130 014362 000002          RTI
3131
3132 014364 022626          POP2SP          IPIX STACK
3133 014366 000177 000000      JMP          @SCOLOP      ILOOP
3134
3135          I
3136 014372 000000          SCOLOP1 0
3137
3138
3139
3140 014374 000000          TENCN11 0
3141 014376 000000          XMASK1 0
3142 014400 000000          FILUTS1 0
3143 014402 000000          FILCNT1 0
3144 014404 000000          VECTOR1 0
3145 014406 000474          FR10001 316.
3146 014410 000236          FR5001 150.
3147 014412 000037          FR1001 31.
3148 014414 000077          FR2001 63.
3149 014416 000006          FR201 6.
3150 014420 026502          FRM1101 11506.
3151
3152 014422 000000          FLAG11 0
3153 014424 000000          FIRST1 0
3154 014426 000000          MICPLP1 0
3155 014430 000000          FLAG1 0
3156 014432 000000          HGH1 0
3157 014434 000000          LOW1 0
3158 014436 000000          SYSMAP1 0
3159 014440 000000          ERRPLP1 0
3160 014442 000000          ERTY11 0
3161 014444 000000          TEMP11 0
3162 014446 000000          TRACK1 0
3163 014450 000000          ADDR1 0
3164 014452 000000          PRIIND1 0
3165 014454 000000          PASLG1 0
3166 014456 000000          PASRUN1 0
3167 014460 000000          ERRLOP1 0
3168 014462 000000          PRMNT1 0
3169 014464 000000          PRMNT11 0
3170 014466 000000          REMPRES1 0

IMASK TO FIND BOX
IPIE UNDER TEST
IPIE COUNT
IICR VECTOR
ITIME CONSTANTS
ISOFT FF
ISOFT FF
IMICROCODE INDICATOR
ISOFT FF
IMGH ADDRESS ON '96
ILOW ADDRESS ON '96
ISYSTEM CONFIGARATION
IERROR FF
IERROR TOTAL
ITEMP STORAGE
IUSED BY '98 LOOP
IUSED BY '98 LOOP
IUSED FOR '96 RANGE
IPASS LENGTH
IPASS COUNT (LOOP)
IERROR FF
ITTY REMOTE - DATA TO BE BUFFERED #1 YES #0 NO
ITTY REMOTE - DATA ALLOWED AT ALL 1=YES 0=NO
IREMOTE FF
    
```

```

3171 014470 000000 TTYTMP: 0 JTIMER
3172 014472 000000 REMOTE: 0 JOPERATOR SW REG ERROR FF
3173 014474 000000 PWRFLP: 0 JPHR FAIL FF
3174 014476 000000 TEMP: 0 JTEMP STORAGE
3175
3176
3177 014500 000000 EDISPT: 0
3178
3179
3180
3181
3182
3183
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3197
3198
3199
3200
3201 014502 105737 001155 STYPE: TSTB STPFLG JIS THERE A TERMINAL?
3202 014506 100002 RPL 15 JBR IF YES
3203 014510 000000 HALT JHALT HERE IF NO TERMINAL
3204 014512 000407 BR 35 JLEAVE
3205 014514 010006 18: MOV R2,-(SP) JSAVE R0
3206 014516 017600 000002 98: MOV 02(SP),R0 JGET ADDRESS OF ASCIZ STRING
3207 014522 112006 28: MOVB (R0)+,-(SP) JPUSH CHARACTER TO BE TYPED ONTO STACK
3208 014524 001005 BNE 45 JBR IF IT ISN'T THE TERMINATOR
3209 014526 005726 TST (SP)+ JIF TERMINATOR POP IT OFF THE STACK
3210 014530 012600 MOV (SP)+,R0 JRESTORE R0
3211 014532 062716 000002 38: ADD 02,(SP) JADJUST RETURN PC
3212 014536 000002 RTI JRETURN
3213 014540 004737 014572 48: JSR PC,75 JGO TYPE THIS CHARACTER
3214 014544 123726 001154 58: CMPB SFILLC,(SP)+ JIS IT TIME FOR FILLER CHARS.?
3215 014550 001364 BNE 25 JIF NO GO GET NEXT CHAR.
3216 014552 013706 001152 MOV 0NULL,-(SP) JGET # OF FILLER CHARS. NEEDED
3217
3218 014556 105366 000001 68: DECB 1(SP) JAND THE NULL CHAR.
3219 014562 002770 RLT 58 JDOES A NULL NEED TO BE TYPED?
3220 014564 004737 014572 JSR PC,75 JBR IF NO--GO POP THE NULL OFF OF STACK
3221 014570 000772 BR 65 JGO TYPE A NULL
3222 014572 122766 000216 000002 78: CMPB 0216,2(SP) JLLOOP
3223 014600 001412 BEQ 98
3224 014602 122766 000217 000002 CMPB 0217,2(SP)
3225 014610 001406 BEQ 98
3226 014612 105777 164330 98: TSTB 087PS JWAIT UNTIL PRINTER IS READY
    
```


| | | | | | | | | |
|------|--------|--------|--------|--------|------|------|------------------|---------------------------------------|
| 3227 | 014616 | 100375 | | | | OPL | 998 | |
| 3228 | 014620 | 116677 | 000002 | 164322 | | MOV8 | 2(SP),0STPB | ILOAD CHAR TO BE TYPED INTO DATA REG. |
| 3229 | 014626 | 032777 | 002000 | 164302 | 9881 | BIT | 0BIT10,0SWR | |
| 3230 | 014634 | 001507 | | | | BEQ | 08 | |
| 3231 | 014636 | 005737 | 014464 | | | TST | PRRMT1 | IREMOTE TTY ALLOWED AT THIS TIME |
| 3232 | 014642 | 001504 | | | | BEQ | 08 | |
| 3233 | 014644 | 005737 | 014462 | | | TST | PRRMT | ISHOULD WE BUFFER? |
| 3234 | 014650 | 001412 | | | | BEQ | 108 | IND, CONT |
| 3235 | 014652 | 005237 | 017774 | | | INC | BUFMES | INC FOR CORRECT STORAGE |
| 3236 | 014656 | 022737 | 021747 | 017774 | | CMF | 0BUFEND-1,BUFMES | IAT END? |

| | | | | | | | | | |
|------|--------|--------|--------|--------|------|--------|--------------------|--|-----------------------------------|
| 3237 | 014664 | 003473 | | | | BLE | 05 | | IYES DONEI |
| 3238 | 014666 | 116677 | 000002 | 003100 | | MOVB | 2(SP),0BUFMS | | IBUFFER |
| 3239 | 014674 | 000467 | | | | RR | 05 | | ICONT |
| 3240 | 014676 | 017746 | 165122 | | 1081 | MOV | 0ICSR,-(SP) | | ISAVE OLD ICSR |
| 3241 | 014702 | 052777 | 001040 | 165114 | | BIS | 0T0MTN+TTYEN,0ICSR | | ISET TTY ENABLE, TMT READ ENABLE |
| 3242 | 014710 | 016677 | 000004 | 165104 | | MOV | 4(SP),0ICMOD | | ISEND DATA TO ICR TTY |
| 3243 | 014716 | 013737 | 014420 | 014470 | | MOV | PRM110,TTYTMP | | |
| 3244 | 014724 | 005037 | 002062 | | | CLR | ERRFLR | | ICLEAR ERROR COUNT |
| 3245 | 014730 | 032777 | 010000 | 165066 | 1381 | BIT | 0ERRBIT,0ICSR | | IERROR BIT SET |
| 3246 | 014736 | 001413 | | | | BEQ | 148 | | INO, THEN 148 |
| 3247 | 014740 | 005237 | 002062 | | | INC | ERRFLR | | ILOG ERROR |
| 3248 | 014744 | 005777 | 165056 | | | TST | 0ICAR | | ICLEAR ERROR |
| 3249 | 014750 | 022737 | 000012 | 002062 | | CMF | 010.,ERRFLR | | ITEN (10) CONSECUTIVE LINE ERRORS |
| 3250 | 014756 | 001364 | | | | BNE | 138 | | INO, THEN CHECK LINE AGAIN |
| 3251 | 014760 | 022626 | | | | POP2SP | | | IADJUST STACK |
| 3252 | 014762 | 000137 | 016474 | | | JMP | ERRLIN | | |
| 3253 | 014766 | 005037 | 002062 | | 1481 | CLR | ERRFLR | | ICLEAR ERROR COUNT |
| 3254 | 014772 | 032777 | 002000 | 165024 | | BIT | 0PWRFL,0ICSR | | IIS PWR FAIL BIT SET |
| 3255 | 015000 | 001403 | | | | BEQ | 158 | | INO, THEN 158 |
| 3256 | 015002 | 022626 | | | | POP2SP | | | |
| 3257 | 015004 | 000137 | 016530 | | | JMP | R8TRT | | |
| 3258 | 015010 | 032777 | 100000 | 165010 | 1581 | BIT | 0XT0MT,0ICAR | | ITRANSMITTER BUFFER EMPTY |
| 3259 | 015016 | 001014 | | | | BNE | 128 | | |
| 3260 | 015020 | 005337 | 014470 | | | DEC | TTYTMP | | |
| 3261 | 015024 | 001341 | | | | BNE | 138 | | |
| 3262 | 015026 | 005037 | 014464 | | | CLR | PRRMTI | | |
| 3263 | 015032 | 022626 | | | | POP2SP | | | |
| 3264 | 015034 | 012600 | | | | MOV | (SP)+,RC | | |
| 3265 | 015036 | 022626 | | | | POP2SP | | | |
| 3266 | 015040 | 104413 | 024676 | | | TYPE, | T0MTMS | | |
| 3267 | 015044 | 000000 | | | | HALT | | | |
| 3268 | 015046 | 000776 | | | | BR | =-2 | | |
| 3269 | 015050 | 012677 | 164750 | | 1281 | MOV | (SP)+,0ICSR | | ISEND OLD CSR |
| 3270 | 015054 | 000207 | | | 081 | RTS | PC | | |
| 3271 | | | | | | | | | |
| 3272 | | | | | | | | | |
| 3273 | | | | | | | | | |
| 3274 | | | | | | | | | |
| 3275 | | | | | | | | | |
| 3276 | | | | | | | | | |
| 3277 | | | | | | | | | |
| 3278 | | | | | | | | | |
| 3279 | | | | | | | | | |
| 3280 | | | | | | | | | .0BTTL ERROR HANDLER ROUTINE |
| 3281 | | | | | | | | | |
| 3282 | | | | | | | | | I08W15=1 HALT ON ERROR |
| 3283 | | | | | | | | | I08W13=1 INHIBIT ERROR TYPEOUTS |
| 3284 | | | | | | | | | I180 TO SERRTYP ON TYPEOUTS |
| 3285 | | | | | | | | | |
| 3286 | 015056 | | | | | | | | SERRR: |
| 3287 | 015056 | 105237 | 001103 | | 781 | INCB | SERFLG | | ISET THE ERROR FLG |
| 3288 | 015062 | 001775 | | | | BEQ | 78 | | IDON'T LET FLAG GO TO ZERO |
| 3289 | 015064 | 013737 | 001102 | 001140 | | MOV | 0YSTNM,00DISPLAY | | IDISPLAY TEST NUMBER AND ERROR |
| 3290 | 015072 | 005264 | 000002 | | | INC | ERRTOT(4) | | IINC THE ERROR COUNT |
| 3291 | 015076 | 011637 | 001116 | | | MOV | (SP),SERRPC | | ISET ADDRESS OF ERROR |
| 3292 | 015102 | 162737 | 000002 | 001116 | | SUB | 02,SERRPC | | |

```

3293 015110 117737 164002 001114      MOVB  0SEHRPC,SITEMB      ISTRIP AND SAVE THE ITEM CODE
3294 015116 032777 020000 164012      RIY   0SW13,0SWR        ISKIP TYPEOUT IF SET
3295 015124 001010                      RNE   20
3296 015126 005237 014424      INC   FIRST              I HAVE WE PRINTED FILE BOX ASSOCIATED WITH ERROR
3297 015132 001007                      BNE   10                 IYES CONTINUE
3298 015134 104413 024357      TYPE, FILET
3299 015140 013746 014400      MOV   FILUTS,-(SP)      IISAVE FILUTS FOR TYPEOUT
3300 015144 104401                      TYPDC                                IIGO TYPE--OCTAL ASCII(ALL DIGITS)
3301 015146 104413 022000      TYPE ,CRLF
3302 015152 004737 015174      101  JSR   PC,00SERRTYP
3303 015156 104413 022000      TYPE, CRLF
3304 015162 005777 163750      201  TST   0SWR
3305 015166 100001                      BPL   30
3306 015170 000000                      HALT
3307 015172 000002      301  RTI

```

;;*****

.SBTTL ERROR MESSAGE TYPEOUT ROUTINE

```

3310
3311
3312
3313
3314 015174
3315 015174 005037 017204      SERRTYP:
3316 015200 104413 022000      CLR   WRKFLP
3317 015204 010046                      TYPE ,CRLF                I"CARRIAGE RETURN" & "LINEFEED"
3318 015206 005000                      MOV   RB,-(SP)           ISAVE RB
3319 015210 153700 001114      CLR   RB                IPICKUP THE ITEM INDEX
3320 015214 001004                      BNE   10
3321
3322
3323 015216 013746 001116      MOV   SERRPC,-(SP)      IISAVE SERRPC FOR TYPEOUT
3324
3325 015222 104401                      TYPDC                                IERROR ADDRESS
3326 015224 000433                      BR    60                 IIGO TYPE--OCTAL ASCII(ALL DIGITS)
3327 015226 005300      101  DEC   RB
3328 015230 006300                      ASL   RB                IADJUST THE INDEX SO THAT IT WILL
3329 015232 006300                      ASL   RB                IWORK FOR THE ERROR TABLE
3330 015234 006300                      ASL   RB
3331 015236 062700 001162      ADD   0SEHRTB,RB
3332 015242 012037 015252      MOV   (RB)+,20
3333 015246 001411                      BEQ   30
3334 015250 104413                      TYPE
3335 015252 000000      201  .WORD 0                IFORM TABLE POINTER
3336 015254 104413 024305      TYPE, PCPRT             IPICKUP "ERROR MESSAGE" POINTER
3337 015260 013746 001116      MOV   SERRPC,-(SP)      ISKIP TYPEOUT IF NO POINTER
3338
3339 015264 104401                      TYPDC                                ITYPE THE ERROR MESSAGE
3340 015266 104413 022000      TYPE ,CRLF             IERROR MESSAGE POINTER GOES HERE
3341 015272 012037 015302      301  MOV   (RB)+,40
3342 015276 001404                      BEQ   50                 IPRINT ERRPC
3343 015300 104413                      TYPE
3344 015302 000000      401  .WORD 0                IISAVE SERRPC FOR TYPEOUT
3345 015304 104413 022000      TYPE ,CRLF             IERROR PC
3346 015310 011000      501  MOV   (RB),RB        IIGO TYPE--OCTAL ASCII(ALL DIGITS)
3347 015312 001004                      BNE   70                 I"CARRIAGE RETURN" "LINEFEED"
3348 015314 012600      601  MOV   (SP)+,RB        IPICKUP "DATA HEADER" POINTER

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```

3349 015316 104413 022000          TYPE ,CRLF          ;TYPE CARRIAGE RETURN LF
3350 015322 000207          RTS          PC
3351 015324          781
3352 015324 013046          MOV          0(R0)+,-(SP)      ;SAVE 0(R0)+ FOR TYPEOUT
3353 015326 104401          TYPOC          ;GO TYPE--OCTAL ASCII(ALL DIGITS)
3354 015330 005710          TST          (R0)          ;IS THERE ANOTHER NUMBER
3355 015332 001770          BEO          05
3356 015334 104413 015342          TYPE ,05          ;TYPE 2 SPACES
3357 015340 000771          BR          78
3358 015342 020040 000          081          .ASCIZ / /
3359
3360          015346          .EVEN
3361
3362          ;*****
3363
3364          .SBTTL  BINARY TO OCTAL (ASCII) AND TYPE
3365
3366          ;*THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 6-DIGIT
3367          ;*OCTAL (ASCII) NUMBER AND TYPE IT.
3368          ;*STYPOS---ENTER HERE TO SETUP SUPPRESS ZEROS AND NUMBER OF DIGITS TO TYPE
3369          ;*CALLI
3370          ;*      MOV          NUM,-(SP)          ;NUMBER TO BE TYPED
3371          ;*      TYPOS          ;CALL FOR TYPEOUT
3372          ;*      .BYTE      N          ;N=1 TO 6 FOR NUMBER OF DIGITS TO TYPE
3373          ;*      .BYTE      M          ;M=1 OR 0
3374          ;*
3375          ;*
3376          ;*
3377          ;*STYPON---ENTER HERE TO TYPE OUT WITH THE SAME PARAMETERS AS THE LAST
3378          ;*STYPOS OR STYPOC
3379          ;*CALLI
3380          ;*      MOV          NUM,-(SP)          ;NUMBER TO BE TYPED
3381          ;*      TYPON          ;CALL FOR TYPEOUT
3382          ;*
3383          ;*STYPOC---ENTER HERE FOR TYPEOUT OF A 16 BIT NUMBER
3384          ;*CALLI
3385          ;*      MOV          NUM,-(SP)          ;NUMBER TO BE TYPED
3386          ;*      TYPOC          ;CALL FOR TYPEOUT
3387
3388 015346 017646 000000          STYPOS:  MOV          0(SP),-(SP)          ;PICKUP THE MODE
3389 015352 110637 000001 015571          MOVB          1(SP),80FILL      ;LOAD ZERO FILL SWITCH
3390 015360 112637 015573          MOVB          (SP)+,80MODE+1    ;NUMBER OF DIGITS TO TYPE
3391 015364 062716 000002          ADD          02,(SP)          ;ADJUST RETURN ADDRESS
3392 015370 000406          BR          STYPON
3393 015372 112737 000001 015571          STYPOC:  MOVB          01,80FILL      ;SET THE ZERO FILL SWITCH
3394 015400 112737 000006 015573          MOVB          06,80MODE+1      ;SET FOR SIX(6) DIGITS
3395 015406 112737 000005 015570          STYPON:  MOVB          05,80CNT      ;SET THE ITERATION COUNT
3396 015414 010346          MOV          R3,-(SP)          ;SAVE R3
3397 015416 010446          MOV          R4,-(SP)          ;SAVE R4
3398 015420 010546          MOV          R5,-(SP)          ;SAVE R5
3399 015422 113704 015573          MOVB          80MODE+1,R4      ;GET THE NUMBER OF DIGITS TO TYPE
3400 015426 005404          NEG          R4
3401 015430 062704 000006          ADD          06,R4          ;SUBTRACT IT FOR MAX. ALLOWED
3402 015434 110437 015572          MOVB          R4,80MODE      ;SAVE IT FOR USE
3403 015440 113704 015571          MOVB          80FILL,R4      ;GET THE ZERO FILL SWITCH
3404 015444 016605 000012          MOV          12(SP),R5      ;PICKUP THE INPUT NUMBER
    
```

```

3485 015450 005003          CLR      R3          ;;CLEAR THE OUTPUT WORD
3486 015452 006105          181     ROL      R5          ;;ROTATE MSB INTO "C"
3487 015454 000404          BR       J8          ;;GO DO MSR
3488 015456 006105          281     ROL      R5          ;;FORM THIS DIGIT
3489 015460 006105          ROL      R5
3490 015462 006105          ROL      R5
3491 015464 010503          MOV      R5,R3
3492 015466 006103          381     ROL      R3          ;;GET LSB OF THIS DIGIT
3493 015470 105337 015572    DECB     SOMODE       ;;TYPE THIS DIGIT?
3494 015474 100016          BPL      J8          ;;BR IF NO
3495 015476 042703 177770    BIC      @177770,R3   ;;GET RID OF JUNK
3496 015502 001002          BNE      J8          ;;TEST FOR 0
3497 015504 005704          TST      R4          ;;SUPPRESS THIS 0?
3498 015506 001403          BEQ     J8          ;;BR IF YES
3499 015510 005204          481     INC      R4          ;;DON'T SUPPRESS ANYMORE 0'S
3500 015512 052703 000060    BIS      @0,R3       ;;MAKE THIS DIGIT ASCII
3501 015516 052703 000040    BIS      @0,R3       ;;MAKE ASCII IF NOT ALREADY
3502 015522 110337 015566    MOVB    R3,@8        ;;SAVE FOR TYPING
3503 015526 104413 015566    TYPE    ,@8         ;;GO TYPE THIS DIGIT
3504 015532 105337 015570    781     DECB     SOCNT       ;;COUNT BY 1
3505 015536 003347          BGT     J8          ;;BR IF MORE TO DO
3506 015540 002402          BLY     J8          ;;BR IF DONE
3507 015542 005204          INC     R4          ;;INSURE LAST DIGIT ISN'T A BLANK
3508 015544 000744          BR      J8          ;;GO DO THE LAST DIGIT
3509 015546 012605          681     MOV      (SP)+,R5     ;;RESTORE R5
3510 015550 012604          MOV     (SP)+,R4     ;;RESTORE R4
3511 015552 012603          MOV     (SP)+,R3     ;;RESTORE R3
3512 015554 016606 000002 000004    MOV     2(SP),4(SP)  ;;SET THE STACK FOR RETURNING
3513 015562 012616          MOV     (SP)+,(SP)
3514 015564 000002          RTI
3515 015566 000          881     .BYTE 0          ;;STORAGE FOR ASCII DIGIT
3516 015567 000          .BYTE 0          ;;TERMINATOR FOR TYPE ROUTINE
3517 015570 000          SOCNT: .BYTE 0    ;;OCTAL DIGIT COUNTER
3518 015571 000          SOFILL: .BYTE 0   ;;ZERO FILL SWITCH
3519 015572 000000          SOMODE: .WORD 0   ;;NUMBER OF DIGITS TO TYPE
3520
3521
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```

 .SOFTL CONVERT BINARY TO DECIMAL AND TYPE ROUTINE

;;THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 5-DIGIT
 ;;SIGNED DECIMAL (ASCII) NUMBER AND TYPE IT. DEPENDING ON WHETHER THE
 ;;NUMBER IS POSITIVE OR NEGATIVE A SPACE OR A MINUS SIGN WILL BE TYPED
 ;;BEFORE THE FIRST DIGIT OF THE NUMBER. LEADING ZEROS WILL ALWAYS BE
 ;;REPLACED WITH SPACES.

;;CALLI

```

;;      MOV      NUM,-(SP)          ;;PUT THE BINARY NUMBER ON THE STACK
;;      TYPDS
    
```

STYPDS:

```

MOV      R0,-(SP)          ;;PUSH R0 ON STACK
MOV      R1,-(SP)          ;;PUSH R1 ON STACK
MOV      R2,-(SP)          ;;PUSH R2 ON STACK
MOV      R3,-(SP)          ;;PUSH R3 ON STACK
MOV      R5,-(SP)          ;;PUSH R5 ON STACK
MOV      @20200,-(SP)      ;;SET BLANK SWITCH AND SIGN
MOV      20(SP),R5        ;;GET THE INPUT NUMBER
    
```

| | | | | | | | | |
|------|--------|--------|--------|--------|-----------------------------------|---------------|------------------|---|
| 3461 | 015616 | 100004 | | | BPL | 18 | | ;;BR IF INPUT IS POS. |
| 3462 | 015620 | 005405 | | | NEG | R5 | | ;;MAKE THE BINARY NUMBER POS. |
| 3463 | 015622 | 112766 | 000055 | 000001 | MOVB | 0'-,1(SP) | | ;;MAKE THE ASCII NUMBER NEG. |
| 3464 | 015630 | 005000 | | 18: | CLR | R0 | | ;;ZERO THE CONSTANTS INDEX |
| 3465 | 015632 | 012703 | 016010 | | MOV | 0SDBLK,R3 | | ;;SETUP THE OUTPUT POINTER |
| 3466 | 015636 | 112723 | 000040 | | MOVB | 0' ,(R3)+ | | ;;SET THE FIRST CHARACTER TO A BLANK |
| 3467 | 015642 | 005002 | | 28: | CLR | R2 | | ;;CLEAR THE BCD NUMBER |
| 3468 | 015644 | 016001 | 016000 | | MOV | 0DTBL(R0),R1 | | ;;GET THE CONSTANT |
| 3469 | 015650 | 160105 | | 38: | SUB | R1,R5 | | ;;FORM THIS BCD DIGIT |
| 3470 | 015652 | 002402 | | | BLT | 48 | | ;;BR IF DONE |
| 3471 | 015654 | 005202 | | | INC | R2 | | ;;INCREASE THE BCD DIGIT BY 1 |
| 3472 | 015656 | 000774 | | | BR | 38 | | |
| 3473 | 015660 | 060105 | | 48: | ADD | R1,R5 | | ;;ADD BACK THE CONSTANT |
| 3474 | 015662 | 005702 | | | TST | R2 | | ;;CHECK IF BCD DIGIT=0 |
| 3475 | 015664 | 001002 | | | BNE | 58 | | ;;FALL THROUGH IF 0 |
| 3476 | 015666 | 105716 | | | TSTB | (SP) | | ;;STILL DOING LEADING 0'S? |
| 3477 | 015670 | 100407 | | | RMI | 78 | | ;;BR IF YES |
| 3478 | 015672 | 106316 | | 58: | ASLB | (SP) | | ;;MS0? |
| 3479 | 015674 | 103003 | | | RCC | 68 | | ;;BR IF NO |
| 3480 | 015676 | 116663 | 000001 | 177777 | MOVB | 1(SP),-1(R3) | | ;;YES--SET THE SIGN |
| 3481 | 015704 | 052702 | 000060 | 68: | BIS | 0'0,R2 | | ;;MAKE THE BCD DIGIT ASCII |
| 3482 | 015710 | 052702 | 000040 | 78: | BIS | 0' ,R2 | | ;;MAKE IT A SPACE IF NOT ALREADY A DIGIT |
| 3483 | 015714 | 110223 | | | MOVB | R2,(R3)+ | | ;;PUT THIS CHARACTER IN THE OUTPUT BUFFER |
| 3484 | 015716 | 005720 | | | TST | (R0)+ | | ;;JUST INCREMENTING |
| 3485 | 015720 | 020027 | 000010 | | CMP | R0,R10 | | ;;CHECK THE TABLE INDEX |
| 3486 | 015724 | 002746 | | | BLT | 28 | | ;;GO DO THE NEXT DIGIT |
| 3487 | 015726 | 003002 | | | BGT | 08 | | ;;GO TO EXIT |
| 3488 | 015730 | 010502 | | | MOV | R5,R2 | | ;;GET THE LSD |
| 3489 | 015732 | 000764 | | | BR | 68 | | ;;GO CHANGE TO ASCII |
| 3490 | 015734 | 105726 | | 88: | TSTB | (SP)+ | | ;;HAS THE LSD THE FIRST NON-ZERO? |
| 3491 | 015736 | 100003 | | | BPL | 98 | | ;;BR IF NO |
| 3492 | 015740 | 116663 | 177777 | 177776 | MOVB | -1(SP),-2(R3) | | ;;YES--SET THE SIGN FOR TYPING |
| 3493 | 015746 | 105013 | | 98: | CLRB | (R3) | | ;;SET THE TERMINATOR |
| 3494 | 015750 | 012605 | | | MOV | (SP)+,R5 | | ;;POP STACK INTO R5 |
| 3495 | 015752 | 012603 | | | MOV | (SP)+,R3 | | ;;POP STACK INTO R3 |
| 3496 | 015754 | 012602 | | | MOV | (SP)+,R2 | | ;;POP STACK INTO R2 |
| 3497 | 015756 | 012601 | | | MOV | (SP)+,R1 | | ;;POP STACK INTO R1 |
| 3498 | 015760 | 012600 | | | MOV | (SP)+,R0 | | ;;POP STACK INTO R0 |
| 3499 | 015762 | 104413 | 016010 | | TYPE | ,SDBLK | | ;;NOW TYPE THE NUMBER |
| 3500 | 015766 | 016666 | 000002 | 000004 | MOV | 2(SP),4(SP) | | ;;ADJUST THE STACK |
| 3501 | 015774 | 012616 | | | MOV | (SP)+,(SP) | | |
| 3502 | 015776 | 000002 | | | RTI | | | ;;RETURN TO USER |
| 3503 | 016000 | 023420 | | | SDTBL: | 10000, | | |
| 3504 | 016002 | 001750 | | | | 1000, | | |
| 3505 | 016004 | 000144 | | | | 100, | | |
| 3506 | 016006 | 000012 | | | | 10, | | |
| 3507 | 016010 | 000004 | | | SDBLK: | .BLKW 4 | | |
| 3508 | | | | | | | | |
| 3509 | | | | | | | | |
| 3510 | | | | | .SBTTL POWER DOWN AND UP ROUTINES | | | |
| 3511 | | | | | | | | |
| 3512 | | | | | ;POWER DOWN ROUTINE | | | |
| 3513 | 016020 | 012737 | 016146 | 000024 | SPHRDN: | MOV | 0BILLUP,00PWRVEC | ;;SET FOR FAST UP |
| 3514 | 016026 | 012737 | 000340 | 000026 | | MOV | 0340,00PWRVEC+2 | ;;PRIO:7 |
| 3515 | 016034 | 010046 | | | | MOV | R0,-(SP) | ;;PUSH R0 ON STACK |
| 3516 | 016036 | 010146 | | | | MOV | R1,-(SP) | ;;PUSH R1 ON STACK |

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3517 016040 010246      MOV      R2,-(SP)      ;;PUSH R2 ON STACK
3518 016042 010346      MOV      R3,-(SP)      ;;PUSH R3 ON STACK
3519 016044 010446      MOV      R4,-(SP)      ;;PUSH R4 ON STACK
3520 016046 010546      MOV      R5,-(SP)      ;;PUSH R5 ON STACK
3521 016050 010637 016152      MOV      SP,SSAVR6     ;;SAVE SP
3522 016054 012737 016066 000024      MOV      SSPHRUP,00PHRVEC ;;SET UP VECTOR
3523 016062 000000      HALT
3524 016064 000776      BR      .-2           ;;HANG UP
3525
3526      ;POWER UP ROUTINE
3527 016066 013706 016152      SPHRUP: MOV      SSAVR6,SP     ;;GET SP
3528 016072 005037 016152      CLR      SSAVR6        ;;WAIT LOOP FOR THE TTY
3529 016076 005237 016152      18:     INC      SSAVR6        ;;WAIT FOR THE INC
3530 016102 001375      BNE      18            ;;OF WORD
3531 016104 012605      MOV      (SP)+,R5      ;;POP STACK INTO R5
3532 016106 012604      MOV      (SP)+,R4      ;;POP STACK INTO R4
3533 016110 012603      MOV      (SP)+,R3      ;;POP STACK INTO R3
3534 016112 012602      MOV      (SP)+,R2      ;;POP STACK INTO R2
3535 016114 012601      MOV      (SP)+,R1      ;;POP STACK INTO R1
3536 016116 012600      MOV      (SP)+,R0      ;;POP STACK INTO R0
3537 016120 012737 016020 000024      MOV      SSPHRDN,00PHRVEC ;;SET UP THE POWER DOWN VECTOR
3538 016126 012737 000340 000026      MOV      0340,00PHRVEC+2 ;;PRI017
3539 016134 104413      TYPE
3540 016136 023060      SPHRMG: .WORD  MESS9     ;;REPORT THE POWER FAILURE
3541 016140 012716      MOV      (PC)+,(SP)    ;;POWER FAIL MESSAGE POINTER
3542 016142 003002      SPHRAD: .WORD  STANT1    ;;RESTART AT START
3543 016144 000002      RTI
3544 016146 000000      SILLUP: HALT
3545 016150 000776      BR      .-2           ;;THE POWER UP SEQUENCE WAS STARTED
3546 016152 000000      SSAVR6: 0             ;; BEFORE THE POWER DOWN WAS COMPLETE
3547                                     ;;PUT THE SP HERE
3548
3549
3550      ;*****
3551
3552      .SBTTL TRAP DECODER
3553
3554      ;THIS ROUTINE WILL PICKUP THE LOWER BYTE OF THE "TRAP" INSTRUCTION
3555      ;AND USE IT TO INDEX THROUGH THE TRAP TABLE FOR THE STARTING ADDRESS
3556      ;OF THE DESIRED ROUTINE. THEN USING THE ADDRESS OBTAINED IT WILL
3557      ;GO TO THAT ROUTINE.
3558
3559 016154 010046      STRAP:  MOV      R0,-(SP)     ;;SAVE R0
3560 016156 016600 000002      MOV      2(SP),R0       ;;GET TRAP ADDRESS
3561 016162 005740      TST      -(R0)          ;;BACKUP BY 2
3562 016164 111000      MOV      (R0),R0       ;;GET RIGHT BYTE OF TRAP
3563 016166 006300      ASL      R0            ;;POSITION FOR INDEXING
3564 016170 016000 016176      MOV      STRPAD(R0),R0   ;;INDEX TO TABLE
3565 016174 000200      RTS      R0            ;;GO TO ROUTINE
3566
3567
3568      .SBTTL TRAP TABLE
3569
3570      ;THIS TABLE CONTAINS THE STARTING ADDRESSES OF THE ROUTINES CALLED
3571      ;BY THE "TRAP" INSTRUCTION.
3572

```


| | | | | | | | | | |
|------|--------|--------|--------|--------|---------|--------|---------------|--|-----------------------------------|
| 3629 | 016406 | 022700 | 000003 | | | CMP | R3,R0 | | IF WAS IT A CNTL C |
| 3630 | 016412 | 001416 | | | | BEO | 18 | | IF YES SERVICE IT |
| 3631 | 016414 | 022700 | 000020 | | | CMP | R20,R0 | | IF CNTRL P |
| 3632 | 016420 | 001401 | | | | BEO | 28 | | IF YES, SERVICE IT |
| 3633 | 016422 | 000002 | | | | RTI | | | IF NO, EXIT |
| 3634 | 016424 | 012737 | 000001 | 014464 | 28: | MOV | R1,PRRMT1 | | |
| 3635 | 016432 | 005037 | 014462 | | | CLR | PRRMT | | |
| 3636 | 016436 | 104413 | 025132 | | | TYPE, | CNTNLP | | |
| 3637 | 016442 | 022626 | | | | POP28P | | | |
| 3638 | 016444 | 000137 | 010446 | | | JMP | PRTSUM | | |
| 3639 | 016450 | 012737 | 000001 | 014464 | 18: | MOV | R1,PRRMT1 | | IF SET UP TO PRINT TO REMOTE |
| 3640 | 016456 | 005037 | 014462 | | | CLR | PRRMT | | |
| 3641 | 016462 | 104413 | 025140 | | | TYPE, | CNTRLC | | IF ECHO "C |
| 3642 | 016466 | 022626 | | | | POP28P | | | IF ADJUST STACK |
| 3643 | 016470 | 000137 | 010452 | | | JMP | WAIT2 | | |
| 3644 | | | | | | | | | |
| 3645 | 016474 | 032777 | 002000 | 163322 | ERRLINE | BIT | OPWRFL,0ICSR | | IF IS PWR FAIL BIT ALSO SET |
| 3646 | 016502 | 001402 | | | | BEO | .+6 | | IF NO, THEN IT MUST BE A BAD LINE |
| 3647 | 016504 | 000137 | 016530 | | | JMP | RSTRT | | IF RESTART |
| 3648 | 016510 | 005037 | 014464 | | | CLR | PRRMT1 | | |
| 3649 | 016514 | 005037 | 014462 | | | CLR | PRRMT | | |
| 3650 | 016520 | 104413 | 025367 | | | TYPE, | NOISY | | |
| 3651 | 016524 | 000137 | 016544 | | | JMP | RST4 | | |
| 3652 | | | | | | | | | |
| 3653 | | | | | | | | | |
| 3654 | | | | | | | | | |
| 3655 | | | | | | | | | |
| 3656 | | | | | | | | | |
| 3657 | 016530 | 005037 | 014464 | | RSTRT: | CLR | PRRMT1 | | IF INHIBIT TYPEOUT TO REMOTE TTY |
| 3658 | 016534 | 005037 | 014462 | | | CLR | PRRMT | | |
| 3659 | 016540 | 104413 | 025161 | | | TYPE, | PWRRES | | IF PRINT POWER FAIL SENSED |
| 3660 | 016544 | 052777 | 040000 | 163252 | RST4: | BIS | SMAINYS,0ICSR | | IF ISSUE RESET |
| 3661 | 016552 | 013700 | 014420 | | | MOV | FRM110,R0 | | |
| 3662 | 016556 | 005300 | | | | DEC | R0 | | |
| 3663 | 016560 | 001376 | | | | BNE | .-2 | | |
| 3664 | 016562 | 012700 | 000002 | | RST3: | MOV | R2,R0 | | IF SET UP DELAY |
| 3665 | 016566 | 005001 | | | | CLR | R1 | | |
| 3666 | 016570 | 032777 | 010000 | 163226 | RST2: | BIT | ERRMBIT,0ICSR | | IF ERROR BIT SET |
| 3667 | 016576 | 001416 | | | | BEO | RST1 | | IF NO, CONT |
| 3668 | 016600 | 005777 | 163222 | | | TST | 0ICAR | | IF CLEAR ERROR |
| 3669 | 016604 | 013702 | 014414 | | | MOV | FR200,R2 | | |
| 3670 | 016610 | 005302 | | | | DEC | R2 | | |
| 3671 | 016612 | 001376 | | | | BNE | .-2 | | |
| 3672 | 016614 | 005301 | | | | DEC | R1 | | |
| 3673 | 016616 | 001364 | | | | BNE | RST2 | | |
| 3674 | 016620 | 005300 | | | | DEC | R0 | | |
| 3675 | 016622 | 001362 | | | | BNE | RST2 | | |
| 3676 | 016624 | 104413 | 025212 | | | TYPE, | ICRDWN | | |
| 3677 | 016630 | 000137 | 016562 | | | JMP | RST3 | | |
| 3678 | 016634 | 052777 | 040000 | 163162 | RST1: | BIS | SMAINYS,0ICSR | | |
| 3679 | 016642 | 012737 | 000001 | 014464 | | MOV | R1,PRRMT1 | | |
| 3680 | 016650 | 012737 | 000000 | 014462 | | MOV | R0,PRRMT | | |
| 3681 | 016656 | 013700 | 014420 | | | MOV | FRM110,R0 | | |
| 3682 | 016662 | 005300 | | | | DEC | R0 | | |
| 3683 | 016664 | 001376 | | | | BNE | .-2 | | |
| 3684 | 016666 | 005737 | 014474 | | | TST | PWRFLP | | IF WHEN ANSWERING QUES DID |

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3685
3686 016672 001404          BEQ      18
3687 016674 005037 014474    CLR      PWRFLP
3688 016700 000137 010452    JMP      WAIT2
3689 016704 104413 025076    181     TYPE,  RSTHES
3690 016710 000137 003002    JMP      STANT1
3691
3692
3693
3694
3695
3696
3697
3698
3699
3700 016714 005237 017206    ICRSRV: INC      INTFLG      ;INDICATE INTERRUPT
3701 016720 005737 014426    TST      MICFLP      ;IN MICRO CODE SECTION?
3702 016724 001401          BEQ      .+4          ;NO, 48
3703 016726 000002          RTI          ;YES, EXIT
3704 016730 005737 017176    TST      TTYFLP      ;IN TTY SECTION
3705 016734 001001          BNE      .+4          ;YES CONT
3706 016736 000002          RTI          ;NO,EXIT
3707 016740 032777 010000 163056    BIT      @RMBIT,@ICSR ;DID ERROR CAUSE INTERRUPT
3708 016746 001405          BEQ      18          ;NO, THEN CHECK FOR OTHERS
3709 016750 017700 163052    MOV      @ICAR,R0    ;REMOVE ERROR
3710 016754 005264 000004          INC      ERRCNT(4)   ;RECORD ERROR
3711 016760 000002          RTI          ;RETURN FROM ERROR INTERRUPT
3712 016762 032777 000001 163034 181     BIS      @RIF,@ICSR  ;SET RIF BIT TO CLEAR INTERRUPT
3713 016770 032777 000200 163026    BIT      @MODINT,@ICSR ;MODULE INTERRUPT THE CAUSE
3714 016776 001416          BEQ      28          ;NO, THEN 28.....BAD
3715 017000 032777 010000 163020    BIT      @DA,@ICAR   ;DID DA CAUSE IT
3716 017006 001016          BNE      38          ;YES, THEN GO SERVICE DA AT 38
3717 017010 032777 100000 163010    BIT      @TBMNT,@ICAR ;WAS IT TBMNT
3718 017016 001040          BNE      48          ;YES THEN GO SERVICE TBMNT AT 48
3719
3720
3721
3722
3723 017020 005777 162776          TST      @ICMOD      ;READ TO CLEAR RIF BIT AND INTERRUPT
3724 017024 017700 162776          MOV      @ICAR,R0
3725
3726
3727 017030 104063          ERROR    63          ;UNEXPECTED MODULE INTERRUPT, INPUT PROBABLY
3728
3729 017032 000401          BR       998
3730
3731
3732 017034 104064          281     ERROR    64          ;SPURIOUS ICR INTERRUPT
3733
3734 017036 022626          998:    POP28P
3735 017040 000137 007620          JMP      TTY2
3736
3737
3738
3739
3740
;DA WAS SET READ IN DATA AND COMPARE
;

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```
3741 017044 017737 162752 001126 38: MOV 0ICMOD,SRODAT IREAD
3742 017052 023737 001124 001126 CMP 8GDUAT,SRODAT ICOMPARE
3743 017060 001401 BEQ 68
3744
3745 017062 104036 ERROR 36 IERROR BAD READ
3746
3747 017064 000240 68: NOP
3748 017066 005237 001124 INC 8GDUAT
3749 017072 005037 017174 CLR DATSNT
3750 017076 032737 000400 001124 BIT 0400,8GDDAT
3751 017104 001405 BEQ 48
3752 017106 022626 78: POP2SP
3753 017110 017700 162712 MOV 0ICAR,R0
3754 017114 000137 007710 JMP TTYEND
3755
3756 /
3757 /
3758 /TBM TRUE SEND NEW PATTERN
3759 /
3760
3761 017120 005737 017174 48: TST DATSNT
3762 017124 001015 BNE 88
3763 017126 013700 014410 MOV FR500,R0
3764
3765 017132 005777 162666 TST 0ICSR
3766 017136 100003 RPL .+10
3767 017140 005300 DEC R0
3768 017142 001373 BNE .-10
3769
3770 017144 104035 ERROR 35
3771
3772 017146 013777 001124 162646 MOV 8GDDAT,0ICMOD
3773 017154 005237 017174 INC DATSNT
3774 017160 017700 162642 88: MOV 0ICAR,R0
3775 017164 022626 POP2SP
3776 017166 000137 007654 JMP TTY1
3777
3778
3779 017172 000000 PRIVL: 0
3780 017174 000000 DATSNT: 0
3781 017176 000000 TTYFLP: 0
3782 017200 000000 BLINK: 0
3783 017202 000000 TIMTRP: 0
3784 017204 000000 WRKFLP: 0
3785 017206 000000 INTPLG: 0
3786
3787
3788 /
3789
3790 /ICR INFORMATION FOR EACH ICR FILE UNDER TEST
3791
3792 017210 000000 INFLST: .WORD 0
3793
3794 017212 000070 .BLKW 56.
3795
3796 /SAVE REGISTERS
```

| | | | | | | | |
|------|--------|--------|--------|--------|----------|----------|-----------------------------|
| 3797 | | | | | | | |
| 3798 | 017372 | 012637 | 017530 | | XSAVREG: | MOV | (SP)+,SAVEPC |
| 3799 | 017376 | 012637 | 017526 | | | MOV | (SP)+,SAVPSW |
| 3800 | 017402 | 012637 | 017524 | | | MOV | (SP)+,SAV2PC |
| 3801 | 017406 | 012637 | 017522 | | | MOV | (SP)+,SAV2SW |
| 3802 | 017412 | 010146 | | | | MOV | R1,-(SP) |
| 3803 | 017414 | 010246 | | | | MOV | R2,-(SP) |
| 3804 | 017416 | 010346 | | | | MOV | R3,-(SP) |
| 3805 | 017420 | 010446 | | | | MOV | R4,-(SP) |
| 3806 | 017422 | 010546 | | | | MOV | R5,-(SP) |
| 3807 | 017424 | 013746 | 017522 | | | MOV | SAV2SW,-(SP) |
| 3808 | 017430 | 013746 | 017524 | | | MOV | SAV2PC,-(SP) |
| 3809 | 017434 | 013746 | 017526 | | | MOV | SAVPSW,-(SP) |
| 3810 | 017440 | 013746 | 017530 | | | MOV | SAVEPC,-(SP) |
| 3811 | 017444 | 000002 | | | | RTI | |
| 3812 | | | | | | | |
| 3813 | | | | | | IRESTORE | REGISTERS |
| 3814 | | | | | | | |
| 3815 | 017446 | 012637 | 017530 | | XRESRG: | MOV | (SP)+,SAVEPC |
| 3816 | 017452 | 012637 | 017526 | | | MOV | (SP)+,SAVPSW |
| 3817 | 017456 | 012637 | 017524 | | | MOV | (SP)+,SAV2PC |
| 3818 | 017462 | 012637 | 017522 | | | MOV | (SP)+,SAV2SW |
| 3819 | 017466 | 012603 | | | | MOV | (SP)+,R5 |
| 3820 | 017470 | 012604 | | | | MOV | (SP)+,R4 |
| 3821 | 017472 | 012603 | | | | MOV | (SP)+,R3 |
| 3822 | 017474 | 012602 | | | | MOV | (SP)+,R2 |
| 3823 | 017476 | 012601 | | | | MOV | (SP)+,R1 |
| 3824 | 017500 | 013746 | 017522 | | | MOV | SAV2SW,-(SP) |
| 3825 | 017504 | 013746 | 017524 | | | MOV | SAV2PC,-(SP) |
| 3826 | 017510 | 013746 | 017526 | | | MOV | SAVPSW,-(SP) |
| 3827 | 017514 | 013746 | 017530 | | | MOV | SAVEPC,-(SP) |
| 3828 | 017520 | 000002 | | | | RTI | |
| 3829 | 017522 | 000000 | | | | SAV2SW: | 0 |
| 3830 | 017524 | 000000 | | | | SAV2PC: | 0 |
| 3831 | 017526 | 000000 | | | | SAVPSW: | 0 |
| 3832 | 017530 | 000000 | | | | SAVEPC: | 0 |
| 3833 | | | | | | | |
| 3834 | 017532 | 000000 | | | | ADDTAB: | 0 |
| 3835 | | | | | | | |
| 3836 | | 017774 | | | | .+.160. | |
| 3837 | | | | | | | |
| 3838 | | | | | | | |
| 3839 | 017774 | 000000 | | | | BUFEND: | 0 |
| 3840 | 017776 | 000000 | | | | BUFBEG: | 0 |
| 3841 | | | | | | | |
| 3842 | | 021750 | | | | .+.1000. | |
| 3843 | | | | | | | |
| 3844 | 021750 | 005015 | 051105 | 047522 | BUFEND: | .ASCII | <15><12>/ERROR BUFFER FULL/ |
| 3845 | 021756 | 020122 | 052502 | 043106 | | | |
| 3846 | 021764 | 051105 | 043040 | 046125 | | | |
| 3847 | 021772 | 114 | | | | | |
| 3848 | 021773 | 201 | | | | .BYTE | 201 |
| 3849 | 021774 | 100601 | | | BUFFIN: | 100601 | |
| 3850 | | | | | | | |
| 3851 | | | | | | .EVEN | |
| 3852 | | | | | | | |

3853 721776 000000
3854
3855
3856
3857
3858

.SBTTL ASCII MESSAGES

```
022200 006415 000012 CRLF: .ASCIZ <15><15><12>
022204 006415 044412 051103 VECMD: .ASCIZ <15><15><12>/ICR VECTOR ADDRESS /
222234 006415 044412 052116 PRIOR: .ASCIZ <15><15><12>/INTERRUPT PRIORITY LEVEL /
022272 006415 046412 042117 VECMES: .ASCIZ <15><15><12>/MOD. INT. WILL NOT INT = ABORTED/
222136 051503 020122 044502 EM1: .ASCIZ /CSH BIT 15 SET/
222155 122 051505 052105 EM2: .ASCIZ /RESET BIT SET/
222173 124 054524 042440 EM3: .ASCIZ /TTY ENA NOT SET/
222213 124 054524 042440 EM4: .ASCIZ /TTY ENA SET/
022227 015 005019 040515 M0094: .ASCIZ <15><15><12>/MAINTENANCE MODE ACTIVATED/
022265 124 047515 052125 EM5: .ASCIZ /TMOUT FLP NOT SET/
222307 123 050505 041440 EM6: .ASCIZ /SEQ COMPARE ERR/
022327 124 046502 020124 EM7: .ASCIZ /TBMT INT ERR/
022344 051105 047522 042516 EM10: .ASCIZ /ERRONEOUS INT/
022362 047516 044440 052116 EM11: .ASCIZ /NO INT FROM ERR/
222402 047111 020124 042523 EM12: .ASCIZ /INT SET APT RIP/
022422 051105 020122 042523 EM13: .ASCIZ /ERR SET APT CLR/
222442 040504 040524 053040 EM14: .ASCIZ /DATA VALID TRUE/
022462 041124 052115 047040 EM15: .ASCIZ /TBMT NOT SET/
022477 116 020117 041124 EM16: .ASCIZ /NO TBMT INT/
022513 116 020117 046502 EM17: .ASCIZ /NO BMT INT/
022526 006415 050012 051501 PASS: .ASCIZ <15><15><12>/PASS COUNT = /
222547 015 043012 046111 FILE: .ASCIZ <15><12>/FILE BOX /
222563 040 041511 051101 ICARMD: .ASCIZ / ICAR=/
022572 044440 051503 036522 ICSRMD: .ASCIZ / ICSR=/
022601 015 047012 020117 NOBOX: .ASCIZ <15><12>/NO ICR'S = ABORTED/<15><12>
022630 026416 005015 042524 TESTINI: .ASCIZ <16><15><15><12>/TESTING FILE BOX /
022656 005015 041511 030522 HEADER: .ASCII <15><12>/ICR11 CONTROLLER DIAGNOSTIC MAINDEC-11-OZIRA-A/<15><12>
022740 005015 025052 025052 .ASCIZ <15><12>/*****ICR11 SYSTEM MAP*****/<15><12>
223010 005015 005015 025052 STARMS: .ASCIZ <15><12><15><12>/*****/
023060 006415 051012 041505 MESS9: .ASCIZ <15><15><12>/RECOVERED FROM POWER FAILURE /<15><15><12>
023124 005015 047111 052520 RESULT: .ASCII <15><12>/INPUT MODULE ADDRESS RANGE/<15><12>
023162 052123 051101 020124 .ASCIZ /START /
023173 015 005015 044506 FINMES: .ASCIZ <15><15><12>/FINISH /
223207 040 020040 000040 BLANK: .ASCIZ / /
023214 047111 052520 020124 EM20: .ASCIZ /INPUT ADDR ERR/
023233 116 020117 047515 EM21: .ASCIZ /NO MOD INT/
023246 052517 050124 052125 EM22: .ASCIZ /OUTPUT ADDR ERR/
023266 052124 020131 042523 EM23: .ASCIZ /TTY SEND RECEIVE ERROR/
023315 102 052115 044440 EM24: .ASCIZ /BMT INT ERR/
023331 115 046125 020124 EM25: .ASCIZ /MULT INT ERR/
023346 052515 052114 044440 EM26: .ASCIZ /MULT INT OCC/
023363 EM27:
023363 EM30:
023363 111 052116 020122 EM31: .ASCIZ /INTR ENA ERR/
023400 047516 020124 052502 EM32: .ASCIZ /NOT BUSY W/ MOVE
023420 040504 047040 052117 EM33: .ASCIZ /DA NOT SET ON TTY TEST/
023420 023233 EM34=EM21
023447 117 052125 041040 EM35: .ASCIZ /OUT BUSY STUCK/
023466 052124 020131 047111 EM36: .ASCIZ /TTY INTERRUPT SEND RECEIVE ERROR/
023527 106 042515 042440 EM37: .ASCIZ /PME ERROR/
```

| | | | | | | |
|--------|--------|--------|--------|---------|--------|--|
| 023541 | 106 | 042515 | 047040 | EM401 | .ASCIZ | /PME NO TIMEOUT/ |
| 023560 | 046123 | 040440 | 045503 | EM411 | .ASCIZ | /SL ACK ON BD CRC/ |
| 023601 | 106 | 042523 | 042440 | EM421 | .ASCIZ | /FSE ERROR/ |
| 023613 | 106 | 042523 | 052040 | EM431 | .ASCIZ | /FSE TIMEOUT/ |
| 223627 | 106 | 042523 | 047040 | EM441 | .ASCIZ | /FSE NO ERROR/ |
| 023644 | 044524 | 042515 | 052517 | EM451 | .ASCIZ | /TIMEOUT ERROR/ |
| 023662 | 040504 | 040524 | 053040 | EM461 | .ASCIZ | /DATA VALID ERROR/ |
| 023703 | 111 | 040503 | 020122 | EM471 | .ASCIZ | /ICAR ERROR/ |
| 023716 | 047515 | 020104 | 042101 | EM501 | .ASCIZ | /MOD ADDR ERROR/ |
| 023735 | 124 | 047105 | 041440 | EM511 | .ASCIZ | /TEN CONSECUTIVE LINE ERRORS IN MODULE RANGE TEST/ |
| 024016 | 042524 | 020116 | 047503 | EM521 | .ASCIZ | /TEN CONSECUTIVE LINE ERRORS IN MODULE WRAP AROUND TEST/ |
| 024105 | 124 | 046502 | 020124 | EM531 | .ASCIZ | /TBMT TTY TRANS/ |
| 024124 | 041124 | 052115 | 052040 | EM541 | .ASCIZ | /TBMT TTY TIME/ |
| 024142 | 044522 | 020106 | 044502 | EM551 | .ASCIZ | /RIF BIT NOT SET/ |
| 024162 | 044522 | 020106 | 044502 | EM561 | .ASCIZ | /RIF BIT SET/ |
| 024176 | 052124 | 020131 | 047111 | EM571 | .ASCIZ | /TTY INTERRUPT TEST HUNG/ |
| 024226 | 040515 | 047111 | 020124 | EM601 | .ASCIZ | /MAINT BIT 3 ON/ |
| 024245 | 120 | 051127 | 043040 | EM611 | .ASCIZ | /PHR FAIL BIT ON/ |
| 024265 | 111 | 051503 | 020122 | EM621 | .ASCIZ | /ICSR REG. ERROR/ |
| 024305 | 040 | 042440 | 051122 | PCPRT1 | .ASCIZ | /ERRPC / |
| 024316 | 006415 | 051412 | 052520 | EM641 | .ASCIZ | <15><15><12>/SPUR ICR INT/ |
| 024336 | 006415 | 052412 | 042516 | EM631 | .ASCIZ | <15><15><12>/UNEXP MOD INT/ |
| 024357 | 015 | 005015 | 044506 | FILEY1 | .ASCIZ | <15><15><12>/FILE BOX IN ERROR / |
| 024405 | 015 | 005015 | 025012 | RUNSUM1 | .ASCIZ | <15><15><12><12>/RUN SUMMARY - FILE / |
| 024436 | 006452 | 000012 | | RUNCON1 | .ASCIZ | /R/<15><12> |
| 024442 | 040520 | 051523 | 041440 | PASMES1 | .ASCIZ | /PASS COUNT / |
| 024463 | 015 | 005015 | 051105 | ERMES1 | .ASCIZ | <15><15><12>/ERROR COUNT / |
| 024507 | 015 | 005015 | 044514 | TRERR1 | .ASCIZ | <15><15><12>/LINE ERROR COUNT/ |
| 024533 | 015 | 005015 | 047516 | NOEXST1 | .ASCIZ | <15><15><12>/NON-EXISTENT FILE BOX/ |
| 024564 | 020040 | 000 | | SPACE1 | .ASCIZ | / / |
| 024567 | 015 | 005015 | 044123 | NOPLUG1 | .ASCIZ | <15><15><12>/SHORTING PLUG NOT IN REMOTE END - TTY TEST ABORTED/<15><12> |
| 024657 | 015 | 005015 | 047514 | LOADIN1 | .ASCIZ | <15><15><12>/LOADING.../ |
| 024676 | 006415 | 051012 | 046505 | TBMTM81 | .ASCIZ | <15><15><12>/REMOTE TTY HUNG--DESELECT IT/ |
| 024736 | 006415 | 051012 | 051105 | WAITIN1 | .ASCIZ | <15><15><12>/RERUN OR LOAD FIELD TEST? / |
| 024775 | 015 | 005015 | 047503 | CONTOP1 | .ASCIZ | <15><15><12>/CONT BY OPERATOR...LOOPING/<15><12> |
| 025035 | 015 | 005015 | 042522 | T8TTT1 | .ASCIZ | <15><15><12>/REMOTE TTY WRAP AROUND TEST/<15><12> |
| 025076 | 006416 | 005015 | 005015 | R8TME81 | .ASCIZ | <16><15><15><12><15><12>/RESTARTING DIAGNOSTIC/ |
| 025132 | 006415 | 057012 | 000120 | CNTRLP1 | .ASCIZ | <15><15><12>/P/ |
| 025140 | 006415 | 057012 | 000103 | CNTRLC1 | .ASCIZ | <15><15><12>/C/ |
| 025146 | 006415 | 052012 | 051505 | WRKME81 | .ASCIZ | <15><15><12>/TESTING/ |
| 025161 | 015 | 005015 | 041511 | PHRME81 | .ASCIZ | <15><15><12>/ICR POWER FAIL SENSED/ |
| 025212 | 006415 | 044412 | 051103 | ICRDWN1 | .ASCIZ | <15><15><12>XICR POWER OFF/LINE OPENX |
| 025245 | 015 | 005015 | 041511 | PHRMS11 | .ASCIZ | <15><15><12>/ICR POWER FAIL TEST/ |
| 025273 | 015 | 050012 | 053517 | | .ASCIZ | <15><12>/POWER DOWN REMOTE END OF ICR/ |
| 025332 | 005015 | 047520 | 042527 | PHRMS21 | .ASCIZ | <15><12>/POWER REMOTE END BACK UP/<15><12> |
| 025367 | 015 | 005015 | 047516 | NOISY1 | .ASCIZ | <15><15><12>XNOISY/OPEN LINEX |

| | | | | | | |
|------|--------|--------|--------|------|--------|---------------|
| 3859 | | | | | .EVEN | |
| 3860 | | | | | | |
| 3861 | 025412 | 006415 | 000012 | DM01 | .ASCIZ | <15><15><12> |
| 3862 | 025416 | 054105 | 023520 | DM11 | .ASCIZ | /EXP'D REC'D/ |
| 3863 | 025424 | 020040 | 042522 | | | |
| 3864 | 025432 | 000104 | | | | |

| | | | | | | | | | | |
|------|--------|--------|--------|--------|---------|----------------------------|-------------------------------------|-------|--|--------------------|
| 3865 | 025434 | 047515 | 052504 | 042514 | DM2: | .ASCII | /MODULE | DATA | EXP'D | REC'D/<15><15><12> |
| 3866 | 025442 | 020040 | 042040 | 052101 | | | | | | |
| 3867 | 025450 | 020101 | 020040 | 054105 | | | | | | |
| 3868 | 025456 | 023520 | 020104 | 020040 | | | | | | |
| 3869 | 025464 | 042522 | 023503 | 006504 | | | | | | |
| 3870 | 025472 | 005015 | | | | | | | | |
| 3871 | 025474 | 042101 | 051104 | 051505 | | .ASCIZ | /ADDRESS | SENT | CONTS | CONTS/ |
| 3872 | 025502 | 020123 | 051440 | 047105 | | | | | | |
| 3873 | 025510 | 020124 | 020040 | 047503 | | | | | | |
| 3874 | 025516 | 052116 | 020123 | 020040 | | | | | | |
| 3875 | 025524 | 047503 | 052116 | 000123 | | | | | | |
| 3876 | 025532 | 042040 | 052101 | 020101 | DM3: | .ASCII | /DATA | EXP'D | REC'D/<15><15><12> | |
| 3877 | 025540 | 020040 | 042440 | 050130 | | | | | | |
| 3878 | 025546 | 042047 | 020040 | 020040 | | | | | | |
| 3879 | 025554 | 042522 | 023503 | 006504 | | | | | | |
| 3880 | 025562 | 005015 | | | | | | | | |
| 3881 | 025564 | 051440 | 047105 | 020124 | | .ASCIZ | /SENT | CONTS | CONTS/ | |
| 3882 | 025572 | 020040 | 041440 | 047117 | | | | | | |
| 3883 | 025600 | 051524 | 020040 | 020040 | | | | | | |
| 3884 | 025606 | 047503 | 052116 | 000123 | | | | | | |
| 3885 | | | | | | | | | | |
| 3886 | | | | | | .EVEN | | | | |
| 3887 | | | | | | | | | | |
| 3888 | 025614 | 000000 | | | DM4: | 0 | | | | |
| 3889 | | | | | | | | | | |
| 3890 | 025616 | 000000 | | | DT0: | 0 | | | | |
| 3891 | 025620 | 001124 | 001126 | 000000 | DT1: | SGDDAT,SBDDAT,0,0 | | | | |
| 3892 | 025626 | 000000 | | | | | | | | |
| 3893 | 025630 | 014450 | 014444 | 001124 | DT2: | ADDR,TEMP1,SGDDAT,SBDDAT,0 | | | | |
| 3894 | 025636 | 001126 | 000000 | | | | | | | |
| 3895 | 025642 | 014444 | 001124 | 001126 | DT3: | TEMP1,SGDDAT,SBDDAT,0 | | | | |
| 3896 | 025650 | 000000 | | | | | | | | |
| 3897 | 025652 | 000000 | | | DT4: | 0 | | | | |
| 3898 | | | | | | | | | | |
| 3899 | | | | | | | | | | |
| 3900 | | | | | | | | | | |
| 3901 | | | | | | | | | | |
| 3902 | | | | | | | | | | |
| 3903 | | | | | | | | | | |
| 3904 | | 033000 | | | | .033000 | | | | |
| 3905 | | | | | | | | | | |
| 3906 | | | | | | .08BTL | FIELD TEST LOAD ROUTINES/ABS LOADER | | | |
| 3907 | | | | | | | | | | |
| 3908 | | | | | | | | | | |
| 3909 | | | | | | | | | | |
| 3910 | | | | | | | | | | |
| 3911 | | | | | | | | | | |
| 3912 | | | | | | | | | | |
| 3913 | 033000 | 052777 | 040000 | 147016 | | | | | | |
| 3914 | 033006 | 013737 | 002024 | 033154 | GOLOAD: | BIB | 0MAINT3,0ICSR | | IRESET | |
| 3915 | 033014 | 013737 | 002026 | 033156 | | MOV | ICSR,SVCSR | | ISAVE PRESENT CSR IN CASE OF CKSUM ERROR | |
| 3916 | 033022 | 013737 | 014404 | 033152 | | MOV | ICAR,SVCAR | | | |
| 3917 | 033030 | 013737 | 002022 | 033160 | | MOV | VECTOR,SVVEC | | | |
| 3918 | 033036 | 013737 | 001136 | 033150 | | MOV | ICMOD,SVMOD | | | |
| 3919 | | | | | | MOV | SHR,TSHR | | | |
| 3920 | 033044 | 000137 | 033232 | | | JMP | L01 | | | |

```

3921
3922
3923      |
3924      |PRINT BAD CHECKSUM MESSAGE
3925      |
3926      033050 010046      CKSMBD: MOV      R0,-(SP)      |SAVE R2
3927      033052 010146      MOV      R1,-(SP)      |SAVE R1
3928      033054 012700 033166      MOV      @CKMES,R0      |GET MESSAGE
3929      033060 112001      38:  MOVB   (@)+,R1      |GET CHAR
3930      033062 001426      BEQ      28              |ZERO TERMINATOR
3931      033064 010177 000072      MOV      R1,@TPB
3932      033070 105777 000070      18:  TSTB   @TPB
3933      033074 100375      RPL      18
3934      033076 032777 002000 000044      BIT      @SW10,@TSWR
3935      033104 001765      BEQ      38
3936      033106 052777 001040 000040      BIS      @TBMTEN+TTYEN,@SVCBR
3937      033114 032777 100000 000034      BIT      @XTBMT,@SVCAR
3938      033122 001774      BEQ      -6
3939      033124 010177 000030      MOV      R1,@SVMOD
3940      033130 042777 001040 000016      BIC      @TTYEN+TBMTEN,@SVCBR
3941      033136 000750      BR       38
3942      033140 012601      28:  MOV   (SP)+,R1
3943      033142 012600      MOV   (SP)+,R0
3944      033144 000137 033246      JMP   LD2
3945
3946
3947      033150 000000      TSWR:  0
3948      033152 000000      SVVEC: 0
3949      033154 000000      SVCBR: 0
3950      033156 000000      SVCAR: 0
3951      033160 000000      SVMOD: 0
3952      033162 177566      TPB:   177566
3953      033164 177564      TP8:   177564
3954
3955      033166 006415 041012 042101  CKMES:  .ASCIZ  <15><15><12>/BAD CHECKSUM/
3956      033174 041440 042510 045503
3957      033202 052523 000115
3958
3959      .EVEN
3960
3961      |
3962      |PDP-11 ABSOLUTE BINARY LOADER -- V085A MODIFIED FOR THE
3963      |PURPOSE OF LOADING ICR11 FIELD TEST PROGRAM (MD-11-DZIRB)
3964      |REMOVELY, LOADER WILL SELF START THE FIELD TEST IF THE CHECKSUM
3965      |IS OK . IF THERE IS A CHECKSUM ERROR, IT WILL INDICATE SO ON BOTH
3966      |LOCAL AND REMOTE TTYS.
3967
3968      |DEFINITIONS FOR THE ABS LOADER ONLY
3969
3970      000000      CKSM=  X0      |CHECKSUM IS KEPT IN R0
3971      000001      ADR=   X1      |LOAD ADDRESS
3972      000002      BC=    X2      |BYTE COUNT
3973      000003      BYT=   X3      |CONTENTS OF BYTE
3974      000004      R4=    X4      |SCRATCH
3975      000005      PTR=   X5      |READ SUBR PNTR
3976      000006      SP=    X6      |STACK POINTER
  
```

DZ


```

3977      000007      PC=      87      IPROGRAM COUNTER
3978
3979      000200      LOAD=200
3980      017776      DEV=17776
3981      000162      ICRVEC=162      IVECTOR FOR FIELD TEST
3982      000164      REMFP=164      IREMOTE LOAD INDICATOR
3983      000166      ICARLD=166      ICAR FOR FIELD TEST
3984      000170      ICSRLD=170      ICSR FOR FIELD TEST
3985      000172      ICSMLD=172      IMODULE ADDRESS FOR FIELD TEST
3986
3987
3988
3989
3990      033206      000012      .BLKW      10.
3991
3992      033232      010700      LD11      MOV      PC,SP      ISET STACK PCINTER
3993      033234      024646      CMP      -(SP),-(SP)      ITO START AT LD1-4
3994      033236      012705      033326      MOV      BREAD,PTR
3995      033242      005001      CLR      ADR      ICLEAR LOAD ADDRESS
3996      033244      005016      LD1B1    CLR      PSP      IUSING ADDRESS ON TAPE
3997
3998
3999      ILOOK FOR THE BEGINNING OF A BLOCK
4000
4001
4002      033246      005000      LD21      CLR      CKSM      IINIT CHECK SUM
4003      033250      004715      JSR      PC,OPTR      ICHECK FOR +1 (START OF BLOCK)
4004      033252      105303      DECB     BYT      ILOOP UNTIL +1 FOUND
4005      033254      001374      BNE      LD2
4006      033256      004715      JSR      PC,OPTR      IREAD ANOTHER FRAME
4007
4008
4009      IINPUT AND SAVE BYTE COUNT, IF BYTE COUNT IS 6 GO PROCESS JUMP
4010
4011
4012      033260      004737      033356      JSR      PC,GWRD      IGET FULL BYTE COUNT
4013      033264      010402      MOV      R4,BC
4014      033266      162702      000204      SUB      #4,BC      ISUB 4 TO BYTE COUNT CORRECT
4015      033272      022702      000002      CMP      #2,BC      IHAS IT SIX (6)
4016      033276      001440      BEQ      JMP1      IJUMP BLOCK
4017      033300      004737      033356      JSR      PC,GWRD      IGET LOAD ADDRESS
4018      033304      061604      ADD      PSP,R4      IACTUAL ADDRESS
4019      033306      010401      MOV      R4,ADR      IPUT ADDRESS IN PROPER CELL
4020
4021
4022      IREAD IN REMAINDER OF TAPE
4023      IIF LOADER GOES TO "BAD" A CHECKSUM ERROR HAS OCCURRED
4024
4025
4026      033310      004715      LD31      JSR      PC,OPTR      IREAD A FRAME
4027      033312      002003      BGE      LD4      IOR IF MORE DATA REMAINS
4028      033314      105700      TSTB     CKSM      ICHECKSUM CORRECT
4029      033316      001753      BEQ      LD2
4030      033320      000464      BAD1     BR      BCKSM      ICHECK SUM ERROR
4031
4032      033322      110321      LD41      MOVB     BYT,(ADR)+      ISTORE 8 BITS
    
```

```

4033 033324 000771          BR      LD3
4034
4035          ;
4036          ;INPUT A FRAME, DECREMENT BYTE COUNT, AND ACCUMULATE CHECKSUM
4037          ;
4038
4039 033326 012703 177550    READ1  MOV      #177550,RYT          ;DEVICE ADDRESS TO BYT
4040 033332 105213          INCB   #BYT          ;READER RUN
4041 033334 105713          R121  TSTB   #BYT
4042 033336 100376          RPL    R12
4043 033340 116303 000002    MOVR  2(BYT),BYT
4044 033344 060300          ADD   BYT,CKSM
4045 033346 042703 177400    BIC   #177400,BYT
4046 033352 005302          DEC   BC
4047 033354 000207          RTS   PC
4048
4049          ;
4050          ;ASSEMBLE ONE FULL WORD OF DATA
4051          ;
4052
4053 033356 012637 033426    GWRD1  MOV      (SP)+,TMP
4054 033362 004715          JSR   PC,OPTN
4055 033364 010304          MOV   BYT,R4
4056 033366 004715          JSR   PC,OPTR
4057 033370 000303          SWAB  BYT
4058 033372 050304          BIS   BYT,R4
4059 033374 013707 033426    MOV   TMP,PC
4060
4061          ;
4062          ;CHECK CORRECTNESS OF JUMP ADDRESS
4063          ;
4064
4065 033400 004737 033356    JMP11  JSR   PC,GWRD
4066 033404 004715          JSR   PC,OPTR
4067 033406 105700          TSTB  CKSM
4068 033410 001343          BNE   BAD
4069 033412 006204          ASR   R4
4070 033414 103002          BCC   JMP11
4071 033416 000404          BR    FLDST
4072 033420 000711          BR    LD10
4073 033422 006204          JMP111 ASR   R4
4074 033424 000114          JMP   OR4
4075
4076 033426 000000          TMP:  .WORD  0
4077
4078 033430 012737 000001 000164  FLDST: MOV      #1,REMPF          ;SETUP ICSR,VECTOR,ICAR FOR FIELD TEST
4079 033436 013737 033154 000170    MOV   SVCBR,ICRLO
4080 033444 013737 033156 000166    MOV   SVCAR,ICARLO
4081 033452 013737 033160 000172    MOV   SVMOD,ICSMLO
4082 033460 013737 033152 000162    MOV   SVVEC,ICRVEC
4083 033466 000137 000200          JMP   LOAD          ;GO START FIELD TEST
4084 033472 000137 033050    B0CKSM: JMP   CKSM0D
4085
4086          SENDAD=.
4087          .END
  
```

| | | | | | | | | | |
|--------|----------|--------|---------|---------|---------|--------|---------|--------|----------|
| ADDR | 014450 | CK8MB0 | 033052 | EM4 | 022213 | FR1000 | 014400 | MFR100 | 002246 |
| ADDTAB | 017532 | CNTRLC | 025142 | EM40 | 023541 | FR20 | 014410 | MFR11K | 002036 |
| ADDWRP | 006434 | CNTRLP | 025132 | EM41 | 023560 | FR200 | 014410 | MFR20 | 002050 |
| ADR | =X000001 | CONTOP | 024775 | EM42 | 023601 | FR500 | 014410 | MFR200 | 002044 |
| ADWR1 | 006364 | CONTRT | 002776 | EM43 | 023613 | GETREG | 104400 | MFR500 | 002042 |
| ADWR2 | 006372 | CONTRW | 004146 | EM44 | 023627 | GOLOAD | 033000 | MICFLP | 014426 |
| BAD | 033320 | CRLP | 022000 | EM45 | 023644 | GOOP | 002754 | MODEN | =000004 |
| BC | =X000002 | DA | =010000 | EM46 | 023662 | GWRD | 033356 | MODINT | =000200 |
| BCKSM | 033472 | DATBNT | 017174 | EM47 | 023703 | HEADER | 022656 | M0004 | 022227 |
| BITLST | 003776 | DDI8P | =177570 | EM5 | 022265 | HGM | 014432 | NOBOX | 022601 |
| BITYST | 003656 | DEV | =017776 | EM50 | 023716 | ICAR | 002026 | NOEXST | 024533 |
| BIT0 | =000001 | DM0 | 025412 | EM51 | 023735 | ICARMD | 022563 | NOISV | 025367 |
| BIT00 | =000001 | DM1 | 025416 | EM52 | 024016 | ICARLD | 000166 | NOPLUG | 024567 |
| BIT01 | =000002 | DM2 | 025434 | EM53 | 024105 | ICMOD | 002022 | ONEBOX | 003242 |
| BIT02 | =000004 | DM3 | 025532 | EM54 | 024124 | ICRCNT | 002034 | OUTOSY | 100000 |
| BIT03 | =000010 | DM4 | 025614 | EM55 | 024142 | ICRDWN | 025212 | PASCNT | 000000 |
| BIT04 | =000020 | DISPLA | 001140 | EM56 | 024162 | ICRRUN | 002030 | PASLG | 014454 |
| BIT05 | =000040 | DISPRE | 000174 | EM57 | 024176 | ICRSRV | 016714 | PASMES | 024442 |
| BIT06 | =000100 | DWR | =177570 | EM6 | 022307 | ICRVEC | 000162 | PASRUN | 014456 |
| BIT07 | =000200 | DT0 | 025616 | EM60 | 024226 | ICRWT | 011116 | PASS | 022526 |
| BIT08 | =000400 | DT1 | 025620 | EM61 | 024245 | ICRWT1 | 011242 | PC | =X000007 |
| BIT09 | =001000 | DT2 | 025630 | EM62 | 024265 | ICRWT2 | 011264 | PCPRY | 024305 |
| BIT1 | =000002 | DT3 | 025642 | EM63 | 024336 | ICRWT3 | 011212 | PERHGM | 000006 |
| BIT10 | =002000 | DT4 | 025652 | EM64 | 024316 | ICSMLO | 000172 | PERLON | 000010 |
| BIT11 | =004000 | EDISPT | 014500 | EM7 | 022327 | ICSR | 002024 | PIRO | =177772 |
| BIT12 | =010000 | EMTVEC | 000030 | ENDPAS | 010304 | ICSRMD | 022572 | PIROVE | 000240 |
| BIT13 | =020000 | EM1 | 022136 | ENDPS10 | 010336 | ICARLD | 000170 | POP2SP | 022626 |
| BIT14 | =040000 | EM10 | 022344 | ERMES | 024463 | INFLST | 017210 | PRIND | 014452 |
| BIT15 | =100000 | EM11 | 022362 | ERRBIT | 010000 | INTFLG | 017206 | PRILVL | 017172 |
| BIT2 | =000004 | EM12 | 022402 | ERRCNT | 000004 | INTST | 005034 | PRIOR | 022034 |
| BIT3 | =000010 | EM13 | 022422 | ERREN | =000002 | INTST1 | 005234 | PRRMT | 014462 |
| BIT4 | =000020 | EM14 | 022442 | ERRFLP | 014440 | IOTVEC | 000020 | PRRMT1 | 014464 |
| BIT5 | =000040 | EM15 | 022462 | ERRFLR | 002062 | JMP1 | 033400 | PRMES | 010720 |
| BIT6 | =000100 | EM16 | 022477 | ERRLIN | 016474 | JMP11 | 033422 | PRTSUM | 010446 |
| BIT7 | =000200 | EM17 | 022513 | ERRLOP | 014460 | LD1 | 033232 | PR0 | =000000 |
| BIT8 | =000400 | EM2 | 022155 | ERRTOT | 000002 | LD10 | 033244 | PR1 | =000040 |
| BIT9 | =001000 | EM20 | 023214 | ERRVEC | 000004 | LD2 | 033246 | PR2 | =000100 |
| BLANK | 023207 | EM21 | 023233 | ERTTL | 014442 | LD3 | 033310 | PR3 | =000140 |
| BLINK | 017200 | EM22 | 023246 | FILECNT | 014402 | LD4 | 033322 | PR4 | =000200 |
| BMTEN | =000010 | EM23 | 023266 | FILE | 022547 | LOAD | =000200 | PR5 | =000240 |
| BMTINT | 013772 | EM24 | 023315 | FILET | 024357 | LOADIN | 024657 | PR6 | =000300 |
| BMTYST | 004574 | EM25 | 023331 | FILEFD | 002574 | LOOP1 | =004410 | PR7 | =000340 |
| BOXCNT | 002052 | EM26 | 023346 | FILLST | 002774 | LOOP2 | =005032 | PS | =177776 |
| BPTVEC | 000014 | EM27 | 023363 | FILNFD | 002710 | LOOP3 | =011400 | PSW | =177776 |
| BUF0EG | 017776 | EM3 | 022173 | FILUT8 | 014400 | LOW | 014434 | PTR | =X000005 |
| BUFEND | 021750 | EM30 | 023363 | FIND11 | 002226 | LPTST | 003504 | PRFEN | =000020 |
| BUFFIN | 021774 | EM31 | 023363 | FINMES | 023173 | MAINTS | 003576 | PRFFLG | 002032 |
| BUFMES | 017774 | EM32 | 023400 | FIRST | 014424 | MAINT0 | 000400 | PRRFL | =002000 |
| BYT | =X000003 | EM33 | 023420 | FLAG | 014430 | MAINT1 | 004000 | PRRFLP | 014474 |
| CKCNC | =104415 | EM34 | =023233 | FLAG1 | 014422 | MAINT2 | 020000 | PRMES | 025161 |
| CKMES | 033166 | EM35 | 023447 | FLOST | 033430 | MAINT3 | 040000 | PRMS1 | 025245 |
| CKPWF | =104414 | EM36 | 023466 | FRM10 | 014420 | MES39 | 023060 | PRMS2 | 025332 |
| CKSM | =X000000 | EM37 | 023527 | FR10P | 014412 | MFR1PK | 002040 | PRRVEC | 000024 |

| | | | | | | | | | |
|--------|----------|--------|--------|--------|--------|--------|--------|--------|--------|
| READ | 033326 | STARTA | 003044 | TMTEND | 001000 | TYPON | 104403 | SERTY | 015174 |
| REMF | 000164 | START1 | 003002 | TMTM5 | 024676 | TYPOS | 104402 | SERTTL | 001112 |
| REMOTE | 014472 | START2 | 003144 | TEMP | 014474 | VECFND | 004150 | SFILLC | 001154 |
| REMPRE | 014466 | STKLMT | 177774 | TEMP1 | 014444 | VECMD | 022004 | SFILLB | 001153 |
| RESULT | 023124 | SUMPRT | 010120 | TENCNT | 002054 | VECHES | 022072 | SGADR | 001120 |
| RESVEC | 000010 | SVCAR | 033156 | TENCN1 | 014374 | VECRET | 004244 | SGDDAT | 001124 |
| RSTMS | 025076 | SVCOR | 033154 | TENTST | 004346 | VECTOR | 014404 | SMD | 000003 |
| RSTRT | 016530 | SVMOD | 033160 | TESTIN | 022630 | VECTST | 004014 | SICNT | 001104 |
| RST1 | 016634 | SVVEC | 033152 | TEST1 | 003332 | VECT1 | 004024 | SILLUP | 016146 |
| RST2 | 016570 | SWLOOP | 013300 | TEST2 | 005554 | VECT2 | 004112 | SITEMB | 001114 |
| RST3 | 016562 | SWR | 001136 | TEST3 | 011330 | WAITIN | 024736 | SLF | 001160 |
| RST4 | 016544 | SWREG | 000176 | TEST3A | 011632 | WAIT1 | 010514 | SLPADR | 001106 |
| RUNCON | 024436 | SW0 | 000001 | TEST3B | 012222 | WAIT2 | 010452 | SLPERR | 001110 |
| RUNSUM | 024405 | SW00 | 000001 | TEST3C | 012344 | WATROU | 010254 | SNULL | 001152 |
| RWBIT | 003524 | SW01 | 000002 | TEST3D | 012556 | WRKFLP | 017204 | SOCNT | 015570 |
| RB | 0X000000 | SW02 | 000004 | TEST3L | 011364 | WRKMES | 025146 | SOMODE | 015572 |
| R1 | 0X000001 | SW03 | 000010 | TIMTRP | 017202 | XCKCNC | 016302 | SPASS | 001100 |
| R12 | 033334 | SW04 | 000020 | TKVEC | 000060 | XCKPWP | 016232 | SPWRAD | 016142 |
| R2 | 0X000002 | SW05 | 000040 | TMP | 033426 | XCKPW1 | 016270 | SPWRDN | 016020 |
| R3 | 0X000003 | SW06 | 000100 | TP0 | 033162 | XMASK | 014376 | SPWRMG | 016136 |
| R4 | 0X000004 | SW07 | 000200 | TPS | 033164 | XRESET | 000100 | SPWRUP | 016066 |
| R5 | 0X000005 | SW08 | 000400 | TPVEC | 000064 | XRESRG | 017446 | SQUES | 001156 |
| R6 | 0X000006 | SW09 | 001000 | TRACK | 014446 | XRIF | 000001 | SSAVR6 | 016152 |
| R7 | 0X000007 | SW1 | 000002 | TRAPVE | 000034 | XSAVRE | 017372 | SSETUP | 000016 |
| SAVEPC | 017530 | SW10 | 002000 | TRERR | 024507 | XSCOPE | 014324 | SSTUP | 177777 |
| SAVPSW | 017526 | SW11 | 004000 | TRTVEC | 000014 | XSC094 | 014156 | SSWR | 160000 |
| SAVREG | 104405 | SW12 | 010000 | TSTTTY | 025035 | XSC096 | 014234 | STKB | 001144 |
| SAV2PC | 017524 | SW13 | 020000 | TSWR | 033150 | XSCTTY | 014256 | STKS | 001142 |
| SAV2SW | 017522 | SW14 | 040000 | TTYEN | 000040 | XTBMT | 100000 | STN | 000001 |
| SCOLOP | 014372 | SW15 | 100000 | TTYEND | 007710 | SDDADR | 001122 | STPD | 001150 |
| SCOPEX | 104412 | SW2 | 000004 | TTYFLP | 017176 | SDDDAT | 001126 | STPFLG | 001155 |
| SCOP94 | 104407 | SW3 | 000010 | TTYINT | 007574 | SCMTAG | 001100 | STPS | 001146 |
| SCOP96 | 104410 | SW4 | 000020 | TTYL | 007112 | SCM3 | 000000 | STRAP | 016154 |
| SCOTTY | 104411 | SW5 | 000040 | TTYSTR | 007032 | SCRLP | 001157 | STRP | 000016 |
| SCTMP | 014232 | SW6 | 000100 | TTYTMP | 014470 | SDBLK | 016010 | STRPAD | 016176 |
| SETPWF | 002064 | SW7 | 000200 | TTYTST | 007036 | SDTBL | 016000 | STSTNM | 001102 |
| SP | 0X000006 | SW8 | 000400 | TTYWT | 011316 | SENDAD | 033476 | STYPOS | 015574 |
| SPACE | 024564 | SW9 | 001000 | TTY1 | 007654 | SERPLG | 001103 | STYPE | 014502 |
| SRTFF | 002060 | SW9FF | 002056 | TTY2 | 007620 | SERMAX | 001115 | STYPOC | 015372 |
| STACK | 001100 | SYMAP | 014436 | TYPDS | 104404 | SERROR | 015056 | STYPON | 015406 |
| STARMS | 023010 | SYSTST | 010542 | TYPE | 104413 | SERRPC | 001116 | STYPOS | 015346 |
| START | 002070 | TBITVE | 000014 | TYPOC | 104401 | SERRTB | 001162 | SDFILL | 015571 |
| . | 033476 | | | | | | | | |

ERRORS DETECTED: 0
 DEFAULT GLOBALS GENERATED: 0

*DZIRAA,DZIRAA/SOL_DZIRAA
 RUN-TIME: 36 24 1 SECONDS
 RUN-TIME RATIO: 190/62=3.0
 CORE USED: 16K (31 PAGES)