

ICR11

CONTROLLER DIAGNOSTIC
MD-11-DZIRA-A

EP-DZIRA-A-DL

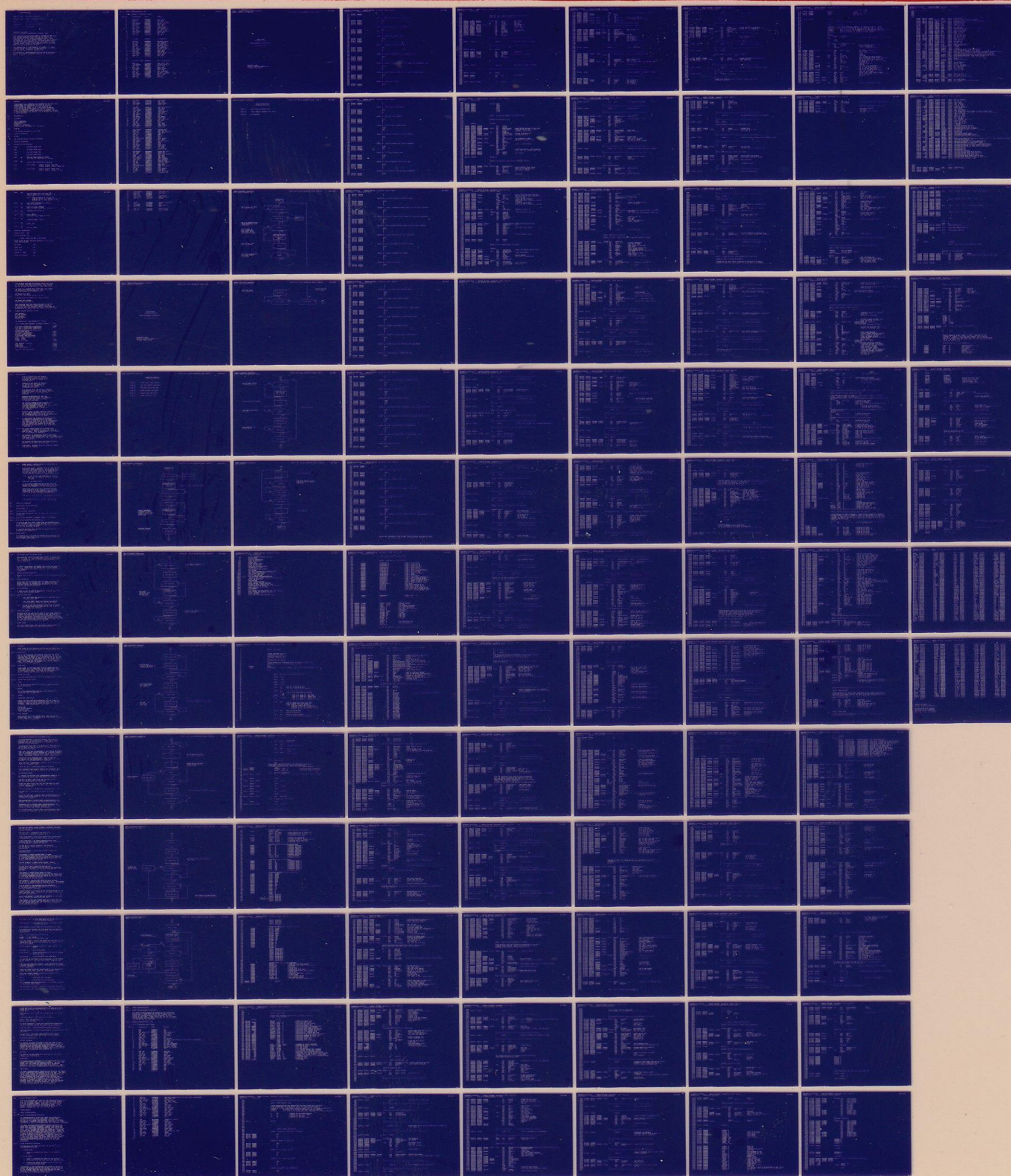
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IDENTIFICATION

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

PDP-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 PDP-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	

SW08 -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
M8094 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=NNN	(*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 SSYNC.
- *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 AGREE 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**14 (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

SEQ 0007

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

SEQ 0000

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

6.1.2 M8094 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 M8098 TEST WHICH IS CONTROLLED BY SW08. WITH SW08 SET THE PROGRAM WILL LOOP ON SENDING SW07-00 UNTIL SW08 IS CLEARED.

6.1.3 M8096 TEST

SCOPE LOOPS IN THE M8096 TEST INVOLVE LOOPING ON THE WHOLE TEST, WITH THE EXCEPTION OF THE M8098 TEST WHICH IS CONTROLLED BY SW08. WITH SW08 SET THE PROGRAM WILL LOOP ON SENDING SW07-00 UNTIL SW08 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 M8094 MICRODIAGNOSTIC WHEN THE DATA SHOULD HAVE BEEN FALSE.

"INPUT ADDR ERR" - IN M8096 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 M8094 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 M8094 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 M8094. 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 M8098 LOOP BACK TEST. INDICATING THE M8098 (SLAVE) DID NOT LOOP BACK THE DATA.

"DATA VALID ERROR" - A BAD CRC WAS RETURNED BY THE M8098 (SLAVE) DURING THE M8098 LOOP BACK TEST.

"ICAR ERROR" - THE DATA LOOPED BACK AND LOADED INTO THE ICAR DURING THE M8098 TEST WAS INCORRECT. BITS 15 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 M8098 TEST THE DATA IS ALSO LOADED INTO THE 16 X 16 FILE IMAGE ON THE M8094, 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.

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

"TGMT 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 M8094, 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 M8094 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 M8094 TEST

THE MICRODIAGNOSTIC RESIDENT IN THE M8094 TESTS THAT FLOWS THROUGH THE M8094 ARE FUNCTIONING PROPERLY. IT WILL ALSO VERIFY THAT THE M8098 CRC CHECKING LOGIC IS WORKING CORRECTLY, AND THAT THE M8098 LOOPS DATA PROPERLY. SEE SECTION 9.1 FOR M8094 MICRODIAGNOSTIC CODE AND FLOWCHARTS.

8.4 M8096 TEST

THE M8096 MICRODIAGNOSTIC TESTS CERTAIN FLOWS ON THE M8096 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 M8096 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 TSMT. 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 TSMT	00000101	TSMT 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

8094 DIAGNOSTIC MICRO-FLOW

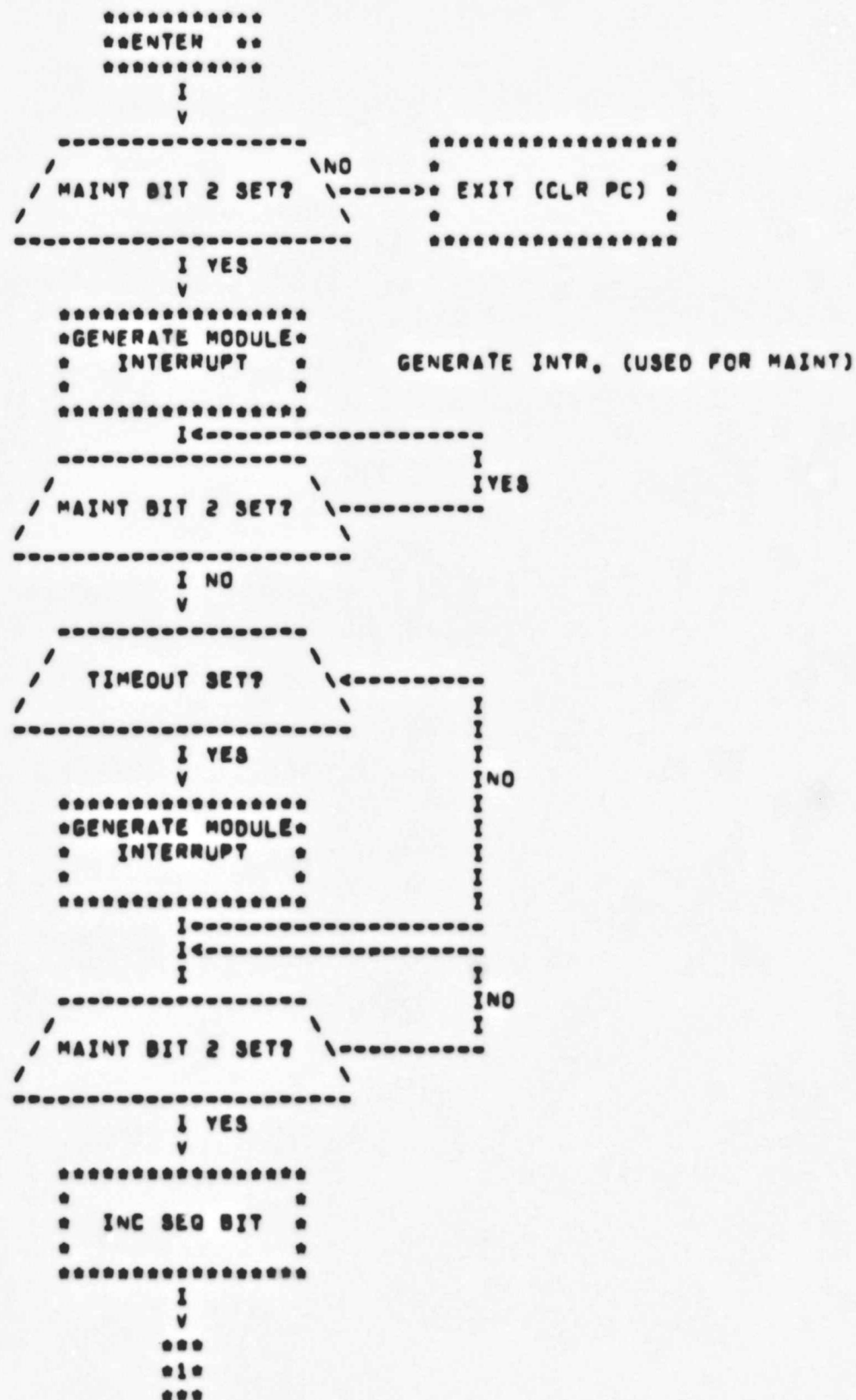
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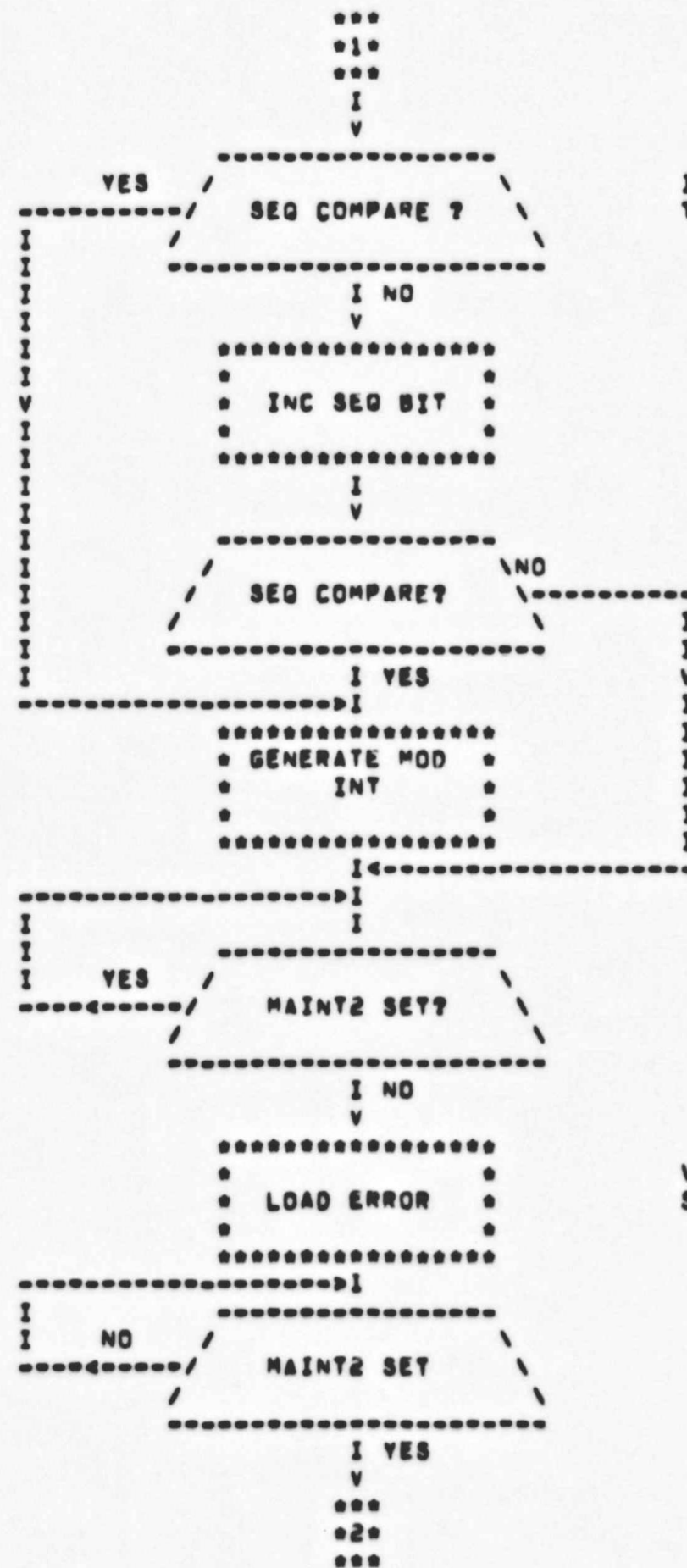
PAGE 01	MAINT INTR., TEST TIMEOUT
PAGE 02	TEST SEQ COMPARE AND ERROR
PAGE 03	TEST DATA VAILD AND TBMT
PAGE 04	FORCED MASTER CRC ERROR
PAGE 05	FORCED SLAVE CRC ERROR
PAGE 06	M8090 LOOP DATA TEST

MODULE INTERRUPT
INDICATES TIMEOUT
PRESENT, WHICH SHOULD
HAPPEN WITH NO TDP
FROM M0094

SEQUENCE COMPARE
FLIP-FLOP CHECK



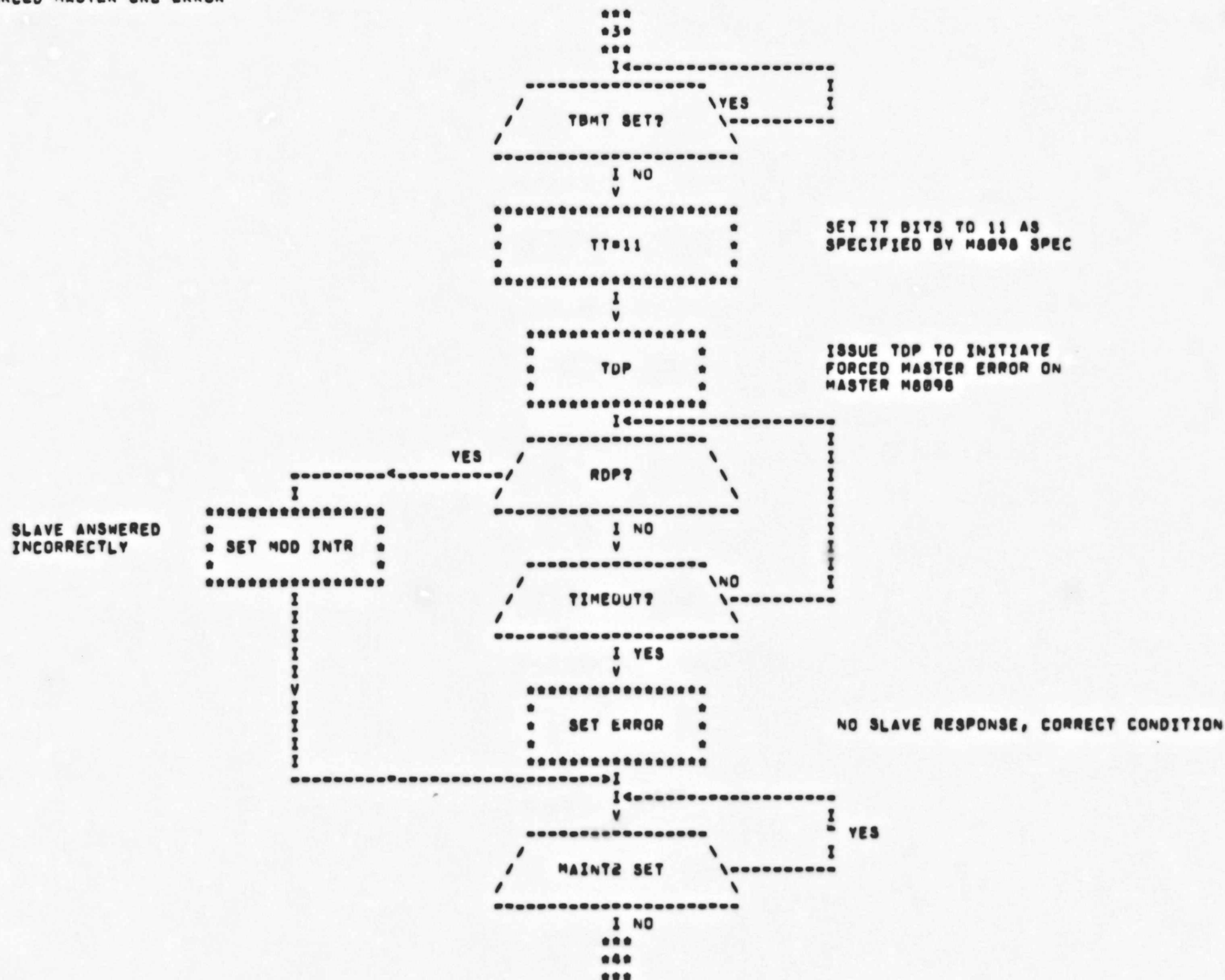
MOD INTR
INDICATES THAT
SEQ CMP FLOP
IS OPERATIVE

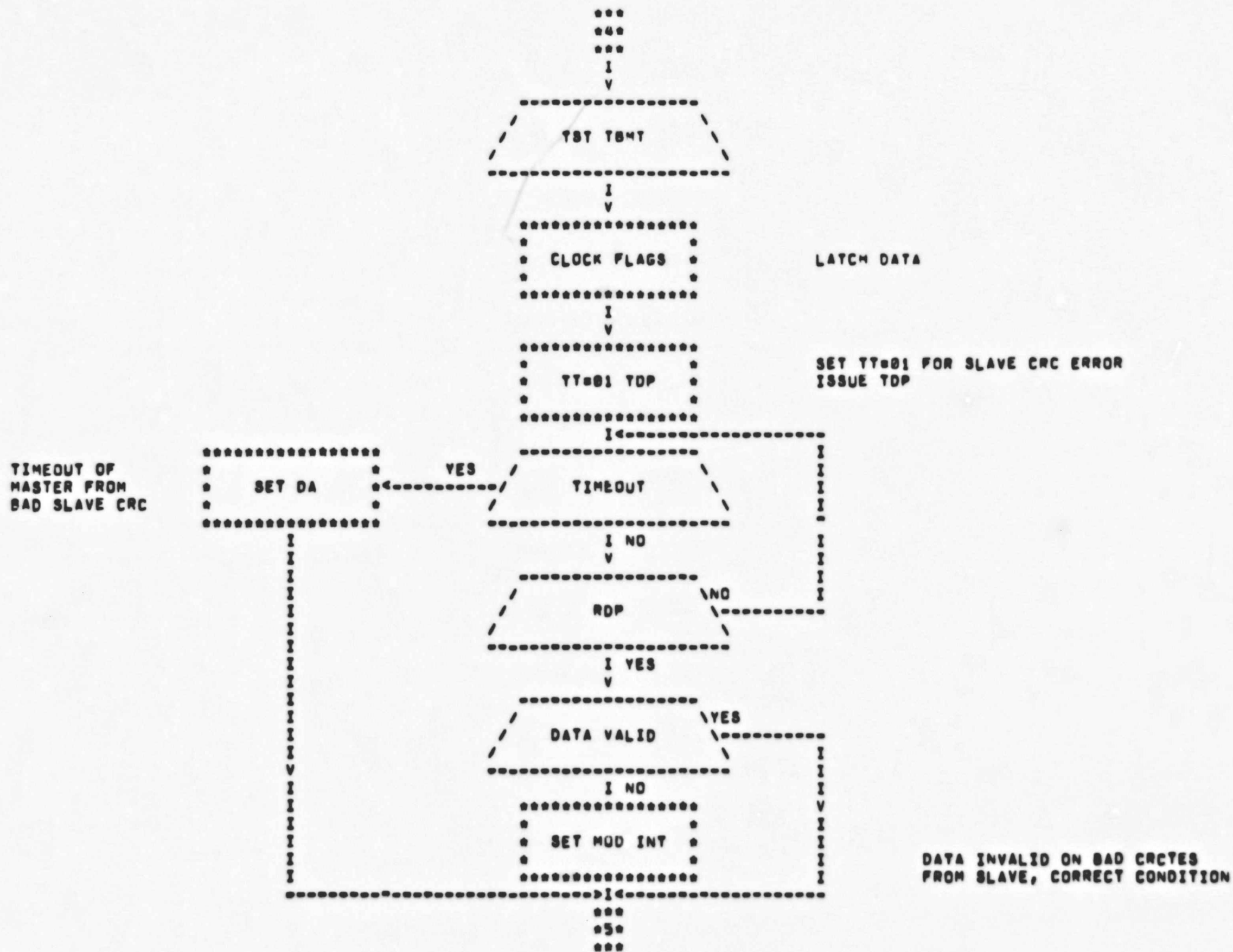


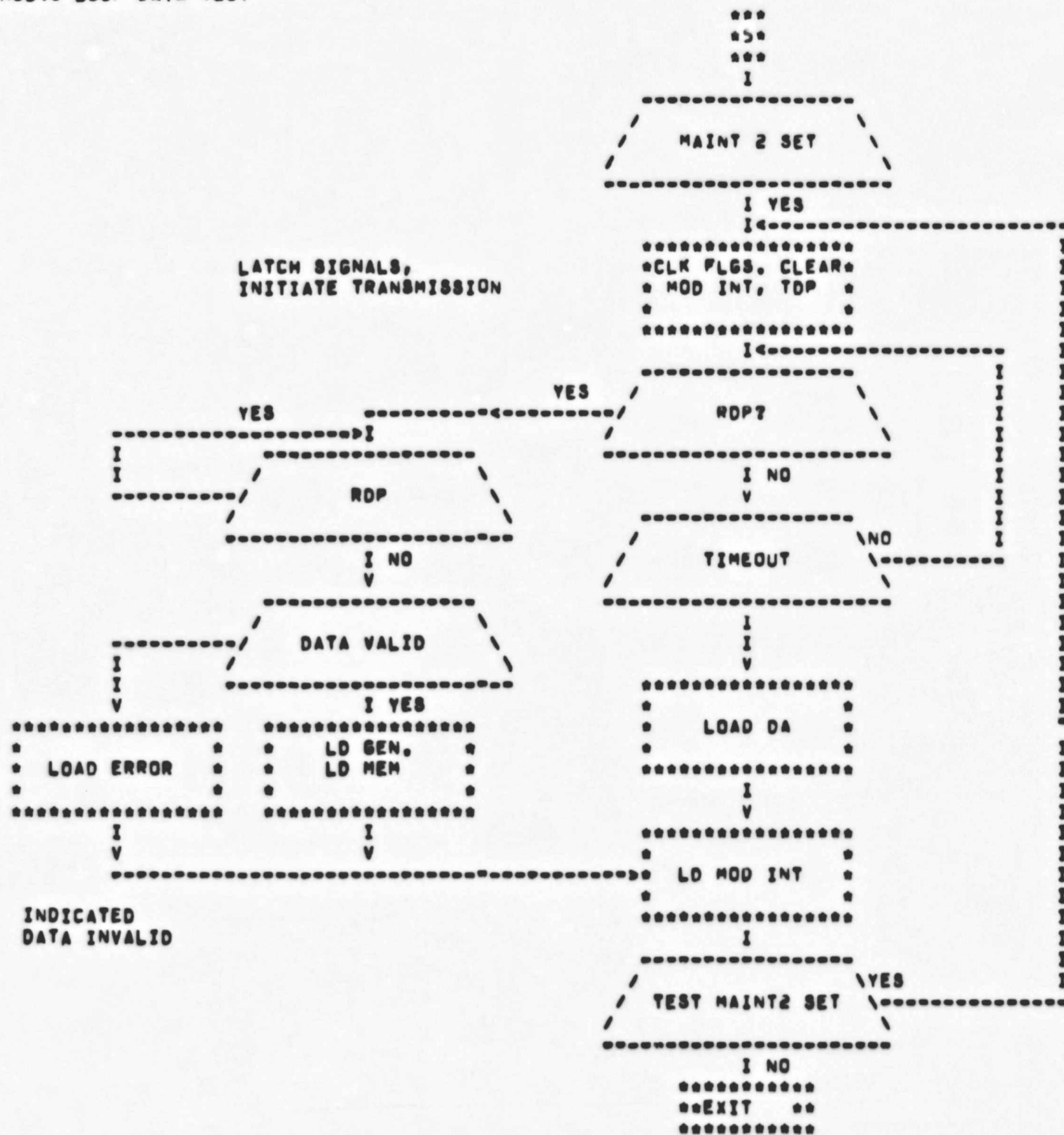
IF IT DOESN'T COMPARE THIS
TIME, TRY ONE MORE

VERIFY THAT ERROR BIT WILL
SET IN ICR CSR









9.2 M8096 MICRODIAGNOSTIC

SEC 0029

9.2.1 M8096 MICRODIAGNOSTIC STRUCTURE

THE M8096 MICRODIAGNOSTIC IS CONTROLLED BY MAINTENANCE BITS 0 AND 1. THESE BITS ARE PASTED TO M8096 WHICH THEN ENTERS THE MICRODIAGNOSTIC WHICH PERFORMS TWO BASIC CHECKS OF THE M8096. THESE CHECKS ARE TEST OF THE M8096 POLLING SCHEME AND THE ABILITY TO READ ALL MODULE ADDRESS AND CONTENTS OF THE FILE BOX.

9.2.2 M8096 MICRODIAGNOSTIC CODE

ICR11 DIAGNOSTIC CODE (M8096)

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	1101XXXX	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	0101XXXX	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 CIF
1	CIF 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 CIF
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

M8096 DIAGNOSTIC MICRO-FLOW

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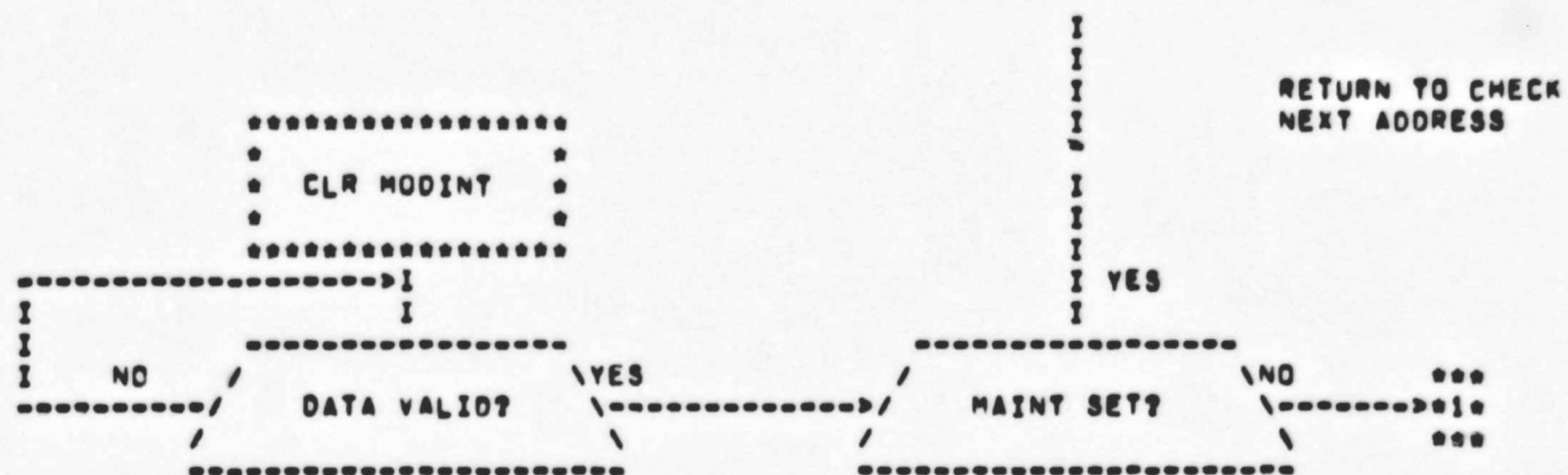
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.

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



WAIT FOR VALID
DATA BEFORE TEST

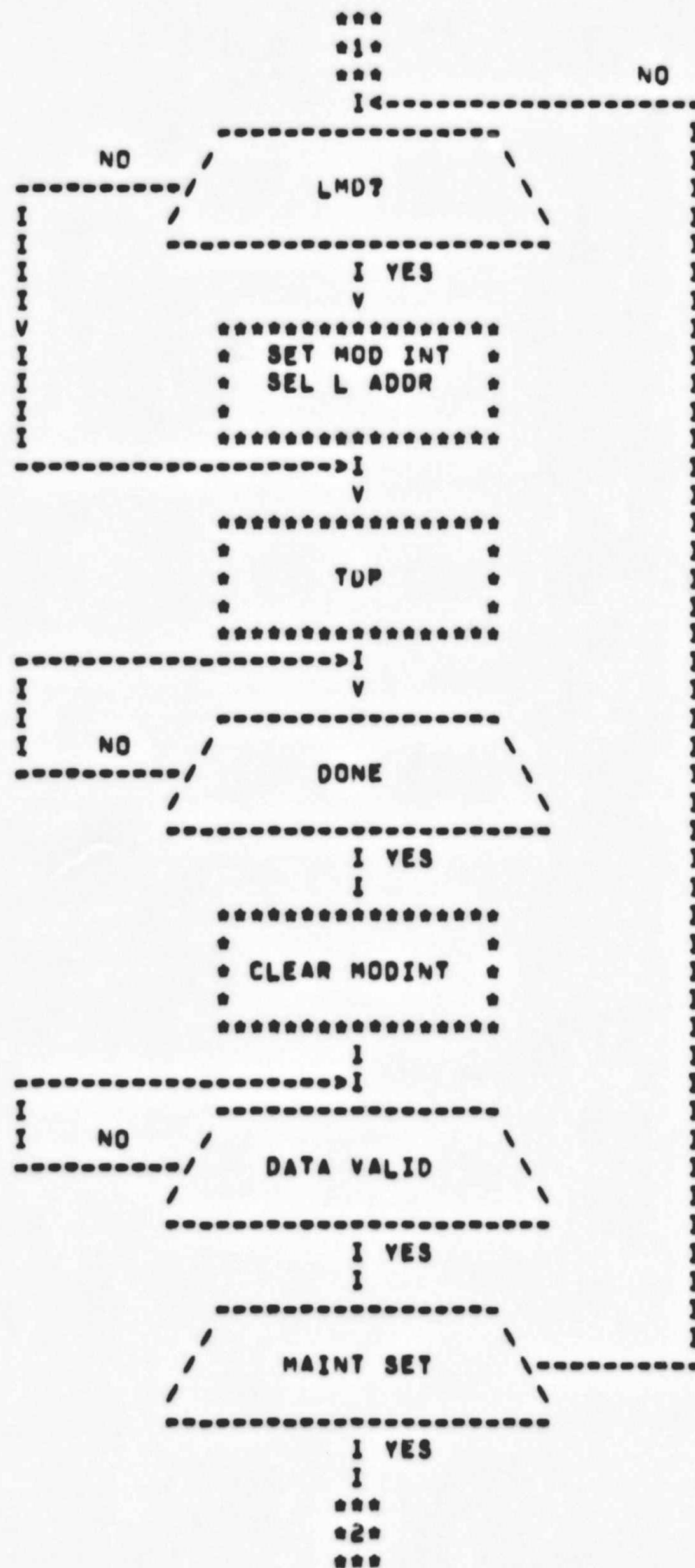


LMD IS USED TO SYNC
MICROCODE WITH CPU.

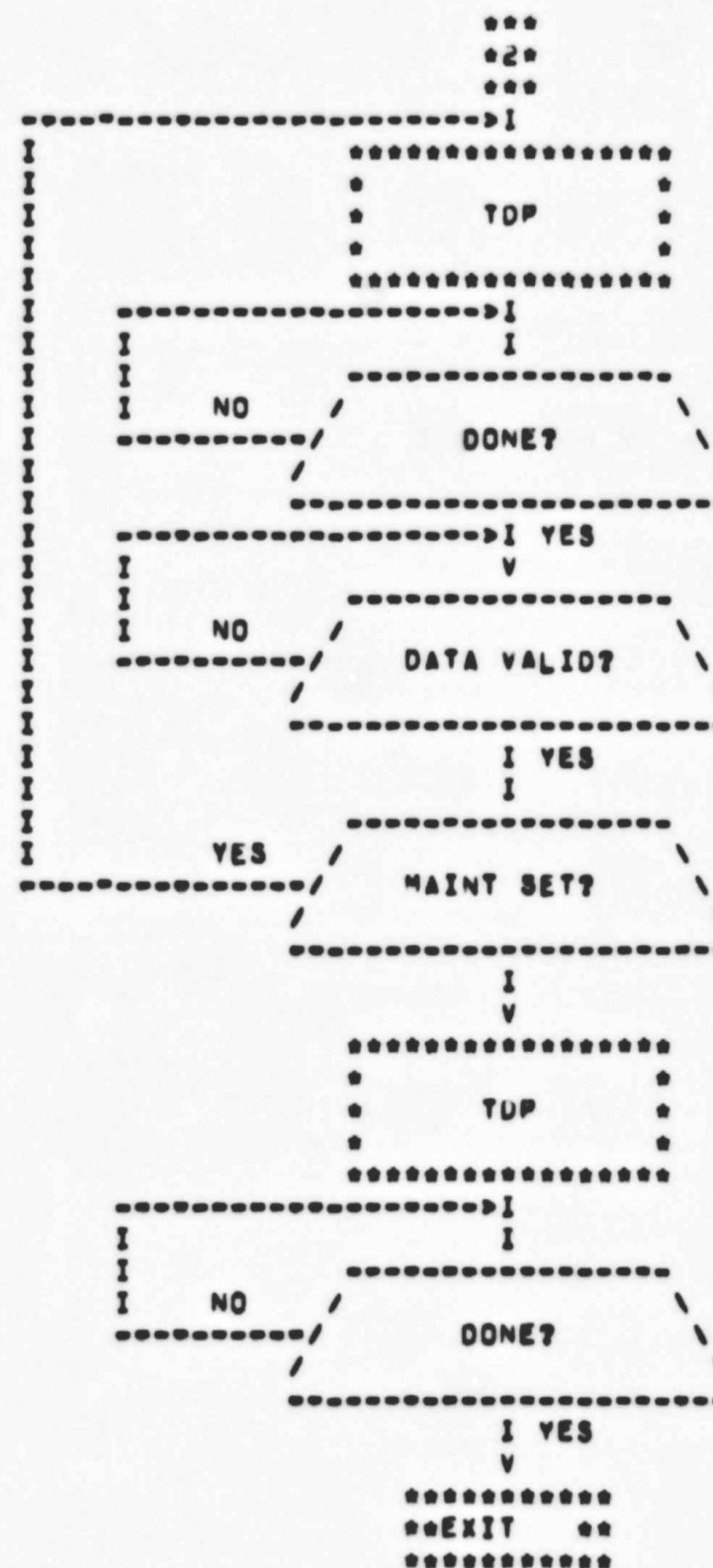
SEND BACK OUTPUT ADDRESS

WAIT FOR TRANSMISSION
COMPLETE

DATA MUST BE VALID
BEFORE TEST



RETURN FOR NEXT



DUMMY MESSAGE BACK

THIS EXIT SCHEME ALLOWS
SMOOTH RETURN TO M8096
MICROCODE

DUMMY MESSAGE

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
3184	TYPE ROUTINE
3283	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
2
3
4
5
6
7
8
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11
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47
48
49
50
51
52
53
54
55
56

000001
160000

```

/
/ICR-11 DIAGNOSTIC
/

.TITLE MAINDEC-11-DZIRA-A
/ *COPYRIGHT (C) 1975
/ *DIGITAL EQUIPMENT CORP.
/ *MAYNARD, MASS. 01754
/ *
/ *PROGRAM BY DAN DEKNIS
/ *
/ *THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC SYSMAC
/ *PACKAGE (MAINDEC-11-DZQAC-01), AUG 29, 1975.
/ *
SYN=1
SSWR=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 M0098 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          /SW12  -0-   QUICK VERIFY
59          /      -1-   LONG TEST
60
61          /SW13  -0-
62          /      -1-   SUPPRESS ERROR TYPEOUT
63
64          /SW14  -0-
65          /      -1-   SCOPE LOOP
66
67          /SW15  -0-
68          /      -1-   HALT ON ERROR
69
70
71
72
73          .SBTTL  TRAP CATCHER
74
75          000000          .00
76          ;=ALL UNUSED LOCATIONS FROM 4 - 776 CONTAIN A ".+2,HALT"
77          ;=SEQUENCE TO CATCH ILLEGAL TRAPS AND INTERRUPTS
78          ;=LOCATION 0 CONTAINS 0 TO CATCH IMPROPERLY LOADED VECTORS
79          000174          .0174
80          000174 000000          DISPREG: .WORD 0          ;;SOFTWARE DISPLAY REGISTER
81          000176 000000          SWREG:  .WORD 0          ;;SOFTWARE SWITCH REGISTER
82
83          .SBTTL  STARTING ADDRESS(ES)
84          000200 000137 002070          JMP      00START          ;;JUMP TO STARTING ADDRESS OF PROGRAM
85
86
87          000204          .0204
88
89          000204 000137 005554          JMP      00TEST2
90
91          000210          .0210
92
93          000210 000137 003002          JMP      00START1
94
95          000214          .0214
96
97          000214 000137 011330          JMP      00TEST3
98
99          000220          .0220
100
101          000220 000137 007032          JMP      00TTYSTR
102
103          ;START IF POWER FAIL TEST WANTED
104
105          000224          .0224
106
107          000224 000137 002064          JMP      00SETPWF
108
109
110
111          .SBTTL  BASIC DEFINITIONS
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      STKLMT= 177774      ;*STACK LIMIT REGISTER
120      177772      PIRQ= 177772      ;*PROGRAM INTERRUPT REQUEST REGISTER
121      177570      DSWR= 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      SW15= 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,SW0
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

```



```

258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274 001162
275
276
277
278
279
280
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
DF	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			ERROR 6 - SEQUENCE COMPARE FLOP INOPERATIVE
318			
319	001232	022307	EM6
320	001234	000000	0
321	001236	000000	0
322	001240	000000	0
323			
324			ERROR 7 - TBMT INTERRUPT DID NOT INTERRUPT
325			
326	001242	022327	EM7
327	001244	000000	0
328	001246	000000	0
329	001250	000000	0
330			
331			ERROR 10 - ERRONOUS CAUSING ERROR
332			
333	001252	022344	EM10
334	001254	000000	0
335	001256	000000	0
336	001260	000000	0
337			
338			ERROR 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			ERROR 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			ERROR 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			ERROR 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			ERROR 15 - TBMT WAS NOT SET
367			
368	001322	022462	EM15
369	001324	000000	0

370	001326	000000	0
371	001330	000000	0
372			
373			ERROR 16 - TBMV 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 M0098 LOOP TEST
535			
536	001622	023644	EM45
537	001624	000000	0

538	001626	000000	0
539	001630	000000	0
540			
541			ERROR 46 - DATA VALID WAS FALSE IN M8098 LOOP TEST
542			
543	001632	023662	EM46
544	001634	000000	0
545	001636	000000	0
546	001640	000000	0
547			
548			ERROR 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			ERROR 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			ERROR 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			ERROR 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			ERROR 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			ERROR 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			ERROR 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 CLEAR 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 HUNG
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

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IICR FILE BOX THAT IS BEING TESTED

.SOTTL ICSR/ICAR BIT EQUIVALENTS

```

I
OUTBSY=BIT15      IICSR - OUTPUT BUSY
MAINT3=BIT14      IICSR - MAINT BIT 03
MAINT2=BIT13      IICSR - MAINT BIT 02
ERRBIT=BIT12      IICSR - ERROR INTERRUPT
MAINT1=BIT11      IICSR - MAINT BIT 01
PWRFL=BIT10       IICSR - POWER FAIL INTERRUPT
TBMTEN=BIT9       IICSR - TBMT INTERRUPT ENABLE
MAINT0=BIT8       IICSR - MAINT BIT 00
MODINT=BIT7       IICSR - MODULE INTERRUPT
XRESET=BIT6       IICSR - RESET
TTYEN=BIT5        IICSR - TTY ENABLE
PWFEN=BIT4        IICSR - POWER FAIL INTERRUPT ENA.
BMTEN=BIT3        IICSR - BMT INTERRUPT ENABLE
MODEN=BIT2        IICSR - MODULE INTERRUPT ENABLE
ERREN=BIT1        IICSR - ERROR INTERRUPT ENABLE
XRIF=BIT0         IICSR - RESET INTERRUPT FLAG
POP28P=022626    IPOP STACK
PASCNT=0         IPASS COUNT OFFSET TO R4
ERRTOT=2         IERROR COUNT OFFSET TO R4
ERRCNT=4         ILINE ERROR COUNT OFFSET TO R4
PERMGH=6         IHIGH INPUT MODULE ADDRESS RANGE
PERLOW=10        ILOW INPUT MODULE ADDRESS RANGE

```

```

I
I
XTBMT=BIT15      IICAR - TBMT
DA=BIT12         IICAR - DA
I
I
I

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ICMOD: 171000    IMODULE ADDRESS
ICSR: 171776     IICR CSR
ICAR: 171774     IICR ADDRESS REGISTER
ICRRUN: 0        IICR COUNT ON SYSTEM
PWFFLG: 0        IPWR FAIL TEST INDICATOR
ICRCNT: 0        IICR COUNT
MFR11K: 11506.   ICONSTANT FOR 110 MSEC
MFR10K: 316.     I1 MSEC
MFR500: 150.     I500 USEC
MFR200: 63.      I200 USEC
MFR100: 31.      I100 USEC
MFR20: 6.        I20 USEC
BOXCNT: 0
TENCNT: 0
SW9FF: 0         ISW9 PREVIOUSLY SET
SRTFF: 0         IPASS RUNNING FLOP
ERRFLR: 0

```

ISTART 224 BRINGS YOU HERE FOR TEST OF POWER FAIL

```

706 002064 005237 002032      SETPHF: INC      PHFFLG      IPOWER FAIL TEST REQUIRED
707
708      .SBTTL ADDRESS MAP OF ICH
709
710
711      START:
712 002070 012706 001100      MOV      #SCHTAG,R6      I/FIRST LOCATION TO BE CLEARED
713 002074 005026      CLR      (R6)+      I/CLEAR MEMORY LOCATION
714 002076 022706 001126      CMP      #SBDDAT,R6      I/DONE?
715 002102 001374      BNE      ,=6      I/LOOP BACK IF NO
716 002104 012706 001100      MOV      #STACK,SP      I/SETUP THE STACK POINTER
717 002110 012737 015036 000030      MOV      #SEHRROR,#SEMTVEC I/EMT VECTOR FOR ERROR ROUTINE
718 002116 012737 000340 000032      MOV      #340,#SEMTVEC+2 I/LEVEL 7
719 002124 012737 016154 000034      MOV      #STHAP,#STHAPVEC I/TRAP VECTOR FOR TRAP CALLS
720 002132 012737 000340 000036      MOV      #340,#STHAPVEC+2 I/LEVEL 7
721 002140 012737 016020 000024      MOV      #SPHRRDN,#SPHRRVEC I/POWER FAILURE VECTOR
722 002146 012737 000340 000026      MOV      #340,#SPHRRVEC+2 I/LEVEL 7
723 002154 013746 000004      MOV      #64,-(SP)      I/SAVE ERROR VECTOR
724 002160 013746 000006      MOV      #66,-(SP)
725 002164 012737 002200 000004      MOV      #645,4      I/SET UP TIME OUT VECTOR
726 002172 005777 176740      TST      #SWR      I/TRY TO REFERENCE HARDWARE SWR
727 002176 000407      BR      658      I/BRANCH IF NO TIMEOUT TRAP OCCURS
728 002200 012737 000176 001136 645:      MOV      #SWREG,SWR      I/POINT TO SOFTWARE SWR
729 002206 012737 000174 001140      MOV      #DISPREG,DISPLAY I/POINT TO SOFTWARE DISPLAY REG
730 002214 022626      CMP      (SP)+,(SP)+      I/RESTORE STACK
731 002216 012637 000006 658:      MOV      (SP)+,#66      I/RESTORE ERROR VECTOR
732 002222 012637 000004      MOV      (SP)+,#64
733
734      I/DETERMINE WHAT PDP11 WE ARE RUNNING ON FOR TIMING CONSTANTS
735
736 002226 012737 000006 000004 FIND11: MOV      #6,#64
737 002234 012737 000002 000012      MOV      #RTI,#612
738 002242 000262      SEV
739 002244 074000      XOR      R0,R0
740 002246 102512      BVS      28
741 002250 013700 002050      MOV      MFR20,R0      I/MUST BE 11/40,11/45 RECAL CONSTANTS
742 002254 010037 014416      MOV      R0,FR20
743 002260 060037 014416      ADD      R0,FR20
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

```


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	014414		ASL	FR200		
775	002446	006337	014410		ASL	FR500		
776	002452	006337	014406		ASL	FR1000		
777	002456	000401			BR	,+4		
778	002460	022626		351	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	251	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		151	CLR	0012	
788	002536	005037	014464			CLR	PRRMT1	
789	002542	005037	014462			CLR	PRRMT	;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				MOV	(R0)	;TRY TO ADDRESS FILE
797						FILFND: CLR		
798								
799								
800								
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		BIS	040,0ICSR	;BIT 5 SET?
805	002624	001004				BNE	50	;1
806	002626	032777	020000	177170		BIS	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								;FILE BOX
812	002650	104402				TYPOS		;GO TYPE--OCTAL ASCII
813	002652	002				.BYTE	2	;TYPE 2 DIGIT(S)
814	002653	000				.BYTE	0	;SUPPRESS LEADING ZEROS
815								;ICAR
816	002654	104413	022563			TYPE,ICARMO		
817	002660	010046				MOV	R0,-(SP)	;SAVE R0 FOR TYPEOUT

018	002662	104401			TYPOC				
019	002664	104413	022572		TYPE,ICSRMD				;;GO TYPE--OCTAL ASCII(ALL DIGITS)
020									;;ICSR
021	002670	062700	000002		ADD	#2,R0			
022	002674	010046			MOV	R0,-(SP)			;;SAVE R0 FOR TYPEOUT
023	002676	104401			TYPOC				;;GO TYPE--OCTAL ASCII(ALL DIGITS)
024	002700	162700	000002		SUB	#2,R0			
025									
026									;;ADDRESS
027	002704	005203			INC	R3			;;INDICATE SUCCESS IN LIST
028	002706	000401			BR	,+4			;
029	002710	022626			FILNFD: POP2SP				;;POP STACK
030	002712	006303			18: ASL	R3			;;INDICATE NO ICR
031	002714	162700	000010		SUB	#10,R0			;;UPDATE FOR NEW ICR
032	002720	005202			INC	R2			;;INCREMENT FILE #
033	002722	022702	000014		CHP	#14,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	#6,#04			;;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	#STACK,SP			;;SET STACK POINTER
057	003006	005037	002056		CLR	SW9FF			;;CLEAR THAT SW9 IS SET
058	003012	032777	001000	176116	BIT	SW9,SWR			;;TEST IF SW 9 IS SET
059	003020	001402			BEO	,+6			
060	003022	005237	002056		INC	SW9FF			;;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	#INFLST,R0			;;BEGINNING OF BUFFER
067	003032	012701	000106		MOV	#70,,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

874	003050	005037	002060		CLR	SWTFF	IINDICATE FIRST BOX FOR PASS SUMMARY
875	003054	005037	017204		CLR	WRKFLP	IPRINT REMOTELY "TESTING"
876	003060	005037	014474		CLR	PWRFLP	IPOWER FAIL INDICATOR
877	003064	005037	002030		CLR	ICRRUN	
878	003070	012737	020000	014376	MOV	020000,XMASK	ISET UP MASK
879	003076	013737	014436	002774	MOV	SYSHAP,FILLST	ISET SYSTEM CONFIG.
880	003104	005037	014400		CLR	FILUTS	IFILE BOX UNDER TEST
881	003110	012704	017210		MOV	01NFLT,R4	IINITIAL ADDRESS OF INFORMATION BUFF
882	003114	012737	000015	014402	MOV	015,FILCNT	ISET MAXIMUM FILE TO 15(BASE 8)
883	003122	012737	171774	002026	MOV	0171774,ICAR	IINITIAL ICAR
884	003130	012737	171776	002024	MOV	0171776,ICSR	IINITIAL ICSR
885	003136	012737	171000	002022	MOV	0171000,ICMOD	IINITIAL MODULE ADDRESS
886							
887	003144	005037	002052		START2: CLR	BOXCNT	ICLEAR THAT BOXES EXIST
888	003150	005037	014426		CLR	MICFLP	IRUNNING MICRODIAGNOSTIC INDICATOR
889	003154	012737	000001	014454	MOV	01,PASLG	ISET FOR QUICK VERIFY
890	003162	032777	010000	175746	BIT	0SW12,PSWR	I LONG PASS WANTED
891	003170	001403			BEG	28	I NO, THEN 28
892	003172	062737	000143	014454	ADD	099.,PASLG	IYES THEN SET LONG PASS
893							
894							IWRITE LOCATIONS "230-1000" WITH "+214", PC+2, IOT TRAP
895							ISINCE EACH PASS WILL OVER WRITE SOME LOCATIONS
896							
897	003200	012700	000230		28: MOV	0230,R0	
898	003204	012701	000232		MOV	0232,R1	
899	003210	010120			18: MOV	R1,(R0)+	
900	003212	012720	000004		MOV	04,(R0)+	
901	003216	022121			CMP	(R1)+,(R1)+	
902	003220	022700	001000		CMP	01000,R0	
903	003224	003371			BGT	18	
904	003226	012737	177777	014424	MOV	0-1,FIRST	ISET TO PRINT FILE BOX ID ONLY ON FIRST ERROR
905	003234	012737	000340	177776	MOV	0340,00PSW	
906							
907							
908							
909							
910	003242	032777	000020	175666	ONEBOX: BIT	0SW4,PSWR	ISINGLE BOX OR ALL TO BE TESTED?
911	003250	001430			BEG	TEST1	IALL THEN TEST1
912	003252	017700	175660		MOV	0SWR,R0	ISET BOX TO BE TESTED
913	003256	012701	010000		MOV	010000,R1	ISET MASK TO FIRST BOX
914	003262	042700	177760		BIC	0177760,R0	ICLEAR ALL BUT BOX SWITCHES
915	003266	001412			BEG	18	IFILE BOX 0, GO TEST
916	003270	020027	000015		CMP	R0,015	IS BOX LEGAL
917	003274	002404			BLT	28	IYES, CONT AT 28
918	003276	104413	024533		TYPE,	NOEXST	I BOX ASKED TO TEST DOES NOT EXIST
919	003302	000000			HALT		
920	003304	000776			BR	0-2	
921	003306	006201			28: ASR	R1	ISHIFT MASK RIGHT TIL BOX FOUND
922	003310	005300			DEC	R0	IHAS BOX BEEN FOUND YET
923	003312	001375			BNE	28	I NO, THEN KEEP LOOKING
924	003314	005037	002774		18: CLR	FILLST	ICLEAR SYSTEM CONFIGURATION SO AS TO
925	003320	050137	002774		BIS	R1,FILLST	ITO TEST ONLY BOX ON SYSTEM
926	003324	012737	000001	002034	MOV	01,ICRCNT	ISET ICRCNT TO ONE
927							
928							
929							


```

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 003344 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 BNE 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 ;
956 003466 104402 TYPOS ;FILE BOX
957 003470 002 .BYTE 2 ;GO TYPE--OCTAL ASCII
958 003471 000 .BYTE 0 ;TYPE 2 DIGIT(S)
959 003472 005000 CLR R0 ;SUPPRESS LEADING ZEROS
960 003474 005300 DEC R0
961 003476 001376 BNE .-2
962
963
964
965
966 003500 000137 004014 JMP VECTST
967
968
969 .BOTTL TEST OF CSR
970
971 003504 012737 017775 017774 LPTST1 MOV 00BUFEG-1,BUFHES ;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 61          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          BIS      @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          WHEN 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      $R1000,R0
1019 003614 005777 176204          708:  TST      @ICSR          IIS OUTPUT BUSY?
1020 003620 100003          BPL      ,+10          INO, CONT
1021 003622 005300          DEC      R0          IYES, INC TIMEOUT
1022 003624 001373          BNE      708
1023
1024 003626 104035          ERROR 35          IOUTPUT BUSY
1025
1026 003630 017700 176172          MOV      @ICAR,R0
1027
1028 003634 052777 040000 176162          BIS      @MAINT3,@ICSR IISSUE MAINT RESET
1029 003642 017737 176156 001126          MOV      @ICAR,$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

```

```

1042
1043
1044      ;TEST THAT ALL ENABLES WILL SET AND CLEAR ICSR BITS
1045      ;INVOLVED ARE BITS 0,1,2,3,4,5,9
1046      ;
1047
1048      003656 012700 003776      BITTST: MOV      @BITLST,R0      ;GET LIST
1049      003662 012701 000007      MOV      #7,R1      ;SET LENGTH
1050      003666 012002      45:      MOV      (0)+,R2      ;GET BIT
1051      003670 012737 003670 014372 15:      MOV      #15,SCOLOP      ;SET SCOPE LOOP
1052      003676 005077 176122      CLR      @ICSR      ;CLEAR CSR
1053      003702 005037 001124      CLR      $GDDAT      ;CLEAR EXPECTED
1054      003706 005037 001126      CLR      $DDAT
1055      003712 050237 001124      BIS      R2,$GDDAT      ;SET EXPECTED
1056      003716 050277 176102      BIS      R2,@ICSR      ;SET BIT IN CSR
1057      003722 030277 176076      BIT      R2,@ICSR
1058      003726 001003      BNE      25
1059      003730 040237 001126      BIC      R2,$DDAT
1060      ;
1061      ;////////////////////////////////////
1062      ;
1063
1064      003734 104062      ERROR 62      ;BIT WAS NOT SET IN ICR CSR
1065
1066      ;
1067      ;////////////////////////////////////
1068      ;
1069
1070      003736 104412      25:      SCOPEX
1071
1072      003740 040237 001124      BIC      R2,$GDDAT      ;CLEAR BIT
1073      003744 040277 176054      BIC      R2,@ICSR
1074      003750 030277 176050      BIT      R2,@ICSR      ;TEST IF BIT IS CLEAR
1075      003754 001403      BEQ      35
1076      003756 050237 001126      BIS      R2,$DDAT
1077
1078      ;
1079      ;////////////////////////////////////
1080      ;
1081
1082      003762 104062      ERROR 62      ;BIT WAS NOT CLEAR IN ICR CSR
1083
1084      ;
1085      ;////////////////////////////////////
1086      ;
1087
1088      003764 104412      35:      SCOPEX
1089
1090      003766 005301      DEC      #1      ;DONE TESTING
1091      003770 001336      BNE      45
1092
1093      ;
1094
1095      003772 000137 004346      JMP      TENTST
1096
1097

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1098
1099 003776 000001
1100 004000 000002
1101 004002 000004
1102 004004 000010
1103 004006 000020
1104 004010 000040
1105 004012 001000
1106
1107
1108
1109
1110
1111
1112
1113
1114 004014
1115
1116 004014 005237 014426 INC MICFLP
1117 004020 005037 004146 CLR CONTSW
1118 004024 012737 004150 000020 VECT1: MOV 0VECFND,0020 ;MOVE VECTOR ROUTINE TO IOT TRAP
1119 004032 012737 000340 177776 MOV 0340,00PSW ;PROCESS STATUS WORD = PRIOR = 7
1120 004040 012703 000007 MOV 07,R3 ;PRIORITY LEVEL IN R3
1121 004044 013700 014410 181 MOV FR500,R0
1122 004050 052777 000004 175746 B18 0MODEN,0ICSR ;MODULE INTERRUPT BIT
1123 004056 052777 020000 175740 B18 0MAINT2,0ICSR ;MAINTENANCE BIT 0
1124 004064 005300 DEC R0
1125 004066 001376 BNE .-2
1126 004070 052777 040000 175726 B18 0MAINT3,0ICSR ;NO INTERRUPT = RESET
1127 004076 005303 DEC R3 ;DECREMENT PRIORITY LEVEL
1128 004100 100404 BMI VECT2 ;
1129 004102 162737 000040 177776 SUB 040,00PSW
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: B18 0MAINT3,0ICSR
1148 004156 010337 017172 MOV R3,PRIVLV ;SAVE PRIORITY LEVEL FOUND
1149 004162 005203 INC R3 ;BUMP UP TO FORM BR LEVEL
1150 004164 011605 MOV (0P),R5 ;GET VECTOR ADDRESS
1151 004166 162705 000004 SUB 04,R5
1152 004172 010537 014404 MOV R5,VECTOR
1153 004176 022626 POP2SP ;POP STACK

```

1154	004200	022626			POP2SP		
1155	004202	005764	000000		TST	PASCNT(4)	IDOING FIRST PAS FOR THIS FILE
1156	004206	001013			BNE	18	INO, CONT DON'T PRINT INFORMATION
1157	004210	104413	022004		TYPE,	VECHD	IPRINT VECTOR
1158	004214	010546			MOV	R5, -(SP)	ISAVE R5 FOR TYPEOUT
1159	004216	104401			TYPOC		IGO TYPE--OCTAL ASCII(ALL DIGITS)
1160	004220	104413	022034		TYPE,PRIOR		IPRIORITY
1161	004224	010346			MOV	R3, -(SP)	ISAVE R3 FOR TYPEOUT
1162	004226	104401			TYPOC		IGO 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	IPRIORITY LEVEL = 7
1167							
1168	004244	012700	000230		VECRET: MOV	0230,R0	IWRITE OVER WITH .+2, HALT
1169	004250	012701	000232		MOV	0232,R1	
1170	004254	010120		9081	MOV	R1,(R0)+	
1171	004256	012720	000000		MOV	00,(R0)+	
1172	004262	022121			CMP	(R1)+,(R1)+	
1173	004264	022700	001000		CMP	01000,R0	
1174	004270	003371			BGT	908	
1175							
1176							
1177	004272	012777	016714	010104	MOV	0ICRSRV,0VECTOR	IMOVE ICR SERVICE ROUTINE
1178	004300	013700	014404		MOV	VECTOR,R0	IMOV
1179	004304	005720			TST	(R0)+	
1180	004306	012710	000340		MOV	0340,(R0)	IMOV 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	IALIGN PRIORITY LEVEL
1186							
1187							
1188							
1189	004336	005037	014472		CLR	REMOTE	
1190	004342	000137	003504		JMP	LPTST	
1191							
1192							
1193							
1194							
1195							
1196	004346				TENTST:		
1197	004346	012700	017776		MOV	0BUFBEQ,R0	ICLEAR OUT ERROR STORAGE BUFFER
1198	004352	012720	100601		9981: MOV	0100601,(0)+	
1199	004356	020027	021750		CMP	R0,0BUFEND	IDONE WITH BUFFER
1200	004362	001373			BNE	998	
1201	004364	005037	014462		CLR	PRRMT	IDON'T BUFFER
1202	004370	012737	000001	014464	MOV	01,PRRMT1	ISSET PRINT TO REMOTE END
1203	004376	005237	014426		INC	MICFLP	
1204	004402	013737	014454	014456	MOV	PASLG,PASRUN	
1205		004410					
1206	004410	012737	004410	014372	LOOP1=: 781: MOV	078,SCOLOP	
1207	004416	052777	000040	175400	BIS	0TTYEN,0ICSR	ISSET TTY ENABLE
1208	004424	032777	000040	175372	BIS	0TTYEN,0ICSR	IS IT SET
1209	004432	001001			BNE	48	

1210

DS


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1211      ;
1212      ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
1213      ;
1214      004434 104003      ERROR 3      ;TTY ENABLE NOT SET
1215
1216      ;
1217      ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
1218      ;
1219
1220      004436 104412      451      SCOPEX
1221
1222      004440 042777 000040 175356      BIC      0TTYEN,0ICSR      ;CLEAR TTY ENABLE
1223      004446 032777 000040 175350      BIT      0TTYEN,0ICSR      ;IS IT CLEAR
1224      004454 001401      BEQ      55
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      068,SCOLOP
1241
1242      004470 005777 175330      TST      0ICSR      ;CHECK BIT 15, OUTPUT BUSY
1243      004474 100001      BPL      15
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      0MAINT3,0ICSR
1257      ;
1258      ;CHECK THAT RIF BIT WILL SET
1259      ;
1260
1261      004510 012737 004510 014372      7381     MOV      0738,SCOLOP
1262      004516 052777 000001 175300      BIS      0XRIF,0ICSR
1263      004524 032777 000001 175272      BIT      0XRIF,0ICSR
1264      004532 001001      BNE      718
1265
1266      ;

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FS

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1267
1268
1269 004534 104055          /\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
1270          ERROR 55          IRIF BIT NOT SET
1271
1272          /\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
1273
1274 004536 104412          718: SCOPEX
1275
1276          /
1277          /CHECK THAT RIF WILL CLEAR WITH ADDRESSING MODULE
1278          /
1279
1280 004540 012737 004540 014372 748: MOV 0748,SCOLOP
1281 004546 052777 000001 175250      BIS 0XRIF,0ICSR
1282 004554 017700 175242      MOV 0ICMOD,R0
1283 004560 032777 000001 175236      BIT 0XRIF,0ICSR
1284 004566 001401          BEQ 728
1285
1286          /
1287          /\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
1288          /
1289 004570 104056          ERROR 56          IRIF WOULD NOT CLEAR
1290
1291          /
1292          /\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
1293          /
1294 004572 104412          728: SCOPEX
1295
1296          /
1297          /CHECK THAT BMT WILL INTERRUPT WHEN ENABLED
1298          /
1299
1300
1301 004574 104415          BMTTST: CKCNC
1302 004576 012737 004576 014372 108: MOV 0108,SCOLOP      /SET SCOPE LOOP
1303 004604 005037 017206          CLR INTFLG          /CLEAR INTERRUPT OCCURANCE FLAG
1304 004610 013700 014414          MOV FR200,R0
1305 004614 005777 175204 708: TST 0ICSR          /IS OUTPUT BUSY
1306 004620 100003          BPL .+10          /IF NO CONT
1307 004622 005300          DEC R0          /INC WATCHDOG
1308 004624 001373          BNE 708          /NOT TIMED OUT THEN 708
1309
1310          /
1311          /\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
1312          /
1313 004626 104035          ERROR 35          /OUTPUT BUSY IS STUCK ON
1314
1315          /
1316          /\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
1317          /
1318 004630 104412          SCOPEX
1319
1320 004632 013700 014416          MOV FR20,R0
1321 004636 005077 175162          CLR 0ICSR          /CLEAR ICR CSR
1322 004642 052777 000010 175154      BIS 0BMTEN,0ICSR      /SET BMT INTERRUPT ENABLE

```



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1379
1380
1381
1382
1383 005016 104412
1384
1385
1386
1387
1388
1389
1390
1391
1392
1393
1394 005020 012737 000001 014464
1395 005026 012737 000001 014462
1396 005034 012737 005034 014372
1397 005042 052777 040000 174754
1398 005050 005077 174750
1399 005054 005037 017206
1400 005060 013737 017172 177776
1401 005066 052777 000004 174730
1402 005074 052777 020000 174722
1403 005102 013700 014410
1404 005106 005300
1405 005110 001376
1406 005112 005737 017206
1407 005116 001001
1408
1409
1410
1411
1412 005120 104021
1413
1414
1415
1416
1417
1418
1419
1420 005122 104412
1421
1422 005124 023727 017206 000001
1423 005132 001401
1424
1425
1426
1427
1428 005134 104026
1429
1430
1431
1432
1433 005136 104412
1434

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1435
1436
1437
1438
1439 005140 013700 014416      MOV      FR20,R0
1440 005144 005037 017206      CLR      INTFLG
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      INTFLG
1446 005174 001001      BNE      35
1447
1448
1449
1450
1451 005176 104027      ;
1452      ERROR 27      ;MODULE INTERRUPT DID NOT HAPPEN
1453
1454
1455
1456 005200 104412      ;
1457      35: SCOPEX
1458 005202 042777 000004 174614  BIC      @MODEN,@ICSR
1459 005210 052777 000001 174606  BIS      @XIF,@ICSR      ;SET RIF BIT
1460 005216 005777 174600      TST      @ICMOD ;CLEAR RIF BIT
1461 005222 052777 040000 174574  BIS      @MAINT3,@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      45: TST      @ICSR      ;OUTPUT BUSY?
1476 005264 100003      BPL      55      ;NO, CONTINUE
1477 005266 005300      DEC      R0
1478 005270 001373      BNE      45
1479
1480
1481
1482
1483 005272 104035      ;
1484      ERROR 35      ;OUTPUT BUSY STUCK ON
1485
1486
1487
1488
1489 005274 104412      ;
1490      55: SCOPEX
1491 005276 052777 020000 174520  BIS      @MAINT2,@ICSR    ;SET MICROCODE MAINT BIT
1492 005304 005037 017206      CLR      INTFLG      ;CLEAR INTERRUPT OCCURANCE FLAG

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1491	005310	013737	017172	177776	MOV	PRIVL,00PSW	IALLOW INTERRUPTS
1492	005316	013700	014416		MOV	FR20,R0	
1493	005322	052777	000014	174474	BIS	#MODEN#BMTEN,#ICSR	ISET BMT AND MODULE INTERRUPT ENABLES
1494	005330	005300			DEC	R0	
1495	005332	001376			BNE	.-2	
1496	005334	005737	017206		TST	INTFLG	IDID INTERRUPT OCCUR?
1497	005340	001001			BNE	15	
1498							
1499							
1500							
1501							
1502	005342	104025					
1503							
1504							
1505							
1506	005344	104412			181	SCOPEX	
1507							
1508							
1509							
1510							
1511	005346	013700	014416		MOV	FR20,R0	
1512	005352	005037	017206		CLR	INTFLG	
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	INTFLG	INTERRUPT OCCUR?
1518	005402	001401			BEG	28	
1519							
1520							
1521							
1522							
1523	005404	104027					
1524							
1525							
1526							
1527	005406	104412			281	SCOPEX	
1528							
1529	005410	013700	014416		MOV	FR20,R0	
1530	005414	005037	017206		CLR	INTFLG	
1531	005420	042777	000014	174376	BIC	#MODEN#BMTEN,#ICSR	IBOUNCE BMT ENABLE
1532	005426	052777	000010	174370	BIS	#BMTEN,#ICSR	
1533	005434	005300			DEC	R0	
1534	005436	001376			BNE	.-2	
1535	005440	005737	017206		TST	INTFLG	INTERRUPT OCCUR?
1536	005444	001001			BNE	38	
1537							
1538							
1539							
1540							
1541	005446	104031					
1542							
1543							
1544							
1545	005450	104412			381	SCOPEX	
1546							


```

1547 005452 042777 000014 174344 BIC 8MODEN+8MTEN,0ICSR ICLEAR ENABLES
1548 005460 052777 000001 174336 BIR 8XRIF,0ICSR ISET RIF BIT
1549 005466 005777 174330 TST 0ICMOD ICLEAR RIF BIT
1550 005472 052777 040000 174324 BIR 8MAINT3,0ICSR IRESET MICROCODE IN CONTROLLER
1551 005500 005077 174320 CLR 0ICSR
1552 005504 005337 014456 DEC PASHUN IDEC PASS COUNT
1553 005510 001402 BEQ .+6 IDONE, .+6
1554 005512 000137 004410 JMP LOOP1 ILOOP BACK
1555 005516 032777 000040 173412 BIT 8SW5,0SWR ILOOP ON TEST SET
1556 005524 001002 BNE .+6 IYES, SEE IF THIS ONE
1557 005526 000137 011330 JMP TEST3 INO, CONT
1558 005532 017700 173400 MOV 0SWR,R0 IPICK UP SWR
1559 005536 042700 177477 BIC 0177477,R0 ICLEAR UNWANTED BITS
1560 005542 001002 BNE .+6 IRESULT 0, FOR TEST 0
1561 005544 000137 003504 JMP LPTST IYES, LOOP ON TEST 0
1562 005550 000137 011330 JMP TEST3
1563
1564
1565 .80TTL TEST OF MICRO-DIAGNOSTIC IN M8096
1566
1567 ITHIS SECTION USES THE MAINTENANCE MICROCODE OF THE REMOTE
1568 ICONTROL BOARD (M8096). M8094 IS RUNNING ITS OWN CODE.
1569 IMICROCODE IS KEYED ON ICR CSR BITS 8 AND 11
1570
1571
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 REMPRES
1577 005574 005637 014452 CLR PRIIND
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 104415 CKCNC
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 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 BIR 8MAINT0+MAINT1,0ICSR ISET MAINT BITS
1588 005660 012705 004000 MOV 04000,R5 ISET MAINT1 BIT IN R5
1589 005664 000240 NOP
1590
1591 ITEST FOR MODULE INPUT RANGE
1592
1593 005666 012701 000050 MOV 040,,R1
1594 005672 012702 017532 MOV 0ADDTA0,R2
1595 005676 013700 014410 628: MOV FR500,R0 ISET TIMEOUT FOR TESTING
1596 005702 005777 174116 TST 0ICSR IOF OUTPUT BUSY
1597 005706 100003 BPL .+10
1598 005710 005300 DEC R0
1599 005712 001373 BNE .-10
1600
1601
1602

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1603
1604 005714 104035          /          ERROR 35          /OUT
1605
1606
1607          /
1608          /
1609 005716 013700 014410          MOV      FR500,R0
1610 005722 010077 174074          MOV      R0,0ICMOD
1611 005726 032777 000200 174070 6081  BIT      0MODINT,0ICSR      /MODINT INDICATES M8096 HAS EXECUTED PROPER CODE
1612 005734 001014          BNE      013
1613 005736 005300          DEC      R0          /INC WATCHDOG
1614 005740 001372          BNE      608
1615
1616 005742 052777 000001 174054          B13      0XRIF,0ICSR      /SET RIF
1617 005750 005777 174046          TST      0ICMOD      /INITIATE RIF
1618 005754 040577 174044          BIC      R5,0ICSR      /CLEAR MAINT 1 TO STALL 96 MICROCODE
1619
1620          /
1621          /
1622          /
1623 005760 104034          /          ERROR 34          /MODULE INTERRUPT NOT POSTED BY M8096
1624
1625          /
1626          /
1627          /
1628 005762 000137 006344          JMP      158
1629
1630
1631 005766 017722 174032          0181  MOV      0ICSR,(2)+      /STORE RESULTS
1632 005772 017722 174030          MOV      0ICAR,(2)+
1633 005776 052777 000001 174020          B13      0XRIF,0ICSR      /SET RIF
1634 006004 005777 174012          TST      0ICMOD      /INITIATE RIF
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      R5,0ICSR      /CLEAR MAINT1 TO STALL '96 MICROCODE
1644 006020 012705 000046          MOV      030.,R5
1645 006024 012702 017542          MOV      #ADDTAB+10,R2
1646 006030 012200          0081  MOV      (2)+,R0      /GET READ
1647 006032 032700 010000          BIT      0ERRBIT,R0      /ERR BIT SET
1648 006036 001402          BEQ      028      /NO, CCNT
1649 006040 005264 000004          INC      ERRCNT(4)      /YES, INDICATE IT
1650 006044 012200          0281  MOV      (2)+,R0      /GET ICAR
1651 006046 005305          DEC      R5      /DONE
1652 006050 001454          BEQ      118      /YES, EXIT
1653
1654 006052 042700 177760          BIC      0177760,R0      /CLEAR UNWANTED BITS
1655 006056 005737 014422          TST      FLAG1      /FIRST GOOD READ?
1656 006062 001012          BNE      98      /NO, THEN 98
1657 006064 010001          MOV      R0,R1      /R1 IS FIRST ADDR
1658 006066 010037 001124          MOV      R0,SGDDAT      /SGDDAT IS LAST RECV ADDR

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1659 006072 010037 014432      MOV      R0,HGH      ;STORE AS HIGH VALUE
1660 006076 010037 014434      MOV      R0,LOW      ;STORE AS LOW VALUE
1661 006102 005237 014422      INC       FLAG1      ;SET FIRST RECEPTION FLAG
1662 006106 000431              BR        108      ;BRANCH
1663
1664 006110 020001      981    CMP      R0,R1      ;IS NEW READ TO FIRST READ
1665 006112 001433              BEQ       118      ;YES, 118
1666 006114 020037 014434      CMP      R0,LOW      ;IS NEW LOW
1667 006120 002002              BGE       998      ;NO, DON'T SWAP
1668 006122 010037 014434      MOV      R0,LOW      ;YES, SWAP
1669 006126 020037 014432      998:    CMP      R0,HGH      ;IS NEW HIGH
1670 006132 003402              BLE       988      ;NO, DON'T SWAP
1671 006134 010037 014432      MOV      R0,HGH      ;YES, SWAP
1672 006140 010003      988:    MOV      R0,R3      ;LETS CHECK IF GOOD
1673 006142 163703 001124      SUB      $GDDAT,R3    ;THAT POLL ADDRESSES
1674 006146 022703 000001      CMP      #1,R3      ;OCCUR IN SUCCESSION
1675 006152 001407              BEQ       108      ;YES THEN 108
1676 006154 005700              TST      R0          ;REPEAT?
1677 006156 001405              BEQ       108      ;YES
1678 006160 005237 001124      INC      $GDDAT
1679 006164 010037 001126      MOV      R0,$GDDAT
1680
1681
1682
1683
1684 006170 104020      ;
1685
1686
1687
1688
1689 006172 010037 001124      108:    MOV      R0,$GDDAT    ;MOVE THIS ADDRESS TO
1690 006176 000137 006030      968:    JMP      008          ;LOOP BACK
1691
1692
1693
1694
1695
1696 006202 042777 004405 173614 118:    BIC      $MAINT1+$MAINT0+$RIF+$MODEN,$ICSR ;CLEAR MAINT BITS RIF MOD INT ENA
1697 006210 005737 014466              TST      REMPRES      ;REMOTE PRESENT
1698 006214 001043              BNE      128          ;YES CONT
1699 006216 005764 000000              TST      PASCNT(4)    ;FIRST PASS
1700 006222 001040              BNE      128          ;NO, DON'T PRINT RESULTS
1701 006224 005737 014452              TST      PRIIND      ;ARE WE LOOPING ON THIS TEST
1702 006230 001035              BNE      128          ;YES, DON'T PRINT
1703 006232 013702 014432      148:    MOV      HGH,R2      ;SET UP TO PRINT
1704 006236 013701 014434      MOV      LOW,R1
1705 006242 013764 014432 000006      MOV      HGH,PERMGH(4)
1706 006250 013764 014434 000010      MOV      LOW,PERLOW(4)
1707 006256 005037 017200              CLR      WRKFLP
1708 006262 032777 020000 172646      BIT      #SW13,$SWR
1709 006270 001030              BNE      138
1710 006272 104413 023124              TYPE,    RESULT
1711 006276 010146              MOV      R1,-(SP)      ;SAVE R1 FOR TYPEOUT
1712 006300 104401              TYPOC
1713 006302 104413 023173              TYPE,    FINMES
1714 006306 010246              MOV      R2,-(SP)      ;SAVE R2 FOR TYPEOUT

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1715 006310 104401          TPOC          ;IGO TYPE--OCTAL ASCII(ALL DIGITS)
1716 006312 104413 022000  TYPE,      CRLF
1717 006316 005237 014466  INC        REMPRE
1718 006322 000413      BR        138
1719 006324 023764 014432 000006 125:  CMP      HIGH,PERHIGH(4) ;RESULTS PRINTED ONLY
1720 006332 001337      BNE        148 ;IF DIFFERENT FROM 1ST PASS
1721 006334 023764 014434 000010      CMP      LOW,PERLOW(4)
1722 006342 001333      BNE        148
1723 006344 042777 004405 173452 155:  BIC      @MAINT0+MAINT1+XRIF+MODEN,@ICSR
1724                                     /
1725                                     ;TEST OF ADDRESS WRAP AROUND CAPABILITY IN M8096
1726                                     /
1727
1728 006352 013737 002022 001124 135:  MOV      ICM00,SGDDAT ;SET UP GOOD DATA
1729 006360 012702 000020      MOV      @20,R2 ;SET UP COUNT
1730 006364 012737 000012 014460 ADWR1:  MOV      @10,,ERRLOP
1731 006372 012737 006372 014372 ADWR2:  MOV      @ADWR2,SCOLOP
1732 006400 052777 000007 173416      BIS      @XRIF+MODEN+ERREN,@ICSR
1733 006406 013700 014414      MOV      FR200,R0 ;SET TIMEOUT
1734 006412 005777 173406 705:  TST      @ICSR ;IS OUTPUT BUSY
1735 006416 100003      BPL      .+10 ;IF NO CONT
1736 006420 005300      DEC      R0 ;INC WATCHDOG
1737 006422 001373      BNE      705 ;NOT TIMED OUT THEN 705
1738
1739                                     /
1740                                     ;/////////////////////////////////////////
1741                                     /
1742 006424 104035          ERROR 35 ;OUTPUT BUSY ERROR
1743
1744                                     /
1745                                     ;/////////////////////////////////////////
1746                                     /
1747 006426 052777 004000 173370      BIS      @MAINT1,@ICSR ;SET MAINT BIT FOR NEXT TEST
1748 006434 000240 ADDWRP:  NOP
1749 006436 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 605:  BIT      @MODINT,@ICSR ;MOD INT KEYS M8096 HAS EXECUTED CODE
1754 006460 001003      BNE      .+10
1755 006462 005300      DEC      R0 ;INC WATCH DOG
1756 006464 001372      BNE      605
1757
1758                                     /
1759                                     ;/////////////////////////////////////////
1760                                     /
1761 006466 104034          ERROR 34 ;MODULE INTERRUPT NOT POSTED BY M8096
1762
1763                                     /
1764                                     ;/////////////////////////////////////////
1765                                     /
1766 006470 000240      NOP
1767 006472 013700 014414 705:  MOV      FR200,R0 ;SET TIMEOUT
1768 006476 005777 173322      TST      @ICSR ;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      703          ;NOT TIMED OUT THEN 703
1772
1773          ;
1774          ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
1775          ;
1776 006510 104035          ERROR    35          ;OUTPUT BUSY ON
1777
1778          ;
1779          ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
1780          ;
1781
1782 006512 032777 010000 173304      BIT      @RMBIT,@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      FR500,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,@BODAT      ;READ ICAR
1794 006562 042777 004000 173234      BIC      @MAINT1,@ICSR      ;CLEAR MAINT BIT
1795 006570 013701 014410          MOV      FR500,R1
1796 006574 005301          DEC      R1
1797 006576 001376          BNE      ,-2
1798 006600 042737 177760 001126      BIC      @177760,@BODAT      ;CLEAR BITS
1799 006606 006337 001126          ASL      @BODAT          ;SHIFT LEFT TO ALIGN
1800 006612 053737 002022 001126      BIS      @MOD,@BODAT      ;BIT SET IN OFFSET
1801 006620 023737 001126 001124      CMP      @BODAT,@GDDAT      ;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          ;
1810          ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
1811          ;
1812
1813 006632 062737 000002 001124 28:  ADD      @2,@GDDAT      ;SETUP FOR NEXT ADDRESS
1814 006640 005302          DEC      R2
1815 006642 001250          BNE      ADDR1          ;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      FR500,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	SHAINY3,0ICSR	IRESET M8094
1831	006710	013700	014410	MOV	FR500,R0	
1832	006714	005300		DEC	R0	IWAIT
1833	006716	001376		BNE	.-2	
1834	006720	017700	173102	MOV	0ICAR,R0	ICLEAR ANY ERRORS PENDING DUE 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	ERRTOT(4),ERTTL	IS ERROR COUNT SAME AS WHEN WE ENTERED
1841	006750	001406		BEQ	998	YES EXIT
1842	006752	032777	040000 172156	BIT	0SW14,0SWR	INO, THEN CHECK FOR POSSIBLE SCOPE LOOP
1843	006760	001402		BEQ	.*6	
1844	006762	000137	005632	JMP	LOOP2	
1845	006766	032777	000040 172142 9981	BIT	0SW5,0SWR	LOOP ON TEST SET
1846	006774	001411		BEQ	38	INO, CONT
1847	006776	017700	172134	MOV	0SWR,R0	IGET SWR
1848	007002	042700	177477	BIC	0177477,R0	ICLEAR UNWANTED BITS
1849	007006	022700	000200	CMP	0200,R0	ITEST 2 DESIRED
1850	007012	001002		BNE	.*6	
1851	007014	000137	005554	JMP	TEST2	
1852	007020	000240		NOP		
1853	007022	000240		NOP		
1854	007024	000240		NOP		
1855	007026	000137	007036	JMP	TTYTST	IGO TO NEXT TEST
1856						
1857						
1858						
1859						
1860						
1861						
1862						
1863						
1864	007032	005064	000000	TTYSTR: CLR	PASCNT(4)	
1865	007036	032777	002000 172072	TTYTST: BIT	0SW10,0SWR	IRUNNING REMOTELY?
1866	007044	001402		BEQ	.*6	INO, DO TTY TEST
1867	007046	000137	010304	JMP	ENDPAS	YES, CAN'T DO TTY TEST
1868	007052	012706	001100	MOV	01100,SP	ISSET STACK
1869	007056	005037	014464	CLR	PRMT1	IDON'T ALLOW REMOTE TYPE
1870	007062	005037	014462	CLR	PRMT	IDON'T BUFFER ERRORS
1871	007066	005737	014472	TST	REMOTE	IDID OPERATOR SET UP TEST WRONG?
1872	007072	001402		BEQ	.*6	INO, CONT
1873	007074	000137	010304	JMP	ENDPAS	YES, DON'T DO TEST
1874	007100	005764	000000	TST	PASCNT(4)	IFIRST PASS
1875	007104	001002		BNE	TTYL	YES, DON'T TYPE HEADER
1876	007106	104413		TYPE		
1877	007110	025035		TSTTTY		
1878		007112				
1879	007112	012737	000001 014466	MOV	01,REMPRE	
1880	007120	052777	000041 172676	BIS	0TYEN+XRIF,0ICSR	ICLEAR ANY PENDING DA
1881	007126	017700	172670	MOV	0ICMOD,R0	
1882	007132	005000		CLR	R0	IWAIT

TTYL=.

1883	007134	005200			INC	R0	
1884	007136	001376			BNE	.-2	
1885	007140	017700	172656		MOV	0ICMOD,R0	ICLEAR AGAIN
1886	007144	005000			CLR	R0	IWAIT
1887	007146	005200			INC	R0	
1888	007150	001376			BNE	.-2	
1889	007152	042777	000040	172644	BIC	0TTYEN,0ICSR	ICLEAR ENABLE
1890	007160	012737	000340	177776	181	MOV	0340,00PSW
1891	007166	005037	014460		CLR	ERRLOP	
1892	007172	005037	001124		581	CLR	SGDDAT
1893	007176	012737	007176	014372	381	MOV	038,SCOLOP
1894	007204	052777	001041	172612		BIS	0TTYEN+0TMTEN+XRIF,0ICSR
1895	007212	013700	014410			MOV	FR500,R0
1896	007216	032777	100000	172602		BIT	0XTMT,0ICAR
1897	007224	001003				BNE	.-10
1898	007226	005300				DEC	R0
1899	007230	001372				BNE	.-12
1900							
1901							
1902							
1903							
1904	007232	104015					
1905							
1906							
1907							
1908							
1909	007234	042777	001000	172562		BIC	0TMTEN,0ICSR
1910							
1911	007242	013700	014410			MOV	FR500,R0
1912	007246	005777	172552			TST	0ICSR
1913	007252	100003				BPL	.-10
1914	007254	005300				DEC	R0
1915	007256	001373				BNE	.-10
1916							
1917							
1918							
1919							
1920	007260	104035					
1921							
1922							
1923							
1924							
1925	007262	104411					
1926							
1927	007264	013777	001124	172530		MOV	SGDDAT,0ICMOD
1928	007272	052777	001000	172524		BIS	0TMTEN,0ICSR
1929	007300	032777	100000	172520		BIT	0XTMT,0ICAR
1930	007306	001401				BEQ	968
1931							
1932							
1933							
1934							
1935	007310	104053					
1936							
1937							
1938							

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1939
1940 007312 104411
1941 007314 042777 001000 172502
1942 007322 017700 172474
1943
1944 007326 013700 014420
1945 007332 032777 010000 172464 998:
1946 007340 001402
1947 007342 005264 000004
1948 007346 032777 010000 172452 975:
1949 007354 001016
1950 007356 005300
1951 007360 001364
1952
1953 007362 005737 014466
1954 007366 001012
1955 007370 005237 014466
1956
1957 007374 013700 014420
1958 007400 005300
1959 007402 001376
1960 007404 017700 172412
1961
1962
1963
1964
1965
1966 007410 104033
1967
1968
1969
1970
1971
1972 007412 104411
1973
1974
1975 007414 052777 001000 172402
1976 007422 032777 100000 172376
1977 007430 001001
1978
1979
1980
1981
1982 007432 104054
1983
1984
1985
1986
1987 007434 104411
1988
1989 007436 042777 001000 172360
1990 007444 052777 000001 172352
1991 007452 017737 172344 001126
1992
1993 007460 023737 001124 001126
1994 007466 001425

/
965: SCOTTY
BIC #TBM TEN, #ICSR
MOV #ICMOD, R0

MOV FRM110, R0
998: BIT #ERRBIT, #ICSR ;ERROR BIT SET?
BEQ 975 ;NO, THEN 975
INC ERRCNT(4) ;YES, THEN ACCOUNT FOR IT
975: BIT #DA, #ICAR ;DA SET?
BNE 988
DEC R0 ;INC WATCHDOG
BNE 998

TST REMPTE
BNE 988+2 ;IT MAY BE OPERATOR ERROR, DON'T FLAG
INC ERRLOP ;YET

MOV FRM110, R0 ;SET TO DELAY 110 MSEC
DEC R0 ;TO ALLOW ANY LATE DA'S
BNE -2
MOV #ICMOD, R0 ;CLEAR DA IF THERE

/
/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
/
ERROR 33 ;DA NOT SET IN TTY LOOP TEST

/
/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
/

988: SCOTTY

BIS #TBM TEN, #ICSR
BIT #XTBMT, #ICAR ;TRANSMITTER EMPTY?
BNE 955 ;YES, CONT

/
/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
/
ERROR 54 ;TBM NOT SET

/
/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
/

958: SCOTTY

BIC #TBM TEN, #ICSR
BIS #XRIF, #ICSR ;SET RIF BIT
MOV #ICMOD, #DDAT ;READ TTY

CMP #GDDAT, #DDAT ;READ OKAY
BEQ 28 ;YES CONT?

```

```

1995
1996 007470 005737 001124          TST      SGDDAT      IIS GOOD DATA 0?
1997 007474 001016                    BNE      48          INO PRINT ERROR
1998 007476 023727 001126 000377    CMP      SGDDAT,0377 IIS BAD DATA 377?
1999 007504 001012                    BNE      48          INO, PRINT ERROR
2000                                     IGOOD DATA = 0   BAD DATA = 337
2001                                     IAPPEARS LIKE PLUG NOT IN END
2002                                     IOPERATOR ERROR, TELL AND SKIP TEST
2003
2004 007506 005764 000000          TST      PASCNT(4)    IFIRST PASS?
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          JMP      ENDPAS      IEND PASS
2009
2010 007532 005737 014460          481      TST      ERRLOP
2011 007536 001001                    BNE      28
2012
2013                                     I
2014                                     I//////////
2015                                     I
2016 007540 104023          ERROR 23          IINCORRECT DATA REC'D FROM TTY
2017
2018                                     I
2019                                     I//////////
2020                                     I
2021 007542 104411          281      SCOTTY
2022 007544 005037 014466          CLR      REMPRES
2023
2024 007550 005237 001124          INC      SGDDAT
2025 007554 005037 014460          CLR      ERRLOP
2026 007560 032737 000400 001124    BIT      0400,SGDDAT  IDONE WHOLE TEST (0-377)
2027 007566 001603                    BEQ      38          INO, CONT
2028 007570 000137 007574          JMP      TTYINT      IDO INTERRUPT TEST
2029
2030                                     I
2031 ITTY 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      IDATA ON IT'S WAY FLOP
2036 007604 005237 017176          INC      TTYFLP      ISET TTY FLOP
2037 007610 005037 001124          CLR      SGDDAT      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      FR500,R0
2041 007632 005777 172166          TST      0ICSR
2042 007636 100003          BPL      .+10
2043 007640 005300          DEC      R0
2044 007642 001373          BNE      .-10
2045
2046                                     I
2047                                     I//////////
2048                                     I
2049 007644 104035          ERROR 35          IOUTPUT BUSY STUCK
2050

```



```

2051
2052
2053
2054 007646 013777 001124 172146      MOV      SGDDAT, PICMOD      ISTART THE TRANSMISSION
2055
2056 007654 052777 000006 172142 TTY1:  BIS      @MODEN+ERREN, @ICSR      ISET INTERRUPT ENABLES
2057 007662 013737 017172 177776      MOV      PRILVL, @PSW      IALLOW INTERRUPTS
2058 007670 005000
2059 007672 032737 000400 001124 28:  CLR      R0
2060 007700 001003      BIT      @400, SGDDAT      IDONE
2061 007702 005200      BNE      18
2062 007704 001372      INC      R0
2063      BNE      28
2064
2065
2066
2067 007706 104057      ERROR      57      ITTY TEST HUNG
2068
2069
2070
2071
2072      007710      TTYEND=.
2073
2074 007710 012737 000340 177776 18:  MOV      @340, @PSW      IINHIBIT INTERRUPTS
2075 007716 005077 172102      CLR      @ICSR      ICLEAR CSR
2076 007722 005037 017176      CLR      TTYFLP      ICLEAR TTY FLAG
2077 007726 032777 000040 171202      BIT      @SW5, @SWR      ILOOP ON TEST SW SET
2078 007734 001411      BEQ      58      INO, CONT
2079 007736 017700 171174      MOV      @SWR, R0 IGET SWR
2080 007742 042700 177477      BIC      @177477, R0
2081 007746 022700 000300      CMP      @300, R0
2082 007752 001002      BNE      .+6
2083 007754 000137 007112      JMP      TTYL      IYES
2084 007760 005764 000000 58:  TST      PASCNT(4)      IFIRST PASS
2085 007764 001404      BEQ      68
2086 007766 005037 002032      CLR      PWRFLG      ICLEAR PWR FLG
2087 007772 000137 010304      JMP      ENDPAS
2088 007776 005737 002032 68:  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      ITEST OF POWER FAIL BIT ON ICR
2093
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      @PWRFL, @ICSR      ISENSE POWER FAIL
2098 010032 001774      BEQ      .+6      IWAIT FOR IT
2099 010034 104413 025161      TYPE,    PWRMES IPRINT POWER FAIL SENSED
2100 010040 052777 040000 171756      BIS      @MAINT3, @ICSR
2101 010046 104413 025332      TYPE,    PWRMS2
2102 010052 032777 010000 171744 48:  BIT      @ERNBIT, @ICSR      IPRINT "POWER UP.....
2103 010060 001010      BNE      38      IIS IT UP
2104 010062 052777 040000 171734      BIS      @MAINT3, @ICSR      INO, CLEAR ERROR AND TRY AGAIN
2105 010070 012737 000001 014464      MOV      @1, PRRMT1      ISYSTEM RESET
2106 010076 000137 010304      JMP      ENDPAS      IALLOW REMOTE PRINT
                                IGO DO END PRINT
  
```

2107 010102 005777 171720
 2108 010106 013700 014414
 2109 010112 005300
 2110 010114 001376
 2111 010116 000755

38: TST P1CAN
 MOV FR200,R2
 DEC R0
 BNE -2
 BR 48

ICLEAR ERROR

2112
 2113
 2114
 2115
 2116
 2117
 2118
 2119
 2120

;
 ;ROUTINE TO PRINT SUMMARY
 ;

2121
 2122 010120 104413 024405
 2123 010124 013700 014400
 2124 010130 010046

SUMPRY: 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

2125
 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

TYPEOS
 .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 SRTFF
 TYPE, PASHES
 MOV R1,-(SP)
 TYPEOS
 JSR PC,WATROU
 TYPE, ERMES
 MOV R2,-(SP)
 TYPEOS
 JSR PC,WATROU
 TYPE, TREHH
 MOV R3,-(SP)
 TYPEOS
 JSR PC,WATROU
 TYPE, CRLF
 TYPE, CRLF
 RTS PC

INDICATE 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

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

ROUTINE TO WAIT BETWEEN DISPLAYING RUN SUMMARY

2152
 2153
 2154
 2155
 2156 010254 032777 002000 170654
 2157 010262 001407
 2158 010264 012700 000010
 2159 010270 005001
 2160 010272 005301
 2161 010274 001376
 2162 010276 005300

WATROU: BIT #SW10,#SWR
 BEQ 28
 MOV #10,R0
 CLR R1
 18: DEC R1
 BNE -2
 DEC R0

2163	010300	001374			BNE	15	
2164	010302	000207		25:	RTS	PC	
2165							
2166							
2167							
2168							
2169							
2170							
2171							
2172							
2173	010304	004737	010720		ENDPAS:	JSR	PC,PRTHES
2174	010310	005264	000000			INC	PASCNT(4)
2175	010314	005037	014462			CLR	PRRMT
2176	010320	012737	000001	014464		MOV	01,PRRMT1
2177	010326	032777	000020	170602	18:	BIT	0SW4,0SWR
2178	010334	001502				BEQ	SYSTST
2179		010336			ENDPS1:		
2180	010336	032777	001000	170572		BIT	0SW9,0SWR
2181	010344	001440				BEQ	PRYSUM
2182	010346	032777	002000	170562		BIT	0SW10,0SWR
2183	010354	001432				BEQ	28
2184	010356	005737	017204			TST	WRKFLP
2185	010362	001002				BNE	38
2186	010364	104413	025146			TYPE,	WRKMES
2187	010370	032777	010000	170540	38:	BIT	0SW12,0SWR
2188	010376	001404				BEQ	58
2189	010400	104413	025146			TYPE,	WRKMES
2190	010404	000137	003504			JMP	LPTST
2191	010410	005237	017204		58:	INC	WRKFLP
2192	010414	112737	000216	017200		MOVB	0210,BLINK
2193	010422	032737	000001	017204		BIT	01,WRKFLP
2194	010430	001402				BEQ	48
2195	010432	005237	017200			INC	BLINK
2196	010436	104413	017200		48:	TYPE,	BLINK
2197	010442	000137	003504		28:	JMP	LPTST
2198	010446	004737	010120		PRYSUM:	JSR	PC,SUMPRT
2199	010452	000240			WAIT2:	NOP	
2200	010454	012777	011116	003722		MOV	0ICRMT,0VECTOR
2201	010462	012737	011316	000060		MOV	0TTYWT,0060
2202	010470	052777	000040	171326		BIS	0TTYEN,0ICSR
2203	010476	017700	171320			MOV	0ICMOD,R0
2204	010502	042777	000040	171314		BIC	0TTYEN,0ICSR
2205	010510	104413	024736			TYPE,	WAITIN
2206	010514	052777	000026	171302	WAIT1:	BIS	0ERRN+MODEN+PHFEN,0ICSR
2207	010522	052777	000100	170412		BIS	0100,0STKS
2208	010530	005037	177776			CLR	00PSW
2209	010534	000001				WAIT	
2210	010536	000000				HALT	
2211	010540	000776				BR	0-2
2212	010542	022737	000001	002034	SYSTST:	CMP	01,ICRCNT
2213	010550	001002				BNE	18
2214	010552	000137	010336			JMP	ENDPS1
2215	010556	032777	001000	170352	18:	BIT	0SW9,0SWR
2216	010564	001013				BNE	28
2217	010566	005737	002056			TST	SW9FF
2218	010572	001406				BEQ	58

/PRINT ANY ERRORS BUFFERED
 /INC PASS COUNT
 /ALLOW PRINT TO REMOTE TTY
 /
 /TESTING ONE FILE BOX?
 /NO, THEN CHECK ENTIRE SYSTEM

 /LOOP ON DIAGNOSTIC
 /NO, THEN PRINT SUMMARY
 /REMOTE TTY REQUESTED
 /NO, THEN GO TO 28
 /IS "TESTING" DISPLAYED
 /YES, THEN GO FLASH IT
 /PRINT TESTING

 /BLINK WORKING IF RT02
 /IF NOT SEND NULLS

 /LOOP
 /PRINT SUMMARY

 /SET UP FOR ICR TTY AND
 /CONSOLE TTY INTERRUPTS,

 /ALLOW ICR INTERRUPTS
 /ALLOW TTY INTERRUPTS
 /CLEAR PSW

 /ONE BOX ON SYSTEM
 /NO, MORE THEN 18

 /LOOPING
 /YES DO NOT PRINT SUMMARY
 /WAS SW 9 EVER SET
 /NO, ALLOW PRINT

2219	010574	005737	002030			TST	ICRHUN		IFIRST SUMMARY
2220	010600	001403				BEQ	58		IYES, ALLOW PRINT
2221	010602	005737	002060			TST	SRTPP		IIN MIDDLE OF BOXES
2222	010606	001402				BEQ	28		IYES, DONT PRINT YET
2223	010610	004737	010120	581		JSR	PC,SUMPRT		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,R4		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	0SW9,0SWR		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	STARTA		ILOOP ON DIAGNOSTIC
2240									
2241									
2242									
2243									
2244									
2245									
2246									
2247									
2248									
2249	010720	032777	002000	170210		PRTHES: BIT	0BIT10,0SWR		IREMOTE REQUESTED
2250	010726	001001				BNE	.+4		IYES, CONT
2251	010730	000207			181	RTS	PC		INO, EXIT
2252	010732	012700	017776			MOV	00UF0EG,R0		ISET UP START
2253	010736	022710	100601			CMP	0100601,(0)		IANYTHING THERE
2254	010742	001772				BEQ	18		INO, EXIT
2255									
2256	010744	052777	001040	171052	281	BIS	0TTYEN+TBMTEEN,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	0TBMTEEN,0ICSR		
2270	011032	112001				MOV0	(0)+,R1		
2271	011034	010177	170762			MOV	R1,0ICMOD		
2272	011040	121027	000015			CMP0	(0),015		
2273	011044	001404				BEQ	38		
2274	011046	121027	000201			CMP0	(0),0201		

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2275 011052 001334 BNE 23
2276 011054 000414 BR 43
2277 011056 012702 000004 381 MOV B4,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 OTTYEN,0ICSR
2287 011114 000207 RTS PC
2288
2289
2290 011116 022626 ICRWT1 POP2SP
2291 011120 032777 002000 170676 BIT 0PWRFL,0ICSR
2292 011126 001405 BEQ 18
2293 011130 012737 000001 014474 MOV B1,PWRFLP
2294 011136 000137 016530 JMP RSTRT
2295 011142 032777 000200 170654 181 BIT 0MODINT,0ICSR
2296 011150 001445 BEQ ICRWT2
2297 011152 032777 002000 167756 BIT 0SW10,0SWR
2298 011160 001441 BEQ ICRWT2
2299 011162 032777 010000 170636 BIT 0DA,0ICAR
2300 011170 001435 BEQ ICRWT2
2301 011172 052777 000041 170624 BIS OTTYEN+XRIF,0ICSR
2302 011200 017700 170616 MOV 0ICMOD,R0
2303 011204 042777 000040 170612 BIC OTTYEN,0ICSR
2304 011212 042700 000240 ICRWT3: BIC 0240,R0
2305 011216 022700 000114 CMP 0'L,R0
2306 011222 001407 BEQ ICRWT1
2307 011224 022700 000122 CMP 0'R,R0
2308 011230 001002 BNE ,=6
2309 011232 000137 016634 JMP RST1
2310 011236 000137 010514 JMP WAIT1
2311 011242 005037 014462 ICRWT1: CLR PRMT
2312 011246 012737 000001 014464 MOV B1,PRMT1
2313 011254 104413 024657 TYPE, LOADIN
2314 011260 000137 033000 JMP GOLOAD
2315 011264 032777 010000 170532 ICRWT2: BIT 0ERRBIT,0ICSR
2316 011272 001402 BEQ 23
2317 011274 017700 170526 MOV 0ICAR,R0
2318 011300 052777 000001 170516 281 BIS 0XRIF,0ICSR
2319 011306 005777 170510 TST 0ICMOD
2320 011312 000137 010514 JMP WAIT1
2321
2322
2323
2324 011316 022626 TTYWT1 POP2SP
2325 011320 017700 167620 MOV 0STKB,R0
2326 011324 000137 011212 JMP ICRWT3
2327
2328
2329
2330

```

ICR INTERRUPTS HERE (FROM QUESTION R OR L?)
IPWR FAIL INTERRUPT
INO, CONTINUE
INDICATE POWER FAIL
IGO TYPE MESSAGE

IMOD INT?
INO, CONT (CHECK ERROR)
IIS REMOTE TTY ON SYSTEM
INO, THEN GO SKIP DA
IDO SET
INO, GO CHECK ERROR
IGET TO READ ICR TTY

ILOOK FOR 'R' OR 'L'

I'L' GO LOAD

I'R' GO START
IWAIT FOR NEXT
IPRINT 'LOADING'

IGO TO ABS LOADER
ICHECK FOR ERROR

ICLEAR INT, EXIT

ICONSOLE TTY INTERRUPTS HERE

.50TTL 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      011400 011400          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          181 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          201 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      %MODINT,%ICSR      ;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      INTFLG      ;CLEAR INTERRUPT OCCURRENCE FLAG
2401 011562 013700 014416      MOV      FR20,R0
2402 011566 052777 000004 170230      BIS      %MODEN,%ICSR      ;ENABLE MODULE INTERRUPT
2403 011574 052777 020000 170222      BIS      %MAINT2,%ICSR     ;SET MAINT MODE
2404 011602 005300                      DEC      R0
2405 011604 001376                      BNE      .-2
2406 011606 005737 017206      TST      INTFLG      ;INTERRUPT OCCUR?
2407 011612 001001                      BNE      38
2408
2409
2410
2411      ;
2412      ;////////////////////////////////////
2413 011614 104006                      ERROR 6              ;INTERRUPT NOT PRESENT
2414
2415
2416
2417
2418
2419      ;
2420      ;////////////////////////////////////
2421 011616 104407 381      SCOP94
2422 011620 032777 000200 170176      BIT      %MODINT,%ICSR      ;CHECK FOR MODULE INTERRUPT
2423 011626 001001                      BNE      TEST3A
2424
2425      ;
2426      ;////////////////////////////////////
2427      ;
2428
2429 011630 104010                      ERROR 10              ;MODULE INTERRUPT DIDN'T CAUSE INTERRUPT
2430
2431
2432      ;
2433      ;////////////////////////////////////
2434 011632 104407      TEST3A: SCOP94
2435 011634 052777 000001 170162      BIS      01,%ICSR      ;SET RIF BIT
2436 011642 005777 170154      TST      %ICMOD      ;CLEAR RIF BIT
2437
2438 011646 032777 000200 170150      BIT      %MODINT,%ICSR      ;CHECK IF MOD INT IS STILL SET
2439 011654 001401                      BEQ      .+4              ;NO, OK
2440
2441      ;
2442      ;////////////////////////////////////

```

```

2443
2444 011656 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      ;CLEAR INTERRUPT OCCURRENCE FLAG
2456 011666 042777 000004 170130  BIC      #MODEN,#PICSR  ;CLEAR MOD INT ENABLER BIT
2457 011674 052777 000002 170122  BIC      #ERREN,#PICSR  ;SET ERROR INT ENABLE BIT
2458 011702 013700 014416    MOV      FR20,R0
2459 011706 042777 020000 170110  BIC      #MAINT2,#PICSR ;CLEAR 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      18          ;YES, THEN 18
2464
2465 ;
2466 ;////////////////////////
2467 ;
2468 011726 104011          ERROR 11          ;ERROR BIT DID NOT INTERRUPT
2469
2470 ;
2471 ;////////////////////////
2472 ;
2473 011730 104407          18: SCOP94
2474
2475 ;
2476 ;TEST ERROR BIT ACTUALLY CAUSED INTERRUPT
2477 ;
2478
2479 011732 005037 017206    CLR      INTFLG      ;CLEAR INTERRUPT OCCURRENCE FLAG
2480 011736 032777 010000 170060  BIT      #ERRBIT,#PICSR ;TEST ERROR BIT
2481 011744 001001    BNE      28          ;SET, THEN 28
2482
2483 ;
2484 ;////////////////////////
2485 ;
2486 011746 104010          ERROR 10          ;ERROR BIT WAS NOT CAUSE OF INTERRUPT
2487
2488 ;
2489 ;////////////////////////
2490 ;
2491 011750 104407          28: SCOP94
2492
2493 ;
2494 ;
2495 ;CHECK THAT BOUNCING ERROR INTERRUPT ENABLE DOES CAUSE
2496 ; ANOTHER INTERRUPT
2497 ;
2498

```

```

2499 011752 013700 014416      MOV      FR20,R0
2500 011756 042777 000002 170040    BIC      @ERRN,@ICSR
2501 011764 052777 000002 170032    BIS      @ERRN,@ICSR
2502 011772 005300              DEC      R0
2503 011774 001376              BNE      .-2
2504 011776 005737 017206          TST      INTFLG
2505 012002 001001              BNE      998
2506
2507      ;
2508      ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\
2509      ;
2510 012004 104030              ERROR 30          ;BOUNCED ERROR ENABLE - NO INTERRUPT
2511
2512      ;
2513      ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\
2514      ;
2515 012006 104407          998:      SCOP94
2516
2517      ;CHECK ERROR BIT CLEARS WITH ADDRESSING ICAR
2518      ;
2519
2520 012010 005777 170012          TST      @ICAR          ;ACCESS ICAR
2521 012014 032777 010000 170002    BIT      @ERRNBIT,@ICSR    ;ERROR BIT STILL SET
2522 012022 001401              BEQ      38          ;NO, THEN 38
2523
2524      ;
2525      ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\
2526      ;
2527 012024 104013              ERROR 13          ;ERROR BIT DID NOT CLEAR WITH ADDRESSING ICAR
2528
2529      ;
2530      ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\
2531      ;
2532
2533 012026 104407          38:      SCOP94
2534 012030 052777 000001 167766    BIS      @XRIF,@ICSR          ;SET RIF BIT
2535 012036 005777 167760          TST      @ICMOD          ;ACCESS MODULE TO CLEAR RIF BIT
2536
2537      ;
2538      ;DATA VALID SHOULD BE FALSE, LETS CHECK IT
2539      ;
2540
2541 012042 042777 000002 167756      BIC      @ERRN,@ICSR          ;CLEAR ERROR INT ENABLE
2542 012050 052777 000004 167746      BIS      @MODEN,@ICSR          ;SET MODULE INTERRUPT ENABLE
2543 012056 013700 014416      MOV      FR20,R0
2544 012062 052777 020000 167734      BIS      @MAINT2,@ICSR        ;SET MAINT BIT
2545 012070 005300              DEC      R0
2546 012072 001376              BNE      .-2
2547 012074 005737 017206          TST      INTFLG          ;INTERRUPT OCCUR
2548 012100 001001              BNE      48
2549
2550      ;
2551      ;/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\
2552      ;
2553 012102 104014              ERROR 14          ;DATA VALID WAS TRUE
2554

```



```

2555
2556
2557
2558 012104 104407
2559
2560
2561
2562
2563
2564 012106 005037 017206 CLR INTFLG ;CLEAR INTERRUPT OCCURRENCE FLAG
2565 012112 052777 000001 167704 BIS #XRI,0ICSR ;SET RIF
2566 012120 005777 167676 TST #ICMOD ;CLEAR RIF
2567 012124 052777 001004 167672 BIS #MODEN+TBMTEN,0ICSR ;SET MOD. INT. ENABLE
2568 012132 013700 014416 MOV FR20,R0
2569 012136 042777 020000 167660 BIC #MAINT2,0ICSR ;SET MAINT BIT
2570 012144 005300 DEC R0
2571 012146 001376 BNE .-2
2572 012150 005737 017206 TST INTFLG ;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 INTFLG ;CLEAR INTERRUPT OCCURRENCE FLAG
2587 012166 032777 100000 167632 BIS #100000,0ICAR ;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 #XRI,0ICSR
2601 012210 005777 167606 TST #ICMOD
2602 012214 042777 001000 167602 BIC #TBMTEN,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 TEST30: CLR INTFLG IFCLEAR INTERRUPT OCCURANCE
2613 012226 012737 000001 017202 MOV #1,TIMTRP
2614 012234 012777 000000 167560 MOV #0,0ICMOD ISEND OUT
2615 012242 052777 000006 167554 BIS #MODEN+ERREN,0ICSR ISET ERROR ENABLE AND MODULE ENABLE
2616 012250 013700 014410 MOV FR500,R0
2617 012254 052777 020000 167542 BIS #MAINT2,0ICSR ISET MAINT BIT FOR MICROCODE
2618 012262 005300 DEC R0 IWAIT FOR INTERRUPT, INC WATCH DOG
2619 012264 001376 BNE .-2
2620
2621 012266 005737 017206 TST INTFLG IDID INTERRUPT OCCUR?
2622 012272 001001 BNE 15
2623
2624
2625
2626
2627 012274 104037
2628
2629
2630
2631
2632 012276 104407 15: SCOP94
2633
2634 012300 032777 010000 167516 BIT #ERNBIT,0ICSR IDID ERROR BIT INTERRUPT INDICATING
2635 012306 001001 BNE 29 ITIMEOUT OF MASTER
2636
2637
2638
2639
2640
2641 012310 104040
2642
2643
2644
2645
2646 012312 104407 28: SCOP94
2647
2648 012314 032777 000200 167502 BIT #MODINT,0ICSR IDID MODULE INTERRUPT INDICATING
2649 012322 001401 BEQ 38 ITHAT DATA WAS PRESENT
2650
2651
2652
2653
2654 012324 104041
2655
2656
2657
2658
2659 012326 104407 35: SCOP94
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	TEST3C: CLR	INTFLG	ICLEAR INTERRUPT OCCURANCE
2670	012350	052777	000001 167446	BIS	#XRIF,#ICSR	ICLEAR RIF BIT
2671	012356	005777	167440	TST	#ICMOD	ICLEAR RIF BIT
2672	012362	017700	167440	MOV	#ICAR,R0	ICLEAR ERROR BIT
2673	012366	052777	000040 167430	BIS	#TTYEN,#ICSR	
2674	012374	017700	167422	MOV	#ICMOD,R0	ICLEAR DA
2675	012400	042777	000040 167416	BIC	#TTYEN,#ICSR	
2676	012406	013700	014410	MOV	FR500,R0	
2677	012412	012777	000300 167402	MOV	#300,#ICMOD	ICLEAR DA
2678	012420	042777	020000 167376	BIC	#MAINT2,#ICSR	ICLEAR DA
2679	012426	005300		DEC	R0	ICLEAR DA
2680	012430	001376		BNE	.-2	ICLEAR DA
2681						
2682	012432	005737	017206	TST	INTFLG	ICLEAR DA
2683	012436	001003		BNE	13	ICLEAR DA
2684						
2685	012440	005337	014374	DEC	TENCN1	ICLEAR DA
2686	012444	001401		BEG	58	ICLEAR DA
2687	012446	000426		BR	88	ICLEAR DA
2688						
2689						
2690						
2691	012450	104042		58:	ERROR 42	ICLEAR DA
2692						
2693						
2694						
2695						
2696	012452	104007		18:	SCOP94	ICLEAR DA
2697						
2698	012454	032777	010000 167344	BIT	#DA,#ICAR	ICLEAR DA
2699	012462	001411		BEG	28	ICLEAR DA
2700						
2701	012464	052777	000040 167332	BIS	#TTYEN,#ICSR	ICLEAR DA
2702	012472	017700	167324	MOV	#ICMOD,R0	ICLEAR DA
2703	012476	042777	000040 167320	BIC	#TTYEN,#ICSR	ICLEAR DA
2704						
2705						
2706						
2707						
2708	012504	104043			ERROR 43	ICLEAR DA
2709						
2710						
2711						
2712						
2713	012506	104007		28:	SCOP94	ICLEAR DA
2714						
2715	012510	032777	000200 167306	BIT	#MODINT,#ICSR	ICLEAR DA
2716						
2717	012516	001001		BNE	48	ICLEAR DA
2718						
2719						
2720						
2721						
2722	012520	104044			ERROR 44	ICLEAR DA


```

2723
2724
2725
2726
2727
2728 012522 104407 48: SCOP94
2729
2730 012524 052777 000041 167272 88: BIS #XRIFF+TTVEN,0ICSR
2731 012532 017700 167264 MOV 0ICMOD,R0
2732 012536 042777 000040 167260 BIC 0TTVEN,0ICSR
2733 012544 017700 167256 MOV 0ICAR,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 #340,00PSW ;INHIBIT INTERRUPTS
2746 012574 052777 001000 167222 BIS 0TBMTEN,0ICSR ;SET TBMT ENABLE
2747 012602 012737 000001 014446 MOV #1,TRACK ;SET LOOP INDICATOR
2748 012610 052737 000100 014444 BIS 0BIT0,TEMP1 ;SET BIT 14 FOR FIRST LOOP
2749 012616 052777 000006 167200 BIS 0MODEN+ERREN,0ICSR ;SET ENABLES
2750 012624 013777 014444 167170 38: MOV TEMP1,0ICMOD ;SEND PATTERN
2751 012632 052777 020000 167164 BIS 0MAINT2,0ICSR ;SET MAINT BIT TO START MICROCODE
2752 012640 013700 014410 18: MOV FR500,R0
2753 012644 032777 000200 167152 BIT 0MODINT,0ICSR
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 0ERRBIT,0ICSR ;TEST FOR ERROR INTERRUPT
2777 012672 001404 BEQ 48
2778

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2779
2780 012674 005237 014460 INC ERRLOP
2781 012700 005264 000004 INC ERRCNT(4)
2782 012704 032777 010000 167114 451 BIT #DA,#ICAR ;TEST FOR DA
2783 012712 001421 BEQ 25
2784
2785 012714 052777 000040 167102 BIS #TTYEN,#ICSR ;CLEAR DA
2786 012722 017700 167074 MOV #ICMOD,R0
2787 012726 042777 000040 167070 BIC #TTYEN,#ICSR
2788
2789 012734 104414 CKPWF
2790
2791
2792 012736 005337 002054 7151 DEC TENCNT ;FOR NOISE IMMUNITY
2793 012742 001011 BNE 635
2794 012744 005237 014460 INC ERRLOP
2795 012750 005264 000004 INC ERRCNT(4)
2796
2797
2798
2799 012754 104045
2800
2801
2802
2803
2804 012756 104407 251 SCOP94
2805
2806 012760 005737 014460 TST ERRLOP
2807 012764 001426 BEQ 825
2808 012766 017700 167034 6351 MOV #ICAR,R0 ;CLEAR ERROR
2809 012772 052777 000001 167024 BIS #XRIF,#ICSR ;SET RIF
2810 013000 017700 167016 MOV #ICMOD,R0 ;CLEAR RIF , MOD INTERRUPT
2811 013004 005037 014460 CLR ERRLOP
2812 013010 032777 000000 166120 BIT #SW0,#SWR
2813 013016 001402 BEQ .+6
2814 013020 000137 013360 JMP SWLOOP
2815 013024 005737 002054 TST TENCNT
2816 013030 001002 BNE .+6
2817 013032 000137 013570 JMP 725
2818 013036 000137 013504 JMP 995 ;ERROR SENSED, RE-SEND MESSAGE
2819
2820
2821
2822 ;DATA HAS BEEN LOADED INTO THE ICAR IN THE FOLLOWING PATTERN
2823 ;(BITS 15-0), WITH THOSE BITS OF THE OUTGOING MESSAGE
2824 ;PATTERN IS 6,1,0,7,4,5,6,7,X,X,X,X,3,2,1,0.
2825 ;IT HAS ALSO BEEN LOADED INTO THE MODULE ADDRESS AS 7-0,7-0
2826 ;X,X,X,X IS THE FILE BOX ADDRESS UNDER TEST
2827
2828 ;CHECK ICAR FOR IT BEING CORRECT
2829
2830 013042 012737 000012 002054 8251 MOV #10.,TENCNT
2831 013050 013737 014444 001124 MOV TEMP1,SGDDAT ;CALCULATE GOOD DATA,
2832 ;GOOD LUCK IN FOLLOWING THIS
2833 013056 042737 177760 001124 BIC #177760,SGDDAT ;CLEAR 15-4
2834 013064 013700 002022 MOV ICMOD,R0 ;GET BITS 7-4

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2835 013070 006200 ASR R0 IDIVIDE FILE BOX BY 2
2836 013072 042700 BIC #177417,R0 ICLEAR 15-8, 3-0
2837 013076 050037 BIS R0,SGDDAT IBITS 7-0 ARE FORMED
2838 013102 032737 BIT #BIT7,TEMP1 ITEST BIT 7 OF MESSAGE SENT
2839 013110 001403 BEQ 58 INOT SET, THEN 58
2840 013112 052737 BIS #10400,SGDDAT ISET, THEN SET REQ'D BITS
2841 013120 031737 BIT #BIT6,TEMP1 ITEST BIT 6 OF MESSAGE SENT
2842 013126 001403 BEQ 68 INOT SET, THEN 68
2843 013130 052737 BIS #101000,SGDDAT ISET, THEN SET REQ'D BITS
2844 013136 032737 BIT #BIT5,TEMP1 ITEST BIT 5
2845 013144 001403 BEQ 78
2846 013146 052737 BIS #2000,SGDDAT
2847 013154 032737 BIT #BIT4,TEMP1 ITEST BIT 12
2848 013162 001403 BEQ 88
2849 013164 052737 BIS #4000,SGDDAT
2850 013172 032737 BIT #BIT1,SGDDAT
2851 013200 001403 BEQ 98
2852 013202 052737 BIS #BIT14,SGDDAT
2853 013210 032737 BIT #BIT0,SGDDAT
2854 013216 001403 BEQ 108
2855 013220 052737 BIS #BIT13,SGDDAT
2856
2857
2858 ;GOOD ICAR IS FORMED LET'S GET ACTUAL ICAR AND COMPARE
2859 ;
2860
2861 013226 017737 166574 001126 108: MOV #ICAR,SBDDAT
2862 013234 042737 110000 001124 BIC #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 ERROR 47 IBAD ICAR ON READ
2871
2872 ;
2873 ;////////////////////////////////////
2874 ;
2875 013262 104407 118: SCOP94
2876
2877 ;READ MODULE DATA FOR PROPER DATA
2878
2879 013264 013737 014444 001124 MOV TEMP1,SGDDAT IFORM SGDDAT OUT OF TEMP1
2880 013272 013700 014444 MOV TEMP1,R0 ISGDDAT = TEMP1 BITS 7-0 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

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2891
2892
2893
2894
2895 013354 104050
2896
2897
2898
2899
2900 013356 104407
2901
2902
2903
2904
2905
2906 013360
2907
2908 013360 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 849:
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 149:
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
/

SWLOOP=.

RIT 0SW8,0SWR /LOOP ON DATA TEST
BEQ 818 /NO THEN 818
MOV8 0SWR,DATSNT /GET SWR LOW BYTE
MOV8 0SWR,TEMP1
BIC 0177477,DATSNT /GET BITS 6,7
BNE 848 /NOT ZERO THEN 848
BIS 001007,TEMP1 /ZERO, DEFAULT TO SET BIT 7
BR 838 /CONT
CMP 0300,DATSNT /BITS 6,7 =11
BNE 838 /NO THEN 838
BIC 0300,TEMP1
BIS 001006,TEMP1 /SET BIT 6
MOV TEMP1,DATSNT /SET DATA SENT
BR 998
TST TRACK /FIRST OR SECOND LOOP?
BEQ 138 /SECOND, THEN 138
ADD 0010,TEMP1 /INC NEW PATTERN
BIT 0010,TEMP1 /DONE?
BEQ 148 /YES, THEN 148, NEXT LOOP
MOV TEMP1,0ICMOD /MOVE OUT NEXT PATTERN
BIC 0TBMTEN,0ICSR /TOGGLE TBMT ENABLE TO ALLOW
BIS 0TBMTEN,0ICSR /MICRO CODE TO PROGRESS
JMP 18 /LOOP
CLR TEMP1 /CLR PATTERN
CLR TRACK /INDICATE SECOND LOOP
BIS 00107,TEMP1 /CREATE NEXT PATTERN
BR 998 /SEND PATTERN
ADD 0010,TEMP1 /INCREMENT PATTERN
BIT 0010,TEMP1 /DONE?
BEQ 998 /NO, THEN SEND NEXT PATTERN
BIC 0TBMTEN+MAINT2,0ICSR /YES,, CLEAR TBMTEN AND MAINT2 TO EXIT MICROCODE

CLR INTFLG
CLR 0ICSR
BIS 0MAINT3,0ICSR
CLR TIMTRP
CHKCNC
DEC PASHUN
BEQ .+6
  
```

```

2947 013630 000137 011400 JMP LOOP3
2948
2949
2950 013634 017700 166166 MOV 0ICAR,R0
2951 013640 032777 000040 165270 BIT 0SW5,0SWR
2952 013646 001002 BNE .+6
2953 013650 000137 013676 JMP 908
2954 013654 017700 165256 MOV 0SWR,R0
2955 013660 042700 177477 RLC 0177477,R0
2956 013664 022700 000100 CMP 0100,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 908: MOV 0908,SCOLOP
2968 013704 013700 014414 MOV FR200,R0
2969 013710 005777 166110 708: TST 0ICSR ;IS OUTPUT BUSY
2970 013714 100003 BPL .+10 ;IF NO CONT
2971 013716 005300 DEC R0 ;INC WATCHDOG
2972 013720 001373 BNE 708 ;NOT TIMED OUT THEN 708
2973
2974 ;
2975 ;////////////////////////////////////
2976 ;
2977 013722 104035 ;
2978 ; ERROR 35 ;LINE ACTIVE TOO LONG
2979 ;
2980 ;
2981 ;////////////////////////////////////
2982 ;
2983 013724 104412 SCOPEX
2984 013726 013700 014412 MOV FR100,R0
2985 013732 052777 000040 166064 BIS 0TTYEN,0ICSR ;SET TTY ENABLE
2986 013740 012777 000000 166054 MOV 00,0ICMOD
2987 013746 005777 166052 908: TST 0ICSR
2988 013752 100403 BHI 978
2989 013754 005300 DEC R0
2990 013756 001373 BNE 908
2991
2992 ;
2993 ;////////////////////////////////////
2994 ;
2995 013760 104032 ;
2996 ; ERROR 32 ;LINE DID NOT GO ACTIVE WITH MOV INSTRUCTION
2997 ;
2998 ;
2999 ;////////////////////////////////////
3000 013762 104412 978: SCOPEX
3001 013764 042777 000040 166032 BIC 0TTYEN,0ICSR ;CLEAR TTY ENABLE
3002

```

```

3003          ;CHECK THAT BMT WILL NOT INTERRUPT WITH LINE BUSY
3004          ;
3005
3006 013772      BMTINT:
3007 013772 012737 013772 014372 128:  MOV    #128,SCOLOP      ; SET SCOPE LOOP
3008 014000 005077 166020          CLR    #ICSR          ;CLEAR ICR CSR
3009 014004 013700 014006          MOV    FR1000,R0
3010 014010 005777 166010 708:  TST    #ICSR          ;IS OUTPUT BUSY
3011 014014 100003          BPL     .+10          ;IF NO CONT
3012 014016 005300          DEC     R0          ;INC WATCHDOG
3013 014020 001373          BNE     708          ;NOT TIMED OUT THEN 708
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    #TTYEN,#ICSR      ;SET TTY ENABLE
3026 014040 012777 000000 165754  MOV    #0,#ICMOD      ;CAUSE LINE TO GO ACTIVE
3027 014046 042777 000040 165750  BIC    #TTYEN,#ICSR      ;CLEAR TTY ENABLE
3028                                ;WAIT FOR IT TO GO ACTIVE
3029 014054 013700 014412          MOV    FR100,R0
3030 014060 005777 165740 808:  TST    #ICSR
3031 014064 100403          BMI     .+10
3032 014066 005300          DEC     R0
3033 014070 001373          BNE     808
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    PR1VL,#PSW      ;LOWER PSW
3046 014106 052777 000010 165710  BIS    #BMTEN,#ICSR      ;ALLOW INTERRUPT IF PENDING
3047 014114 005300          DEC     R0
3048 014116 001376          BNE     .-2
3049 014120 042777 000010 165676  BIC    #BMTEN,#ICSR      ;CLEAR BMT ENABLE
3050 014126 012737 000340 177776  MOV    #340,#PSW
3051 014134 005737 017206          TST    INTFLG          ;INTERRUPT OCCUR
3052 014140 001401          BEQ     118          ;NO, OKAY THEN GO TO 118
3053
3054          ;
3055          ;////////////////////////////////////
3056          ;
3057 014142 104024          ;          ERROR 24          ;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      .SBTTL  SCOPE LOOP ROUTINES
3071
3072      /SCOPE LOOP ROUTINE FOR M8094 MICRO DIAGNOSTICS
3073      /
3074
3075      014156 104414      XSC094: CKPWF
3076      014160 032777 040000 164750      BIT  @SW14,@SWR      /SW 14 SET
3077      014166 001001      BNE  .+4
3078      014170 000002      RTI      /NO EXIT
3079      014172 011637 014232      MOV  (SP),SCTMP      /GET SCOPE LOCATION
3080      014176 162737 000004 014232      SUB  @4,SCTMP      /SUB 4 TO LOOK LIKE ERR LOC
3081      014204 023737 001116 014232      CMP  @ERRPC,SCTMP      /EQUAL TO ERR PC
3082      014212 001401      BEQ  .+4
3083      014214 000002      RTI
3084
3085      014216 022626      POP2SP
3086      014220 052777 040000 165576      BIS  @MAINT3,@ICSR      /FIX STACK
3087      014226 000137 011364      JMP  TEST3L      /RESET 94
3088      /LOOP
3089      014232 000000      SCTMP: 0
3090      /
3091      /SCOPE LOOP FOR M8096 MICRO DIAGNOSTICS
3092      /
3093
3094      014234 104414      XSC096: CKPWF
3095      014236 032777 040000 164672      BIT  @SW14,@SWR      /SW 14 SET
3096      014244 001001      BNE  .+4
3097      014246 000002      RTI      /NO EXIT
3098      014250 022626      POP2SP      /FIX STACK
3099      014252 000177 000114      JMP  @SCOLOP      /LOOP
3100      /
3101      /SCOPE LOOP FOR TTY TEST
3102      /
3103      /
3104
3105      014256 104414      XSCTTY: CKPWF
3106      014260 032777 040000 164650      BIT  @SW14,@SWR      /CHECK FOR TTY INPUT
3107      014266 001001      BNE  .+4      /SW 14 SET
3108      014270 000002      RTI      /NO EXIT
3109      014272 011637 014232      MOV  (SP),SCTMP      /GET SCOPE LOCATION
3110      014276 162737 000004 014232      SUB  @4,SCTMP      /SUB 4 TO LOOK LIKE ERR LOC
3111      014304 023737 001116 014232      CMP  @ERRPC,SCTMP      /EQUAL TO ERR PC
3112      014312 001401      BEQ  .+4
3113      014314 000002      RTI
3114

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```

3115 014316 022626          POP2SP          IFIX STACK
3116 014320 000177 000046    JMP          @SCOLOP    ILOOP
3117
3118
3119          /
3120          /REGULAR SCOPE LOOP FOR REMAINDER OF TEST
3121          /
3122 014324 104414          XSCOPE: CKPWF
3123 014326 032777 040000 164602    BIT          @SW14,@SWR          ISW 14 SET
3124 014334 001001          BNE          .+4
3125 014336 000002          RTI          JNO EXIT
3126 014340 011637 014232    MOV          (SP),SCTMP    IGET SCOPE LOCATION
3127 014344 162737 000004 014232    SUB          @4,SCTMP    ISUB 4 TO LOOK LIKE ERR LOC
3128 014352 023737 001116 014232    CMP          @ERRPC,SCTMP    IEQUAL TO ERR PC
3129 014360 001401          BEQ          .+4
3130 014362 000002          RTI
3131
3132 014364 022626          POP2SP          IFIX STACK
3133 014366 000177 000000    JMP          @SCOLOP    ILOOP
3134
3135          /
3136 014372 000000          SCOLOP: 0
3137
3138
3139
3140 014374 000000          TENCN1: 0
3141 014376 000000          XMASK: 0
3142 014400 000000          FILUTS: 0
3143 014402 000000          FILCNT: 0
3144 014404 000000          VECTOR: 0
3145 014406 000474          FR1000: 316.
3146 014410 000236          FR500: 150.
3147 014412 000037          FR100: 31.
3148 014414 000077          FR200: 63.
3149 014416 000006          FR20: 6.
3150 014420 026502          FRM110: 11506.
3151
3152 014422 000000          FLAG1: 0
3153 014424 000000          FIRST: 0
3154 014426 000000          MICPLP: 0
3155 014430 000000          FLAG: 0
3156 014432 000000          HGH: 0
3157 014434 000000          LOW: 0
3158 014436 000000          SYSNAP: 0
3159 014440 000000          ERRFLP: 0
3160 014442 000000          ERTYL: 0
3161 014444 000000          TEMP1: 0
3162 014446 000000          TRACK: 0
3163 014450 000000          ADDR: 0
3164 014452 000000          PRIIND: 0
3165 014454 000000          PASLG: 0
3166 014456 000000          PASRUN: 0
3167 014460 000000          ERRLOP: 0
3168 014462 000000          PRMT: 0
3169 014464 000000          PRMT1: 0
3170 014466 000000          REMPRI: 0

IMASK TO FIND BOX
IFILE UNDER TEST
IFILE COUNT
ICR VECTOR
ITIME CONSTANTS
ISOFT FF
ISOFT FF
IMICROCODE INDICATOR
ISOFT FF
IMGH ADDRESS ON '96
ILOW ADDRESS ON '96
ISYSTEM CONFIGURATION
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 01 YES 00 NO
ITTY REMOTE - DATA ALLOWED AT ALL 1=YES 0=NO
IREMOTE FF

```


3171 314470 000000
3172 014472 000000
3173 014474 000000
3174 014476 000000

TTYTMP: 0
REMOTE: 0
PWRFLP: 0
TEMP: 0

ITIMER
IOPERATOR SW REG ERROR FF
IPWR FAIL FF
ITEMP STORAGE

3175
3176
3177 014500 000000

EDISPT: 0

3178
3179

3180

.SBTTL TYPE ROUTINE

3181

I*ROUTINE TO TYPE ASCIZ MESSAGE. MESSAGE MUST TERMINATE WITH A 0 BYTE.
I*THE ROUTINE WILL INSERT A NUMBER OF NULL CHARACTERS AFTER A LINE FEED.
I*NOTE1: SNULL CONTAINS THE CHARACTER TO BE USED AS THE FILLER CHARACTER.
I*NOTE2: SFILLS CONTAINS THE NUMBER OF FILLER CHARACTERS REQUIRED.
I*NOTE3: SPILLC CONTAINS THE CHARACTER TO FILL AFTER.

3182

3183

3184

3185

3186

3187

3188

3189

I*CALL:

3190

I*1) USING A TRAP INSTRUCTION

3191

I* TYPE ,MESADR

IMESADR IS FIRST ADDRESS OF AN ASCIZ STRING

3192

I*OR

3193

I* TYPE

3194

I* MESADR

3195

I*

3196

I*2) USING A JSR INSTRUCTION

3197

I* MOV PS, -(SP)

IPUSH PROCESSOR STATUS WORD ON THE STACK

3198

I* JSR PC, STYPE

ICALL TYPE ROUTINE

3199

I* MESSADR

IFIRST ADDRESS OF MESSAGE

3200

3201 014502 105737 001155

STYPE: TSTB STPFLG

IIIS THERE A TERMINAL?

3202 014506 100002

RPL 15

I*IF YES

3203 014510 000000

HALT

I*HALT HERE IF NO TERMINAL

3204 014512 000407

BR 35

I*LEAVE

3205 014514 010046

15: MOV R0, -(SP)

ISAVE R0

3206 014516 017600 000002

95: MOV 02(SP), R0

IGET ADDRESS OF ASCIZ STRING

3207 014522 112046

25: MOVB (R0)+, -(SP)

IPUSH CHARACTER TO BE TYPED ONTO STACK

3208 014524 001005

BNE 45

I*IF IT ISN'T THE TERMINATOR

3209 014526 005726

TST (SP)+

IIIF TERMINATOR POP IT OFF THE STACK

3210 014530 012600

MOV (SP)+, R0

I*RESTORE R0

3211 014532 062716 000002

35: ADD 02, (SP)

I*ADJUST RETURN PC

3212 014536 000002

RTI

I*RETURN

3213 014540 004737 014572

45: JSR PC, 75

IGO TYPE THIS CHARACTER

3214 014544 123726 001154

55: CMPB SFILLC, (SP)+

IIIS IT TIME FOR FILLER CHARS.?

3215 014550 001364

BNE 25

IIIF NO GO GET NEXT CHAR.

3216 014552 013746 001152

MOV SNULL, -(SP)

IGET # OF FILLER CHARS. NEEDED

3217

3218 014556 105366 000001

65: DECB 1(SP)

I*AND THE NULL CHAR.

3219 014562 002770

HLT 55

IIDOES A NULL NEED TO BE TYPED?

3220 014564 004737 014572

JSR PC, 75

I*IF NO--GO POP THE NULL OFF OF STACK

3221 014570 000772

BR 65

IGO TYPE A NULL

3222 014572 122766 000216 000002

75: CMPB 0216, 2(SP)

I*LOOP

3223 014600 001412

BEG 955

3224 014602 122766 000217 000002

CMPB 0217, 2(SP)

3225 014610 001406

BEG 955

3226 014612 105777 164330

955: TSTB 05TPS

I*WAIT UNTIL PRINTER IS READY

3227	014616	100375				0PL	998	
3228	014620	116677	000002	164322		MOVB	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	INO, CONT
3235	014652	005237	017774			INC	0UFMES	IINC FOR CORRECT STORAGE
3236	014656	022737	021747	017774		CMP	00UFEND-1,0UFMES	IAT END?

3237	014664	003473			BLE	85		IYES DONE!
3238	014666	116677	000002	003100	MOVB	2(SP),#BUFMES		I\$BUFFER
3239	014674	000467			BR	85		I\$CONT
3240	014676	017746	165122		MOV	#ICSR,-(SP)		I\$SAVE OLD ICSR
3241	014702	052777	001040	165114	BIS	#TBMEN+TTYEN,#ICSR		I\$SET TTY ENABLE, TBM READ ENABLE
3242	014710	016677	000004	165104	MOV	4(SP),#ICMOD		I\$SEND DATA TO ICR TTY
3243	014716	013737	014420	014470	MOV	FRM110,TTYTMP		
3244	014724	005037	002062		CLR	ERRFLR		I\$CLEAR ERROR COUNT
3245	014730	032777	010000	165066	BIT	#ERRBIT,#ICSR		I\$ERROR BIT SET
3246	014736	001413			BEO	145		I\$NO, THEN 145
3247	014740	005237	002062		INC	ERRFLR		I\$LOG ERROR
3248	014744	005777	165056		TST	#ICAR		I\$CLEAR ERROR
3249	014750	022737	000012	002062	CMF	#10.,ERRFLR		I\$TEN (10) CONSECUTIVE LINE ERRORS
3250	014756	001364			BNE	135		I\$NO, THEN CHECK LINE AGAIN
3251	014760	022626			POP2SP			I\$ADJUST STACK
3252	014762	000137	016474		JMP	ERRLIN		
3253	014766	005037	002062		CLR	ERRFLR		I\$CLEAR ERROR COUNT
3254	014772	032777	002000	165024	BIT	#PWRFL,#ICSR		I\$IS PWR FAIL BIT SET
3255	015000	001403			BEO	155		I\$NO, THEN 155
3256	015002	022626			POP2SP			
3257	015004	000137	016530		JMP	R\$TRT		
3258	015010	032777	100000	165010	BIT	#XTBMT,#ICAR		I\$TRANSMITTER BUFFER EMPTY
3259	015016	001014			BNE	125		
3260	015020	005337	014470		DEC	TTYTMP		
3261	015024	001341			BNE	135		
3262	015026	005037	014464		CLR	PRMT1		
3263	015032	022626			POP2SP			
3264	015034	012600			MOV	(SP)+,R0		
3265	015036	022626			POP2SP			
3266	015040	104413	024676		TYPE,	TBMTHS		
3267	015044	000000			HALT			
3268	015046	000776			BR	=2		
3269	015050	012677	164750		MOV	(SP)+,#ICSR		I\$SEND OLD CSR
3270	015054	000207			RTS	PC		
3271								
3272								
3273								
3274								
3275								
3276								
3277								
3278								
3279								
3280								
3281								
3282								
3283								
3284								
3285								
3286	015056							
3287	015056	105237	001103		INC	ERRFLG		I\$SET THE ERROR FLG
3288	015062	001775			BEO	75		I\$DON'T LET FLAG GO TO ZERO
3289	015064	013737	001102	001140	MOV	#STNM,#DISP		I\$DISPLAY TEST NUMBER AND ERROR
3290	015072	005264	000002		INC	ERRTOT(4)		I\$INC THE ERROR COUNT
3291	015076	011637	001116		MOV	(SP),#ERRPC		I\$GET ADDRESS OF ERROR
3292	015102	162737	000002	001116	SUB	#2,#ERRPC		

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3293 015110 117737 164002 001114      MOVB    @SERRPC,SITEMB      ISTRIP AND SAVE THE ITEM CODE
3294 015116 032777 020000 164012      BIT     @SW13,@SWR        ISKIP TYPEOUT IF SET
3295 015124 001010                      BNE     29
3296 015126 005237 014424      INC     FIRST             I HAVE WE PRINTED FILE BOX ASSOCIATED WITH ERROR
3297 015132 001007                      BNE     19             IYES CONTINUE
3298 015134 104413 024357      TYPE,   FILET
3299 015140 013746 014400      MOV     FILUTS,-(SP)      IISAVE FILUTS FOR TYPEOUT
3300 015144 104401                      TYP0C      IIGO TYPE--OCTAL ASCII(ALL DIGITS)
3301 015146 104413 022000      TYPE    ,CRLF
3302 015152 004737 015174      JSR     PC,@SERRTYP      19:
3303 015156 104413 022000      TYPE,   CRLF
3304 015162 005777 163750      TST     @SWR            29:
3305 015166 100001                      BPL     35
3306 015170 000000                      HALT
3307 015172 000002      RTI            39:

I*****

.SBTTL  ERROR MESSAGE TYPEOUT ROUTINE

SERRTYP:
3314 015174                      CLR     WRKFLP
3315 015174 005037 017204      TYPE    ,CRLF          I"CARRIAGE RETURN" & "LINEFEED"
3316 015200 104413 022000      MOV     R0,-(SP)        ISAVE R0
3317 015204 010046                      CLR     R0            IPICKUP THE ITEM INDEX
3318 015206 005000                      DISB    @SITEMB,R0
3319 015210 153700 001114      BNE     19
3320 015214 001004                      IIF ITEM NUMBER IS ZERO, JUST
3321                                ITYPE THE PC OF THE ERROR
3322                                IISAVE SERRPC FOR TYPEOUT
3323 015216 013746 001116      MOV     SERRPC,-(SP)      IERROR ADDRESS
3324                                IIGO TYPE--OCTAL ASCII(ALL DIGITS)
3325                                IADJUST THE INDEX SO THAT IT WILL
3326                                IWORK FOR THE ERROR TABLE
3327 015222 104401                      BR      69
3328 015224 000433      19:  DEC     R0
3329 015226 005300      ASL     R0
3330 015230 006300      ASL     R0
3331 015232 006300      ASL     R0
3332 015234 006300      ADD     @SERRTB,R0      IFORM TABLE POINTER
3333 015236 062700 001162      MOV     (R0)+,29      IPICKUP "ERROR MESSAGE" POINTER
3334 015242 012037 015252      BEQ     39      ISKIP TYPEOUT IF NO POINTER
3335 015246 001411      TYPE    ITYPE THE ERROR MESSAGE
3336 015250 104413      29:  .WORD    0      IERROR MESSAGE POINTER GOES HERE
3337 015252 000000      TYPE,   PCPRT      IPRINT ERRPC
3338 015254 104413 024305      MOV     SERRPC,-(SP)      IISAVE SERRPC FOR TYPEOUT
3339 015260 013746 001116      TYP0C      IERROR PC
3340 015264 104401                                IIGO TYPE--OCTAL ASCII(ALL DIGITS)
3341 015266 104413 022000      TYPE    ,CRLF      I"CARRIAGE RETURN" "LINEFEED"
3342 015272 012037 015302      MOV     (R0)+,49      IPICKUP "DATA HEADER" POINTER
3343 015276 001404      BEQ     59      ISKIP TYPEOUT IF ZERO
3344 015300 104413      TYPE    ITYPE THE "DATA HEADER"
3345 015302 000000      49:  .WORD    0      I"DATA HEADER" POINTER GOES HERE
3346 015304 104413 022000      TYPE,   ,CRLF      I"CARRIAGE RETURN" "LINEFEED"
3347 015310 011000      59:  MOV     (R0),R0      IPICKUP "DATA TABLE" POINTER
3348 015312 001004      BNE     79      IGO TYPE THE DATA
3349 015314 012600      69:  MOV     (SP)+,R0      IRESTORE R0

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3349 015316 104413 022000      TYPE ,CRLF      ;TYPE CARRIAGE RETURN LF
3350 015322 000207      RTS      PC
3351 015324      78:      MOV      0(R0)+,-(SP)    ;SAVE 0(R0)+ FOR TYPEOUT
3352 015324 013046      TYPOC      ;GO TYPE--OCTAL ASCII(ALL DIGITS)
3353 015326 104401      TST      (R0)            ;IS THERE ANOTHER NUMBER
3354 015330 005710      BEQ      68
3355 015332 001770      TYPE      ,68            ;TYPE 2 SPACES
3356 015334 104413 015342      BR      78
3357 015340 000771      88:      .ASCIZ  /  /
3358 015342 020040 000      .EVEN
3359
3360      015346
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      ;CALL:
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      ;*      ;1=TYPE LEADING ZEROS
3375      ;*      ;0=SUPPRESS LEADING ZEROS
3376      ;*
3377      ;STYPON---ENTER HERE TO TYPE OUT WITH THE SAME PARAMETERS AS THE LAST
3378      ;STYPOS OR STYPOC
3379      ;CALL:
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      ;CALL:
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 116637 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

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3405	015450	005003		CLR	R3	;;CLEAR THE OUTPUT WORD
3406	015452	006105	181	ROL	R5	;;ROTATE MSB INTO "C"
3407	015454	000404		BR	38	;;GO DO MSB
3408	015456	006105	281	ROL	R5	;;FORM THIS DIGIT
3409	015460	006105		ROL	R5	
3410	015462	006105		ROL	R5	
3411	015464	010503		MOV	R5,R3	
3412	015466	006103	381	ROL	R3	;;GET LSB OF THIS DIGIT
3413	015470	105337	015572	DECB	SOMODE	;;TYPE THIS DIGIT?
3414	015474	100016		BPL	78	;;BR IF NO
3415	015476	042703	177770	BIC	#177770,R3	;;GET RID OF JUNK
3416	015502	001002		BNE	48	;;TEST FOR 0
3417	015504	005704		TST	R4	;;SUPPRESS THIS 0?
3418	015506	001403		BEO	58	;;BR IF YES
3419	015510	005204		INC	R4	;;DON'T SUPPRESS ANYMORE 0'S
3420	015512	052703	000060	BIS	0'0,R3	;;MAKE THIS DIGIT ASCII
3421	015516	052703	000040	BIS	0' ,R3	;;MAKE ASCII IF NOT ALREADY
3422	015522	110337	015566	MOVB	R3,08	;;SAVE FOR TYPING
3423	015526	104413	015566	TYPE	,08	;;GO TYPE THIS DIGIT
3424	015532	105337	015570	781	DECB	SOCNT
3425	015536	003347		BGT	28	;;COUNT BY 1
3426	015540	002402		BLT	68	;;BR IF MORE TO DO
3427	015542	005204		INC	R4	;;BR IF DONE
3428	015544	000744		BR	28	;;INSURE LAST DIGIT ISN'T A BLANK
3429	015546	012605	681	MOV	(SP)+,R5	;;GO DO THE LAST DIGIT
3430	015550	012604		MOV	(SP)+,R4	;;RESTORE R5
3431	015552	012603		MOV	(SP)+,R3	;;RESTORE R4
3432	015554	016606	000002 000004	MOV	2(SP),4(SP)	;;RESTORE R3
3433	015562	012616		MOV	(SP)+,(SP)	;;SET THE STACK FOR RETURNING
3434	015564	000002		RTI		;;RETURN
3435	015566	000	881	.BYTE	0	;;STORAGE FOR ASCII DIGIT
3436	015567	000		.BYTE	0	;;TERMINATOR FOR TYPE ROUTINE
3437	015570	000	SOCNT:	.BYTE	0	;;OCTAL DIGIT COUNTER
3438	015571	000	SOFILL:	.BYTE	0	;;ZERO FILL SWITCH
3439	015572	000000	SOMODE:	.WORD	0	;;NUMBER OF DIGITS TO TYPE
3440			*****			
3441						
3442			.SBTTL CONVERT BINARY TO DECIMAL AND TYPE ROUTINE			
3443						
3444			;THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 5-DIGIT			
3445			;SIGNED DECIMAL (ASCII) NUMBER AND TYPE IT. DEPENDING ON WHETHER THE			
3446			;NUMBER IS POSITIVE OR NEGATIVE A SPACE OR A MINUS SIGN WILL BE TYPED			
3447			;BEFORE THE FIRST DIGIT OF THE NUMBER. LEADING ZEROS WILL ALWAYS BE			
3448			;REPLACED WITH SPACES.			
3449			;CALLI			
3450			;	MOV	NUM,-(SP)	;;PUT THE BINARY NUMBER ON THE STACK
3451			;	TYPDS		;;GO TO THE ROUTINE
3452						
3453	015574		STYPDS:			
3454	015574	010046		MOV	R0,-(SP)	;;PUSH R0 ON STACK
3455	015576	010146		MOV	R1,-(SP)	;;PUSH R1 ON STACK
3456	015600	010246		MOV	R2,-(SP)	;;PUSH R2 ON STACK
3457	015602	010346		MOV	R3,-(SP)	;;PUSH R3 ON STACK
3458	015604	010546		MOV	R5,-(SP)	;;PUSH R5 ON STACK
3459	015606	012746	020200	MOV	020200,-(SP)	;;SET BLANK SWITCH AND SIGN
3460	015612	016605	000020	MOV	20(SP),R5	;;GET THE INPUT NUMBER

3461	015616	100004			BPL	18		11BR IF INPUT IS POS.
3462	015620	005405			NEG	R5		11MAKE THE BINARY NUMBER POS.
3463	015622	112766	000055	000001	MOVB	0'-,1(SP)		11MAKE THE ASCII NUMBER NEG.
3464	015630	005000		131	CLR	R0		11ZERO THE CONSTANTS INDEX
3465	015632	012703	016010		MOV	80BLK,R3		11SETUP THE OUTPUT POINTER
3466	015636	112723	000040		MOVB	0' ,(R3)+		11SET THE FIRST CHARACTER TO A BLANK
3467	015642	005002		231	CLR	R2		11CLEAR THE BCD NUMBER
3468	015644	016001	016000		MOV	80TBL(R0),R1		11GET THE CONSTANT
3469	015650	160105		331	SUB	R1,R5		11FORM THIS BCD DIGIT
3470	015652	002402			BLT	45		11BR IF DONE
3471	015654	005202			INC	R2		11INCREASE THE BCD DIGIT BY 1
3472	015656	000774			BR	35		
3473	015660	060105		431	ADD	R1,R5		11ADD BACK THE CONSTANT
3474	015662	005702			TST	R2		11CHECK IF BCD DIGIT=0
3475	015664	001002			BNE	58		11FALL THROUGH IF 0
3476	015666	105716			TSTB	(SP)		11STILL DOING LEADING 0'S?
3477	015670	100407			BMI	75		11BR IF YES
3478	015672	106316		531	ASLB	(SP)		11MSD?
3479	015674	103003			RCC	65		11BR IF NO
3480	015676	116663	000001	177777	MOVB	1(SP),-1(R3)		11YES--SET THE SIGN
3481	015704	052702	000060	631	BIS	0'0,R2		11MAKE THE BCD DIGIT ASCII
3482	015710	052702	000040	731	BIS	0' ,R2		11MAKE IT A SPACE IF NOT ALREADY A DIGIT
3483	015714	110223			MOVB	R2,(R3)+		11PUT THIS CHARACTER IN THE OUTPUT BUFFER
3484	015716	005720			TST	(R0)+		11JUST INCREMENTING
3485	015720	020027	000010		CMP	R0,010		11CHECK THE TABLE INDEX
3486	015724	002746			BLT	28		11GO DO THE NEXT DIGIT
3487	015726	003002			BGT	88		11GO TO EXIT
3488	015730	010502			MOV	R5,R2		11GET THE LSD
3489	015732	000764			BR	68		11GO CHANGE TO ASCII
3490	015734	105726		831	TSTB	(SP)+		11WAS THE LSD THE FIRST NON-ZERO?
3491	015736	100003			BPL	98		11BR IF NO
3492	015740	116663	177777	177776	MOVB	-1(SP),-2(R3)		11YES--SET THE SIGN FOR TYPING
3493	015746	105013		931	CLRB	(R3)		11SET THE TERMINATOR
3494	015750	012605			MOV	(SP)+,R5		11POP STACK INTO R5
3495	015752	012603			MOV	(SP)+,R3		11POP STACK INTO R3
3496	015754	012602			MOV	(SP)+,R2		11POP STACK INTO R2
3497	015756	012601			MOV	(SP)+,R1		11POP STACK INTO R1
3498	015760	012600			MOV	(SP)+,R0		11POP STACK INTO R0
3499	015762	104413	016010		TYPE	,80BLK		11NOW TYPE THE NUMBER
3500	015766	016666	000002	000004	MOV	2(SP),4(SP)		11ADJUST THE STACK
3501	015774	012616			MOV	(SP)+,(SP)		
3502	015776	000002			RTI			11RETURN TO USER
3503	016000	023420			80TBL:	10000.		
3504	016002	001750				1000.		
3505	016004	000144				100.		
3506	016006	000012				10.		
3507	016010	000004			80BLK:	.BLKW 4		
3508					/*****			
3509								
3510					.SBTTL POWER DOWN AND UP ROUTINES			
3511								
3512					;POWER DOWN ROUTINE			
3513	016020	012737	016146	000024	SPWRDN:	MOV	88ILLUP,88PWRVEC	11SET FOR FAST UP
3514	016026	012737	000340	000026		MOV	8340,88PWRVEC+2	11PRI0:7
3515	016034	010046				MOV	R0,-(SP)	11PUSH R0 ON STACK
3516	016036	010146				MOV	R1,-(SP)	11PUSH 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      $SPHRUP,$SPHRVEC ;;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 181 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      $SPHRDN,$SPHRVEC ;;SET UP THE POWER DOWN VECTOR
3538 016126 012737 000340 000026  MOV      $340,$SPHRVEC+2 ;;PRI017
3539 016134 104413      TYPE      MESS39      ;;REPORT THE POWER FAILURE
3540 016136 023060      SPHRMG: .WORD      MESS39      ;;POWER FAIL MESSAGE POINTER
3541 016140 012716      MOV      (PC)+,(SP)      ;;RESTART AT START1
3542 016142 003002      SPHRAD: .WORD      START1      ;;RESTART ADDRESS
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 000002  STRAP: MOV      R0,-(SP)      ;;SAVE R0
3560 016156 016600      MOV      2(SP),R0      ;;GET TRAP ADDRESS
3561 016162 005740      TST      -(R0)      ;;BACKUP BY 2
3562 016164 111000      MOVB     (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

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						ROUTINE	

3573							
3574							
3575	016176				STRPAD:		
3576	016176	014502			STYPE	;;CALL=TYPE	TRAP+0(104400) TTY TYPEOUT ROUTINE
3577	016200	015372			STYPOC	;;CALL=TYPOC	TRAP+1(104401) TYPE OCTAL NUMBER (WITH LEADING ZEROS)
3578	016202	015346			STYPOS	;;CALL=TYPOS	TRAP+2(104402) TYPE OCTAL NUMBER (NO LEADING ZEROS)
3579	016204	015406			STYPON	;;CALL=TYPON	TRAP+3(104403) TYPE OCTAL NUMBER (AS PER LAST CALL)
3580	016206	015574			STYPOD	;;CALL=TYPOD	TRAP+4(104404) TYPE DECIMAL NUMBER (WITH SIGN)
3581	016210	017372			XSAVRE	;;CALL=SAVREG	TRAP+5(104405) ROUTINE TO SAVE REGISTER
3582	016212	017446			XRESRG	;;CALL=GETREG	TRAP+6(104406) ROUTINE TO RESTORE REGISTERS
3583	016214	014156			XSC094	;;CALL=SCOP94	TRAP+7(104407) M8094 MICRO CODE SCOP94 ROUTINE
3584	016216	014234			XSC096	;;CALL=SCOP96	TRAP+10(104410) M8096 MICRO CODE SCOPE ROUTINE
3585	016220	014256			XSCTTY	;;CALL=SCOTTY	TRAP+11(104411) TTY SCOPE ROUTINE
3586	016222	014324			XSCOPE	;;CALL=SCOPEX	TRAP+12(104412) GENERAL SCOPE ROUTINE
3587	016224	014502			STYPE	;;CALL=TYPE	TRAP+13(104413) TTY & REMOTE TTY TYPE ROUTINE
3588	016226	016232			XCKPWF	;;CALL=CKPWF	TRAP+14(104414) PWR FAIL SENSE ROUTINE
3589	016230	016302			XCKCNC	;;CALL=CKCNC	TRAP+15(104415) CNTRL C CHECK
3590							
3591							
3592							
3593							
3594							
3595	016232	032777	002000	162676	XCKPWF:	BIT	00IT10,0SWR
3596	016240	001001			BNE		04
3597	016242	000002			RTI		
3598	016244	005737	017202		TSY		TIMTRP
3599	016250	001401			BEQ		04
3600	016252	000002			RTI		
3601	016254	032777	002000	163542	BIT	0PWRFL,0ICSR	
3602	016262	001001			BNE		04
3603	016264	000002			RTI		
3604	016266	022626			POP2SP		
3605	016270	052777	040000	163526	XCKPW1:	BIS	0MAINT3,0ICSR
3606	016276	000137	016530		JMP		RSTRY
3607							
3608							
3609							
3610	016302	032777	002000	162626	XCKCNC:	BIT	0SW10,0SWR
3611	016310	001006			BNE		38
3612	016312	105777	162624		TSYB		0STKS
3613	016316	001403			BEQ		38
3614	016320	017700	162620		MOV		0STKB,R0
3615	016324	000423			BR		48
3616	016326	032777	002000	162602	38:	BIT	00IT10,0SWR
3617	016334	001001			BNE		04
3618	016336	000002			RTI		
3619	016340	013700	014420		MOV		FRM110,R0
3620	016344	005300			DEC		R0
3621	016346	001376			BNE		02
3622	016350	032777	010000	163450	BIT	0DA,0ICAR	
3623	016356	001001			BNE		04
3624	016360	000002			RTI		
3625	016362	052777	000041	163434	BIS	0TTYEN+XRF,0ICSR	
3626	016370	017700	163426		MOV		0ICMOD,R0
3627	016374	042700	000200	48:	BIC		0200,R0
3628	016400	042777	000040	163416	BIC		0TTYEN,0ICSR

.SBTTL EXIT REQUEST ROUTINES(POWER FAIL AND CONTROL C)

;;IS BIT 10 SET
;;YES CONTINUE
;;NO, RETURN

;;IS POWER FAIL BIT SET
;;YES, CONTINUE
;;NO, EXIT

;;ISSUE "RESET"
;;GO AND RESTART PROGRAM

;;IS BIT 10 SET
;;YES, CONTINUE
;;NO, EXIT

;;REMOTE TTY DATA AVAILABLE
;;YES CONTINUE
;;NO,EXIT

;;ENABLE TTY READ
;;READ
;;CLEAR READENABLE

3629	016406	022700	000003			CMP	03,R0		
3630	016412	001416				BEQ	18		IF WAS IT A CNTL C
3631	016414	022700	000020			CMP	020,R0		IF YES SERVICE IT
3632	016420	001401				BEQ	28		IF CNTRL P
3633	016422	000002				RTI			IF YES, SERVICE IT
3634	016424	012737	000001	014464	291	MOV	01,PRRMT1		IF NO, EXIT
3635	016432	005037	014462			CLR	PRRMT		
3636	016436	104413	025132			TYPE,	CNTNLP		
3637	016442	022626				POP2SP			
3638	016444	000137	010446			JMP	PRTSUM		
3639	016450	012737	000001	014464	181	MOV	01,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				POP2SP			IF ADJUST STACK
3643	016470	000137	010452			JMP	WAIT2		
3644									
3645	016474	032777	002000	163322	ERRLIN:	BIT	0PWRFL,0ICSR		IF IS PWR FAIL BIT ALSO SET
3646	016502	001402				BEQ	.+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,	PWRMES		IF PRINT POWER FAIL SENSED
3660	016544	052777	040000	163252	RST4:	BIS	0MAINT3,0ICSR		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	02.,R0		IF SET UP DELAY
3665	016566	005001				CLR	R1		
3666	016570	032777	010000	163226	RST2:	BIT	0ERRBIT,0ICSR		IF ERROR BIT SET
3667	016576	001416				BEQ	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,	ICROWN		
3677	016630	000137	016562			JMP	RST3		
3678	016634	052777	040000	163162	RST1:	BIS	0MAINT3,0ICSR		
3679	016642	012737	000001	014464		MOV	01,PRRMT1		
3680	016650	012737	000000	014462		MOV	00,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


```

3685
3686 016672 001404      BEQ      15      IPWR FAIL CAUSE US TO GET HERE
3687 016674 005037 014474 CLR      PWRFLP    INO, THEN RESTART DIAGNOSTIC
3688 016700 000137 010452 JMP      WAIT2    ICLEAR INDICATOR
3689 016704 104413 025076 151 TYPE,   RSTHES   IREASK QUESTION
3690 016710 000137 003002 JMP      START1
3691
3692
3693
3694
3695
3696
3697
3698
3699
3700 016714 005237 017206 ICRSRV: INC      INTFLG    IINDICATE INTERRUPT
3701 016720 005737 014426 TST      MICFLP    IIN MICRO CODE SECTION?
3702 016724 001401      BEQ      .+4      INO, 48
3703 016726 000002      RTI          IYES, EXIT
3704 016730 005737 017176 TST      TTYFLP    IIN TTY SECTION
3705 016734 001001      BNE      .+4      IYES CONT
3706 016736 000002      RTI          INO,EXIT
3707 016740 032777 010000 163056 BIT      @ERRBIT,@ICSR IODID ERROR CAUSE INTERRUPT
3708 016746 001405      BEQ      15      INO, THEN CHECK FOR OTHERS
3709 016750 017700 163052 MOV      @ICAR,R0    IREMOVE ERROR
3710 016754 005264 000004 INC      ERRCNT(4) IRECORD ERROR
3711 016760 000002      RTI          IRETURN FROM ERROR INTERRUPT
3712 016762 032777 000001 163034 151 BIT      @XRIF,@ICSR ISET RIF BIT TO CLEAR INTERRUPT
3713 016770 032777 000200 163026 BIT      @MODINT,@ICSR IMODULE INTERRUPT THE CAUSE
3714 016776 001416      BEQ      28      INO, THEN 28.....BAD
3715 017000 032777 010000 163020 BIT      @DA,@ICAR    IODID DA CAUSE IT
3716 017006 001016      BNE      38      IYES, THEN GO SERVICE DA AT 38
3717 017010 032777 100000 163010 BIT      @XTBMT,@ICAR IAS IT TBM
3718 017016 001040      BNE      48      IYES THEN GO SERVICE TBM AT 48
3719
3720
3721
3722
3723 017020 005777 162776 TST      @ICMOD      IREAD TO CLEAR RIF BIT AND INTERRUPT
3724 017024 017700 162776 MOV      @ICAR,R0
3725
3726
3727 017030 104063      ERROR    63      IUNEXPECTED MODULE INTERRUPT, INPUT PROBABLY
3728
3729 017032 000401      BR        998
3730
3731
3732 017034 104064      251 ERROR    64      ISPURIOUS ICR INTERRUPT
3733
3734 017036 022626      998: POP2SP
3735 017040 000137 007620 JMP      TTY2
3736
3737
3738
3739
3740

```

```

3741 017044 017737 162752 001126 38: MOV @ICMOD,SDDAT IREAD
3742 017052 023737 001124 001126 CMP SGDDAT,SDDAT 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 SGDDAT
3749 017072 005037 017174 CLR DATSNT
3750 017076 032737 000400 001124 BIT @400,SGDDAT
3751 017104 001405 BEQ 48
3752 017106 022626 78: POP2SP
3753 017110 017700 162712 MOV @ICAR,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 @ICSR
3766 017136 100003 BPL .+10
3767 017140 005300 DEC R0
3768 017142 001373 BNE .-10
3769
3770 017144 104035 ERROR 35
3771
3772 017146 013777 001124 162646 MOV SGDDAT,@ICMOD
3773 017154 005237 017174 INC DATSNT
3774 017160 017700 162642 88: MOV @ICAR,R0
3775 017164 022626 POP2SP
3776 017166 000137 007654 JMP TTY1
3777
3778
3779 017172 000000 PRILVL: 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 ISAVE 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			BUFHEB: 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 221776 000000
3854
3855
3856
3857
3858
022000 006415 000012 CRLF: .ASCIZ <15><15><12>
022004 006415 044412 051103 VECMD: .ASCIZ <15><15><12>/ICR VECTOR ADDRESS = /
022034 006415 044412 052116 PRIOR: .ASCIZ <15><15><12>/INTERRUPT PRIORITY LEVEL = /
022072 006415 046412 042117 VECMES: .ASCIZ <15><15><12>/MOD. INT. WILL NOT INT = ABORTED/
022136 051503 020122 044502 EM1: .ASCIZ /CSW BIT 15 SET/
022155 122 051505 052105 EM2: .ASCIZ /RESET BIT SET/
022173 124 054524 042440 EM3: .ASCIZ /TTY ENA NOT SET/
022213 124 054524 042440 EM4: .ASCIZ /TTY ENA SET/
022227 015 005015 040515 M6094: .ASCIZ <15><15><12>/MAINTENANCE MODE ACTIVATED/
022265 124 047515 052125 EM5: .ASCIZ /THOUT FLP NOT SET/
022307 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/
022402 047111 020124 042523 EM12: .ASCIZ /INT SET APT RIP/
022422 051105 020122 042523 EM13: .ASCIZ /ERR SET APT CLR/
022442 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 = /
022547 015 043012 046111 FILE: .ASCIZ <15><12>/FILE BOX /
022563 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 006416 005015 042524 TESTIN: .ASCIZ <16><15><15><12>/TESTING FILE BOX /
022656 005015 041511 030522 HEADER: .ASCIZ <15><12>/ICR11 CONTROLLER DIAGNOSTIC MAINDEC-11-DZIRA-A/<15><12>
022740 005015 025052 025052 .ASCIZ <15><12>/*****ICR11 SYSTEM MAP*****/<15><12>
023010 005015 005015 025052 STARMS: .ASCIZ <15><12><15><12>/*****/
023060 006415 051012 041505 MES39: .ASCIZ <15><15><12>/RECOVERED FROM POWER FAILURE /<15><15><12>
023124 005015 047111 052520 RESULT: .ASCIZ <15><12>/INPUT MODULE ADDRESS RANGE/<15><12>
023162 052123 051101 020124 .ASCIZ /START /
023173 015 005015 044506 FINMES: .ASCIZ <15><15><12>/FINISH /
023207 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/ MOVX
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/

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023541	106	042515	047040	EM40:	.ASCII	/FME NO TIMEOUT/
023560	046123	040440	045503	EM41:	.ASCII	/SL ACK ON BD CRC/
023601	106	042523	042440	EM42:	.ASCII	/FSE ERROR/
023613	106	042523	052040	EM43:	.ASCII	/FSE TIMEOUT/
023627	106	042523	047040	EM44:	.ASCII	/FSE NO ERROR/
023644	044524	042515	052517	EM45:	.ASCII	/TIMEOUT ERROR/
023662	040504	040524	053040	EM46:	.ASCII	/DATA VALID ERROR/
023703	111	040503	020122	EM47:	.ASCII	/ICAR ERROR/
023716	047515	020104	042101	EM50:	.ASCII	/MOD ADDR ERROR/
023735	124	047105	041440	EM51:	.ASCII	/TEN CONSECUTIVE LINE ERRORS IN MODULE RANGE TEST/
024016	042524	020116	047503	EM52:	.ASCII	/TEN CONSECUTIVE LINE ERRORS IN MODULE WRAP AROUND TEST/
024105	124	046502	020124	EM53:	.ASCII	/TBM TTY TRANS/
024124	041124	052115	052040	EM54:	.ASCII	/TBM TTY TIME/
024142	044522	020106	044502	EM55:	.ASCII	/RIF BIT NOT SET/
024162	044522	020106	044502	EM56:	.ASCII	/RIF BIT SET/
024176	052124	020131	047111	EM57:	.ASCII	/TTY INTERRUPT TEST HUNG/
024226	040515	047111	020124	EM60:	.ASCII	/MAINT BIT 3 ON/
024245	120	051127	043040	EM61:	.ASCII	/PWR FAIL BIT ON/
024265	111	051503	020122	EM62:	.ASCII	/ICR REG. ERROR/
024305	040	042440	051122	PCPRT:	.ASCII	/ERRPC /
024316	006415	051412	052520	EM64:	.ASCII	<15><15><12>/SPUR ICR INT/
024336	006415	052412	042516	EM63:	.ASCII	<15><15><12>/UNEXP MOD INT/
024357	015	005015	044506	FILET:	.ASCII	<15><15><12>/FILE BOX IN ERROR /
024405	015	005015	025012	RUNSUM:	.ASCII	<15><15><12><12>/RUN SUMMARY - FILE /
024436	006452	000012		RUNCON:	.ASCII	/a/<15><12>
024442	040520	051523	041440	PASMES:	.ASCII	/PASS COUNT /
024463	015	005015	051105	ERMES:	.ASCII	<15><15><12>/ERROR COUNT /
024507	015	005015	044514	TRERR:	.ASCII	<15><15><12>/LINE ERROR COUNT/
024533	015	005015	047516	NOEXST:	.ASCII	<15><15><12>/NON-EXISTENT FILE BOX/
024564	020040	000		SPACE:	.ASCII	/ /
024567	015	005015	044123	NOPLUG:	.ASCII	<15><15><12>/SHORTING PLUG NOT IN REMOTE END - TTY TEST ABORTED/<15><12>
024657	015	005015	047514	LOADIN:	.ASCII	<15><15><12>/LOADING..../
024676	006415	051012	046505	TBMTHS:	.ASCII	<15><15><12>/REMOTE TTY HUNG--DESELECT IT/
024736	006415	051012	051105	WAITIN:	.ASCII	<15><15><12>/RERUN OR LOAD FIELD TEST? /
024775	015	005015	047503	CONTOP:	.ASCII	<15><15><12>/CONT BY OPERATOR...LOOPING/<15><12>
025035	015	005015	042522	TSTTTY:	.ASCII	<15><15><12>/REMOTE TTY WRAP AROUND TEST/<15><12>
025076	006416	005015	005015	RSTMES:	.ASCII	<16><15><15><12><15><12>/RESTARTING DIAGNOSTIC/
025132	006415	057012	000120	CNTRLPI:	.ASCII	<15><15><12>/P/
025140	006415	057012	000103	CNTRLC:	.ASCII	<15><15><12>/C/
025146	006415	052012	051505	WRKMES:	.ASCII	<15><15><12>/TESTING/
025161	015	005015	041511	PWRMES:	.ASCII	<15><15><12>/ICR POWER FAIL SENSED/
025212	006415	044412	051103	ICRDWN:	.ASCII	<15><15><12>/ICR POWER OFF/LINE OPENX
025245	015	005015	041511	PWRMS1:	.ASCII	<15><15><12>/ICR POWER FAIL TEST/
025273	015	050012	053517		.ASCII	<15><12>/POWER DOWN REMOTE END OF ICR/
025332	005015	047520	042527	PWRMS2:	.ASCII	<15><12>/POWER REMOTE END BACK UP/<15><12>
025367	015	005015	047516	NOISY:	.ASCII	<15><15><12>/XNOISY/OPEN LINEX

3859					.EVEN	
3860						
3861	025412	006415	000012	DM0:	.ASCII	<15><15><12>
3862	025416	054105	023520	DM1:	.ASCII	/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				.=33000				
3905										
3906						.8B TTL	FIELD TEST LOAD ROUTINES/ABS LOADER			
3907										
3908										
3909										
3910										
3911										
3912										
3913	033000	052777	040000	147016	GOLOAD:	BIS	0MAINT3,0ICSR	IRESET		
3914	033006	013737	002024	033154		MOV	ICSR,SVCSR	ISAVE PRESENT CSR IN CASE OF CKSUM ERROR		
3915	033014	013737	002026	033156		MOV	ICAR,SVCAR			
3916	033022	013737	014404	033152		MOV	VECTOR,SVVEC			
3917	033030	013737	002022	033160		MOV	ICMOD,SVMOD			
3918	033036	013737	001136	033150		MOV	SWR,TSHR			
3919										
3920	033044	000137	033232			JMP	L01			


```

3921
3922
3923      ;
3924      ;PRINT BAD CHECKSUM MESSAGE
3925      ;
3926      033050 010046      CKSMDB: 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:      MOV      (0)+,R1      ;GET CHAR
3930      033062 001426      BEQ      28      ;ZERO TERMINATOR
3931      033064 010177 000072      MOV      R1,PTPB
3932      033070 105777 000070      18:      TSTB      0TPS
3933      033074 100375      BPL      18
3934      033076 032777 002000 000044      BIT      @SW10,PTSWR
3935      033104 001765      BEQ      38
3936      033106 052777 001040 000040      BIS      @TBMEN+TTYEN,@SVCSR
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+TBMEN,@SVCSR
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      SVCSR:      0
3950      033156 000000      SVCAR:      0
3951      033160 000000      SVMOD:      0
3952      033162 177566      TPB:      177566
3953      033164 177564      TPS:      177564
3954
3955      033166 006415 041012 042101 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 -- V005A MODIFIED FOR THE
3963      ;PURPOSE OF LOADING ICR11 FIELD TEST PROGRAM (MD-11-DZIR0)
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

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3977	000007		PC=	87		PROGRAM COUNTER
3978						
3979	000200		LOAD=	200		
3980	017776		DEV=	17776		
3981	000162		ICRVEC=	162		IVECTOR FOR FIELD TEST
3982	000164		REMPF=	164		IREMOTE LOAD INDICATOR
3983	000166		ICARLD=	166		ICAR FOR FIELD TEST
3984	000170		ICSRLO=	170		ICSR FOR FIELD TEST
3985	000172		ICSMLO=	172		IMODULE ADDRESS FOR FIELD TEST
3986						
3987						
3988						
3989						
3990	033206	000012		.BLKW	10,	
3991						
3992	033232	010706	LD1:	MOV	PC,SP	SET STACK POINTER
3993	033234	024646		CMP	-(SP),-(SP)	TO START AT LD1-4
3994	033236	012705		MOV	BREAD,PTR	
3995	033242	005001		CLR	ADR	ICLEAR LOAD ADDRESS
3996	033244	005016	LD1B:	CLR	OSP	USING ADDRESS ON TAPE
3997						
3998						
3999						
4000						
4001						
4002	033246	005000	LD2:	CLR	CKSM	INIT CHECK SUM
4003	033250	004715		JSR	PC,OPTR	CHECK FOR +1 (START OF BLOCK)
4004	033252	105303		DECB	BYT	LOOP UNTIL +1 FOUND
4005	033254	001374		BNE	LD2	
4006	033256	004715		JSR	PC,OPTR	READ ANOTHER FRAME
4007						
4008						
4009						
4010						
4011						
4012	033260	004737		JSR	PC,GWRD	GET FULL BYTE COUNT
4013	033264	010402		MOV	R4,BC	
4014	033266	162702		SUB	84,BC	SUB 4 TO BYTE COUNT CORRECT
4015	033272	022702		CMP	82,BC	WAS IT SIX (6)
4016	033276	001440		BEQ	JMP1	JUMP BLOCK
4017	033300	004737		JSR	PC,GWRD	GET LOAD ADDRESS
4018	033304	061604		ADD	OSP,R4	ACTUAL ADDRESS
4019	033306	010401		MOV	R4,ADR	PUT ADDRESS IN PROPER CELL
4020						
4021						
4022						
4023						
4024						
4025						
4026	033310	004715	LD3:	JSR	PC,OPTR	READ A FRAME
4027	033312	002003		BGE	LD4	IF MORE DATA REMAINS
4028	033314	105700		TSTB	CKSM	CHECKSUM CORRECT
4029	033316	001753		BEQ	LD2	
4030	033320	000464	BAD:	BR	BOCKSM	CHECK SUM ERROR
4031						
4032	033322	110321	LD4:	MOVB	BYT,(ADR)+	STORE 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          INC0      #BYT          ;READER RUN
4041 033334 105713          R12:     TSTB      #BYT
4042 033336 100376          BPL      R12
4043 033340 116303 000002      MOV0     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,OPTR
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      JMP1:   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          JMP11:  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      SVCSR,ICSRLO
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      BDCKSM: JMP      CKSM0
4085
4086          033476      SENDAD=.
4087          000001          .END

```


ADDR	014450	CK8MBD	033050	EM4	022213	FR1000	014406	MFR100	002046
ADDYAB	017532	CNTRLC	025140	EM40	023541	FR20	014416	MFR11K	002036
ADDWRP	006434	CNTRLP	025132	EM41	023560	FR200	014414	MFR20	002050
ADR	=X000001	CONTOP	024775	EM42	023601	FR500	014410	MFR200	002044
ADWR1	006364	CONYST	002776	EM43	023613	GETREG	104406	MFR500	002042
ADWR2	006372	CONYSH	004146	EM44	023627	GOLOAD	033000	MICFLP	014426
BAD	033320	CRLF	022000	EM45	023644	GOOF	002754	MODEN	=000004
BC	=X000002	DA	=010000	EM46	023662	GWRD	033356	MODINT	=000200
BDCKSM	033472	DATENT	017174	EM47	023703	HEADER	022656	M0094	022227
BITLEST	003776	DDISP	=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	NOISY	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	D8WR	=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	PCPRT	024305
BIT1	=000002	DT3	025642	EM63	024336	ICRWT3	011212	PERHGM	000006
BIT10	=002000	DT4	025652	EM64	024316	ICSHLD	000172	PERLOW	000010
BIT11	=004000	EDISPT	014500	EM7	022327	ICSR	002024	PIRQ	=177772
BIT12	=010000	EMTVEC	000030	ENDPAS	010304	ICSRMD	022572	PIRQVE	000240
BIT13	=020000	EM1	022136	ENDPS1	010336	ICSRLD	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	PRMT	014462
BIT4	=000020	EM14	022442	ERRFLP	014440	IOTVEC	000020	PRMT1	014464
BIT5	=000040	EM15	022462	ERRFLR	002062	JMP1	033400	PRMES	010720
BIT6	=000100	EM16	022477	ERRFLR	002062	JMP11	033422	PRTSUM	010446
BIT7	=000200	EM17	022513	ERRLIN	016474	LD1	033232	PR0	=000000
BIT8	=000400	EM2	022155	ERRLOP	014460	LD10	033244	PR1	=000040
BIT9	=001000	EM20	023214	ERRTOT	000002	LD2	033246	PR2	=000100
BLANK	023207	EM21	023233	ERRVEC	000004	LD3	033310	PR3	=000140
BLINK	017200	EM22	023246	ERTTL	014442	LD4	033322	PR4	=000200
BMTEN	=000010	EM23	023266	FILENT	014402	LOAD	=000200	PR5	=000240
BMTINT	013772	EM24	023315	FILE	022547	LOADIN	024657	PR6	=000300
BMTTST	004574	EM25	023331	FILET	024357	LOOP1	=004410	PR7	=000340
BOXCNT	002052	EM26	023346	FILEND	002574	LOOP2	=005632	PS	=177776
BPTVEC	000014	EM27	023363	FILLST	002774	LOOP3	=011400	PSW	=177776
BUF0EG	017776	EM3	022173	FILNFD	002710	LOW	014434	PTR	=X000005
BUFEND	021750	EM30	023363	FILUT8	014400	LPTST	003504	PWFEN	=000020
BUFFIN	021774	EM31	023363	FIND11	002226	MAINT3	003576	PWFFLG	002032
BUFMES	017774	EM32	023400	FINMES	023173	MAINT0	000400	PWRFL	=002000
BYT	=X000003	EM33	023420	FIRST	014424	MAINT1	004000	PWRFLP	014474
CKCNC	=104415	EM34	=023233	FLAG	014430	MAINT2	020000	PWRMES	025161
CKMES	033166	EM35	023447	FLAG1	014422	MAINT3	040000	PWRMS1	025245
CKPWF	=104414	EM36	023466	FLOST	033430	MES39	023060	PWRMS2	025332
CKSM	=X000000	EM37	023527	FR100	014412	MFR10K	002040	PWRVEC	000024

READ 003326	STARTA 003044	TMTEN= 001000	TYPON = 104403	SERTY 015174
REFF = 000164	START1 003002	TMTMS 024676	TYP0S = 104402	SERTTL 001112
REMOTE 014472	START2 003144	TEMP 014476	VECFND 004150	SFILLC 001154
REMPRE 014466	STKLMT= 177774	TEMP1 014444	VECHD 022004	SFILLS 001153
RESULT 023124	SUMPRT 010120	TENCNT 002054	VECHES 022072	SGDADR 001120
RESVEC= 000010	SVCAR 033156	TENCN1 014374	VECRET 004244	SGDDAT 001124
RSTMS 025076	SVCOR 033154	TENTST 004346	VECTOR 014404	SHD = 000003
RSTRT 016530	SVMOD 033160	TESTIN 022630	VECTST= 004014	SICNT 001104
RST1 016634	SVVEC 033152	TEST1 003332	VECT1 004024	SILLUP 016146
RST2 016570	SWLOOP= 013360	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	SWB = 000001	TEST3B 012222	WAIT2 010452	SLPERR 001110
RUNSUM 024405	SWB0 = 000001	TEST3C 012344	WATROU 010254	SNUL 001152
RWBIT 003524	SWB1 = 000002	TEST3D 012556	WRKFLP 017204	SOCNT 015570
R0 =X000000	SWB2 = 000004	TEST3L 011364	WRKMES 025146	SOMODE 015572
R1 =X000001	SWB3 = 000010	TIMTRP 017202	XCKCNC 016302	SPASS 001100
R12 033334	SWB4 = 000020	TKVEC = 000060	XCKPWF 016232	SPWRAD 016142
R2 =X000002	SWB5 = 000040	TMP 033426	XCKPW1 016270	SPWRDN 016020
R3 =X000003	SWB6 = 000100	TPB 033162	XMASK 014376	SPWRMG 016136
R4 =X000004	SWB7 = 000200	TPS 033164	XRESET= 000100	SPWRUP 016066
R5 =X000005	SWB8 = 000400	TPVEC = 000064	XRESRG 017446	SQUES 001156
R6 =X000006	SWB9 = 001000	TRACK 014446	XRIF = 000001	SSAVR6 016152
R7 =X000007	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	STPB 001150
SCOPEX= 104412	SW2 = 000004	TTYFLP 017176	SDDAT 001126	STPFLG 001155
SCOP94= 104407	SW3 = 000010	TTYINT 007574	SCHTAG 001100	STPS 001146
SCOP96= 104410	SW4 = 000020	TYL = 007112	SCH3 = 000000	STRAP 016154
SCOTTY= 104411	SW5 = 000040	TTYSTR 007032	SCRLF 001157	STRP = 000016
SCTMP 014232	SW6 = 000100	TTYTMP 014470	SDBLK 016010	STRPAD 016176
SETPWF 002064	SW7 = 000200	TTYTST 007036	SDTBL 016000	STSTNM 001102
SP =X000006	SW8 = 000400	TTYWT 011316	SENDAD= 033476	STYPOS 015574
SPACE 024564	SW9 = 001000	TTY1 007654	SERFLG 001103	STYPE 014502
SRTFF 002060	SW9FF 002056	TTY2 007620	SERMAX 001115	STYPOC 015372
STACK = 001100	SYSMAP 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	SOFILL 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)