

.REM 6

IDENTIFICATION

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MAINTAINER: ENE - DIAGNOSTICS GROUP
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***** MODIFICATION HISTORY *****

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THE FOLLOWING MODIFICATIONS HAVE BEEN MADE TO THE OLD CZDHWA:

THE HARDWARE QUESTION "TYPE OF LOOPBACK" HAS BEEN ALTERED TO INCLUDE THE STAGGERED LOOPBACK CONNECTORS ON THE DHU11 DISTRIBUTION PANEL (H3029).

THE HARDWARE QUESTION "INTERRUPT VECTOR" HAS BEEN REMOVED.

THE HARDWARE QUESTION "BR LEVEL" HAS BEEN REMOVED.

ALL THE TESTS THAT WERE IN THE PREVIOUS VERSION (CZDHWA); EXCEPT THE "REGISTER ADDRESS TEST" AND THE "REPORT BMP CODES" (THE FIRST AND LAST TESTS COMMON TO EACH PART OF THE DIAGNOSTIC); HAVE BEEN TRANSFERED TO PART (CZDHX).

THE MODEM SIGNAL TESTS FROM PART CZDHVA HAVE BEEN TRANSFERED INTO THIS PART, THEY WERE TESTS 16 THRU 23 IN CZDHVA.

TABLE OF CONTENTS

1.0	GENERAL PROGRAM CONSIDERATIONS
1.1	PROGRAM ABSTRACT
1.2	SYSTEM REQUIREMENTS
1.3	RELATED DOCUMENTS AND STANDARDS
1.4	DIAGNOSTIC HIERARCHY PREREQUISITES
2.0	OPERATING INSTRUCTIONS
2.1	COMMANDS
2.2	SWITCHES
2.3	FLAGS
2.4	EXTENDED COMMAND SYNTAX
2.4.1	START COMMAND
2.4.1.1	TESTS SWITCH (/TESTS:<TEST-LIST>)
2.4.1.2	PASS SWITCH (/PASS:<PASS-CNT>)
2.4.1.3	FLAGS SWITCH (/FLAGS:<FLAG-LIST>)
2.4.1.4	END OF PASS SWITCH (/EOP:<INCR>)
2.4.1.5	EFFECT OF START COMMAND
2.4.2	RESTART COMMAND
2.4.2.1	TESTS, PASS, AND FLAGS SWITCHES
2.4.2.2	UNITS SWITCH (/UNITS:<UNIT-LIST>)
2.4.2.3	EFFECT OF RESTART COMMAND
2.4.3	CONTINUE COMMAND
2.4.3.1	FLAG SWITCH (/FLAGS:<FLAG-LIST>)
2.4.3.2	EFFECT OF CONTINUE COMMAND
2.4.4	PROCEED COMMAND
2.4.4.1	FLAGS SWITCH (/FLAGS:<FLAG-LIST>)
2.4.4.2	EFFECT OF PROCEED COMMAND
2.4.5	ADD COMMAND
2.4.6	EFFECT OF ADD COMMAND
2.4.7	DROP COMMAND
2.4.8	EFFECT OF DROP COMMAND
2.4.9	PRINT COMMAND
2.4.9.1	EFFECT OF PRINT COMMAND
2.4.10	DISPLAY COMMAND
2.4.10.1	EFFECT OF DISPLAY COMMAND
2.4.11	FLAGS COMMAND
2.4.11.1	EFFECT OF FLAGS COMMAND
2.4.12	ZFLAGS COMMAND
2.4.13	ZFLAGS COMMAND
2.4.14	CONTROL CHARACTERS
2.5	HARDWARE QUESTIONS
2.6	SOFTWARE QUESTIONS
2.7	EXTENDED P-TABLE DIALOGUE
2.8	QUICK START-UP PROCEDURE (XXDP)
3.0	ERROR INFORMATION
3.1	TYPES OF ERROR MESSAGES
3.2	SPECIFIC ERROR MESSAGES
4.0	PERFORMANCE AND PROGRESS REPORTS
5.0	TEST SUMMARIES
6.0	EXAMPLE ERROR FREE PASS

1.0 GENERAL PROGRAM CONSIDERATIONS

1.1 PROGRAM ABSTRACT

CZDHW80 IS PART OF THE DHU-11 FUNCTIONAL VERIFICATION TEST. THIS PART OF THE TEST PERFORMS TESTS ON THE MODEM CONTROL SIGNALS OF THE DUT.

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

1.2 SYSTEM REQUIREMENTS

THE FOLLOWING HARDWARE IS REQUIRED TO RUN THE DHU11 FVT:

- O UNIBUS PROCESSOR WITH AT LEAST 32K BYTES OF MEMORY.
- O DHU BOARDS INSTALLED ON THE UNIBUS.
- O APPROPRIATE PROGRAM LOAD DEVICE SUPPORTING XXDP+ MEDIA OR A DOWN LINE LOADING SYSTEM.

1.3 RELATED DOCUMENTS AND STANDARDS

- O XXDP+ USER'S MANUAL DESCRIBES THE RUNNING OF DIAGNOSTICS UNDER THE XXDP+ MONITOR.

1.4 DIAGNOSTIC HIERARCHY PREREQUISITES

THE PROCESSOR, THE UNIBUS, THE SYSTEM MEMORY, THE CONSOLE TERMINAL AND THE LOAD MEDIA ARE ASSUMED TO HAVE BEEN TESTED AND FOUND WORKING BEFORE THIS PROGRAM IS RUN.

2.0 OPERATING INSTRUCTIONS

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

2.1 COMMANDS

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

COMMAND	EFFECT
START	START THE DIAGNOSTIC FROM AN INITIAL STATE
RESTART	START THE DIAGNOSTIC WITHOUT INITIALIZING
CONTINUE	CONTINUE AT TEST THAT WAS INTERRUPTED (AFTER +C)
PROCEED	CONTINUE FROM AN ERROR HALT
EXIT	RETURN TO XXDP+ MONITOR (XXDP+ OPERATION ONLY!)
ADD	ACTIVATE A UNIT FOR TESTING (ALL UNITS ARE CONSIDERED TO BE ACTIVE AT START TIME)
DROP	DEACTIVATE A UNIT
PRINT	PRINT STATISTICAL INFORMATION (IF IMPLEMENTED BY THE DIAGNOSTIC - SEE PERFORMANCE AND PROGRESS REPORTS SECTION OF THIS DOCUMENT)
DISPLAY	TYPE A LIST OF ALL DEVICE INFORMATION
FLAGS	TYPE THE STATE OF ALL FLAGS (SEE FLAGS SECTION)
ZFLAGS	CLEAR ALL FLAGS (SEE FLAGS SECTION)

A COMMAND CAN BE RECOGNIZED BY THE FIRST THREE CHARACTERS. SO
YOU MAY, FOR EXAMPLE, TYPE "STA" INSTEAD OF "START".
MORE INFORMATION CAN BE FOUND WITHIN THE SECTION LABELLED
EXTENDED COMMAND SYNTAX

2.2 SWITCHES

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

SWITCH	EFFECT
/TESTS:LIST	EXECUTE ONLY THOSE TESTS SPECIFIED IN THE LIST. LIST IS A STRING OF TEST NUMBERS, FOR EXAMPLE - /TESTS:1:5:7-10. THIS LIST WILL CAUSE TESTS 1,5,7,8,9,10 TO BE RUN. ALL OTHER TESTS WILL NOT BE RUN.
/PASS:DDDDD	EXECUTE DDDDD PASSES (DDDDD = 1 TO 64000)
/FLAGS:FLGS	SET SPECIFIED FLAGS. SEE THE FLAGS SECTION OF THIS DOCUMENT.
/EOP:DDDDD	REPORT END OF PASS MESSAGE AFTER EVERY DDDDD PASSES ONLY. (DDDDD = 1 TO 64000)
/UNITS:LIST	TEST/ADD/DROP ONLY THOSE UNITS SPECIFIED IN THE LIST. LIST EXAMPLE - /UNITS:0:5:10 12 USE UNITS 0,5,10,11,12 (UNIT NUMBERS = 0-63)

EXAMPLE OF SWITCH USAGE:

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

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

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

	TESTS	PASS	FLAGS	EOP	UNITS
START	X	X	X	X	X
RESTART	X	X	X	X	X
CONTINUE		X	X	X	
PROCEED			X		
DROP					X
ADD					X
PRINT					
DISPLAY					X
FLAGS					
/FLAGS					
EXIT					

2.3 FLAGS

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

FLAG	EFFECT
HOE	HALT ON ERROR - CONTROL IS RETURNED TO RUNTIME SERVICES COMMAND MODE
LOE	LOOP ON ERROR
IER*	INHIBIT ALL ERROR REPORTS
IBR*	INHIBIT ALL ERROR REPORTS EXCEPT FIRST LEVEL (FIRST LEVEL CONTAINS ERROR TYPE, NUMBER, PC, TEST AND UNIT)
IXR*	INHIBIT EXTENDED ERROR REPORTS (THOSE CALLED BY PRINTX MACRO'S)
PR1	DIRECT MESSAGES TO LINE PRINTER
PNT	PRINT TEST NUMBER AS TEST EXECUTES
BOE	"BELL" ON ERROR
UAM	UNATTENDED MODE (NO MANUAL INTERVENTION)
ISR	INHIBIT STATISTICAL REPORTS (DOES NOT APPLY TO DIAGNOSTICS WHICH DO NOT SUPPORT STATISTICAL REPORTING)
IDR	INHIBIT PROGRAM DROPPING OF UNITS
ADR	EXECUTE AUTODROP CODE
LOT	LOOP ON TEST
EVL	EXECUTE EVALUATION (ON DIAGNOSTICS WHICH HAVE EVALUATION SUPPORT)

*SEE THE ERROR INFORMATION SECTION OF THIS DOCUMENT.

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

/FLAGS:LOE:IER:BOE

2.4 EXTENDED COMMAND SYNTAX

2.4.1 START COMMAND

```
*****
STA(RT)/TESTS:<TEST-LIST>/PASS:<PASS-CNT>/FLAGS:
<FLAG-LIST>/EOP:<INCR>
*****
```

2.4.1.1 TESTS SWITCH (/TESTS:<TEST-LIST>) -

<TEST-LIST> IS A SEQUENCE OF DECIMAL NUMBERS (1;2 ETC.) OR RANGES OF DECIMAL NUMBERS (1-5;8-10 ETC.), SEPERATED BY COLONS, THAT SPECIFY THE TESTS TO BE EXECUTED. TESTS WILL BE EXECUTED IN NUMERICAL ORDER REGARDLESS OF THE ORDER OF SPECIFICATION. THE DEFAULT IS TO EXECUTE ALL TESTS. ON THIS AND ALL SWITCHES, THE ANGLE BRACKETS <> ARE PUNCTUATION USED IN THE DEFINITION ONLY, AND ARE NOT TO BE TYPED BY THE OPERATOR. SEE EXAMPLE AT END OF "EFFECT OF START COMMAND" SECTION.

2.4.1.2 PASS SWITCH (/PASS:<PASS-CNT>) -

<PASS-CNT> IS A DECIMAL NUMBER INDICATING THE DESIRED NUMBER OF PASSES. A PASS IS DEFINED AS THE EXECUTION OF THE FULL DIAGNOSTIC (ALL SELECTED TESTS). THE DEFAULT IS NON-ENDING EXECUTION. IN THIS CASE, EXIT FROM THE PROGRAM IS ACCOMPLISHED EITHER BY TYPING A CONTROL/C OR BY OCCURANCE OF AN ERROR WITH THE HALT ON ERROR FLAG BEING SET. THE EXIT IS A RETURN TO COMMAND MODE. SEE EXAMPLE AT END OF "EFFECT OF START COMMAND" SECTION.

2.4.1.3 FLAGS SWITCH (/FLAGS:<FLAG-LIST>) -

<FLAG-LIST> IS A SEQUENCE OF ELEMENTS OF THE FORM <FLAG>, <FLAG=1>, OR <FLAG=0>, SEPERATED BY COLONS, WHERE <FLAG> HAS ONE OF THE FOLLOWING VALUES:

HOE	HALT ON ERROR, CAUSING COMMAND MODE TO BE ENTERED WHEN AN ERROR IS ENCOUNTERED.
LOE	LOOP ON ERROR, CAUSING THE DIAGNOSTIC TO LOOP CONTINUOUSLY WITHIN THE SMALLEST DEFINED BLOCK OF CODING (SEGMENT, SUBTEST, OR TEST) CONTAINING THE ERROR.
IER	INHIBIT ERROR REPORTING.
IBE	INHIBIT BASIC ERROR REPORTS.
IXE	INHIBIT EXTENDED ERROR REPORTS.
PRI	DIRECT ALL MESSAGES TO A LINE PRINTER.
PNT	PRINT NUMBER OF TEST BEING EXECUTED.
BOE	BELL ON ERROR (NOT RELATED TO BELL PROMPTING).
UAM	RUN IN UNATTENDED MODE, BYPASSING MANUAL INTERVENTION (ILLEGAL FOR THIS DIAGNOSTIC).
ISR	INHIBIT STATISTICAL REPORTS.

IDU INHIBIT DROPPING OF UNITS BY DIAGNOSTIC.
(HAS NO EFFECT IN THIS DIAGNOSTIC.)
LOT LOOP ON TEST.
THE FLAGS NAMED OR EQUATED TO 1 ARE SET, THOSE EQUATED TO 0 ARE
Cleared. A FLAG NOT SPECIFIED IS CLEARED. IF THE FLAGS SWITCH IS NOT
GIVEN ALL FLAGS ARE CLEARED. SEE EXAMPLE AT END OF "EFFECT OF START
COMMAND" SECTION.

2.4.1.4 END OF PASS SWITCH (/EOP:<INCR>) -

<INCR> IS A DECIMAL NUMBER INDICATING HOW OFTEN (IN TERMS OF
PASSES) IT IS DESIRED THAT THE END OF PASS MESSAGE BE PRINTED. THE
DEFAULT IS AT THE END OF EVERY PASS. SEE EXAMPLE AT END OF "EFFECT OF
START COMMAND" SECTION.

2.4.1.5 EFFECT OF START COMMAND -

THE EFFECT OF THE START COMMAND IS TO INITIATE THE HARDWARE
PARAMETER DIALOGUE, THE SOFTWARE PARAMETER DIALOGUE, THE
INITIALIZATION QUESTIONS, AND THEN THE DIAGNOSTIC COMMENCES TESTING.

THE HARDWARE PARAMETER DIALOGUE COMMENCES WITH THE QUESTION "0
UNITS (0) ?" TO WHICH THE OPERATOR SHOULD REPLY WITH THE NUMBER OF
UNITS TO BE TESTED. FOLLOWING THIS ARE THE QUESTIONS WHEREBY THE
P-TABLES THEMSELVES ARE BUILT. EACH P-TABLE IS A CORE-RESIDENT TABLE
CONTAINING ALL THE HARDWARE INFORMATION FOR ONE COMPLETE UNIT. EACH
QUESTION IS FOLLOWED BY THE RESPONSE RADIX (D FOR DECIMAL, B FOR
BINARY, O FOR OCTAL, L FOR YES/NO) IN PARENTHESES AND THE DEFAULT
VALUE AFTER THE PARENTHESES FOR THE ACTUAL HARDWARE P-TABLE
QUESTIONS SEE THE "HARDWARE PARAMETERS" SECTION.

FOLLOWING THE HARDWARE QUESTIONS ARE THE SOFTWARE QUESTIONS TO
BUILD THE SOFTWARE TABLES, WHICH DEFINE OPERATING PARAMETERS OF THE
DIAGNOSTIC PROGRAM. THESE QUESTIONS ARE DESCRIBED IN THE "SOFTWARE
PARAMETERS" SECTION.

EXAMPLE:

STA/TESTS:1;3-4:/PASS:3/FLAGS:IER:HOE*1

THIS COMMAND WILL CAUSE THREE PASSES TO BE MADE, WITH EACH PASS
CONSISTING OF TESTS 1, 3, AND 4. THERE IS NO DIFFERENCE BETWEEN SAYING
<FLAG> AND SAYING <FLAG-1>. THE NOTATION <FLAG-0> IS MEANINGFUL ONLY
ON A COMMAND OTHER THAN START TO CLEAR A FLAG THAT WAS PREVIOUSLY SET.
NOTE THAT ON ALL COMMANDS ONLY THE FIRST THREE LETTERS ARE SCANNED.

2.4.2 RESTART COMMAND -

```
*****
RES(TART)/TESTS:<TEST-LIST>/PASS:<PASS-CNT>/FLAGS:
  <FLAG-LIST>/UNITS:<UNIT-LIST>
*****
```

2.4.2.1 TESTS, PASS, AND FLAGS SWITCHES -

<TEST-LIST>, <PASS-CNT>, AND <FLAG-LIST> ARE AS IN THE START COMMAND.

2.4.2.2 UNITS SWITCH (/UNITS:<UNIT-LIST>) - <UNIT-LIST> IS A SEQUENCE OF DECIMAL NUMBERS (0,1 ETC.) OR RANGES OF DECIMAL NUMBERS (0-5, 8-10 ETC.) THAT SPECIFY THE UNITS TO BE TESTED. THE NUMBERS ARE SEPARATED BY COLONS. THE NUMBERS MAY RANGE FROM 0 THRU N-1 (N IS THE NUMBER OF UNITS SPECIFIED IN THE PREVIOUS START COMMAND). THE NUMBER INDICATES THE POSITION OF THE P-TABLE AS THE DATA WAS ENTERED DURING THE HARDWARE DIALOGUE. THE UNITS WHICH ARE SELECTED MUST NOT HAVE BEEN DROPPED BY THE DROP COMMAND. SEE THE DISCUSSION OF ADD AND DROP COMMANDS BELOW. DEFAULT IS TO TEST ALL UNITS WHICH HAVE NOT BEEN DROPPED BY A DROP COMMAND.

2.4.2.3 EFFECT OF RESTART COMMAND -

THE RESTART COMMAND DIFFERS FROM THE START COMMAND IN THAT THE P-TABLES FROM THE PREVIOUS START COMMAND (THERE MUST HAVE BEEN ONE) ARE USED, INSTEAD OF NEW ONES BEING BUILT. THE UNITS SWITCH SHOULD NOT BE USED WITH THIS PROGRAM. THE SOFTWARE DIALOGUE MAY OPTIONALLY BE REEXECUTED (OPERATOR WILL BE ASKED). THE COMMAND CAN BE USED AFTER COMMAND MODE HAS BEEN REENTERED IN ANY OF THE THREE NORMAL WAYS: A) THE REQUESTED NUMBER OF PASSES HAVE BEEN MADE, B) AN ERROR WAS ENCOUNTERED WITH THE HALT ON ERROR FLAG SET, OR C) A CONTROL/C WAS ENTERED BY THE OPERATOR.

2.4.3 CONTINUE COMMAND

```
*****
CON(TINUE)/PASS:<PASS-CNT>/FLAGS:<FLAG-LIST>
*****
```

2.4.3.1 FLAG SWITCH (/FLAGS:<FLAG-LIST>)

<FLAG-LIST> IS SAME AS IN THE START COMMAND, BUT UNSPECIFIED FLAGS RETAIN THEIR CURRENT VALUE.

2.4.3.2 EFFECT OF CONTINUE COMMAND -

CONTINUE MUST FOLLOW A START OR RESTART, AND COMMAND MODE MUST HAVE BEEN ENTERED DUE TO A HALT ON ERROR OR A CONTROL/C. THE EFFECT OF THE COMMAND IS TO GO TO THE BEGINNING OF THE TEST THAT WAS BEING EXECUTED WHEN THE HALT OR CONTROL/C TOOK PLACE. SOFTWARE DIALOGUE MAY OPTIONALLY BE REEXECUTED. HARDWARE PARAMETERS MAY NOT BE CHANGED.

2.4.4 PROCEED COMMAND -

PROCEED)/FLAGS:<FLAG-LIST>

2.4.4.1 FLAGS SWITCH (/FLAGS:<FLAG-LIST>) -

<FLAG-LIST> IS AS IN THE START COMMAND, BUT UNSPECIFIED FLAGS RETAIN THEIR CURRENT VALUE.

2.4.4.2 EFFECT OF PROCEED COMMAND -

PROCEED MUST FOLLOW A START, RESTART, OR CONTINUE. COMMAND MODE MUST HAVE BEEN ENTERED VIA A HALT ON ERROR. THE EFFECT OF THE COMMAND IS TO BEGIN EXECUTION AT THE LOCATION FOLLOWING THE ERROR CALL. NEITHER HARDWARE NOR SOFTWARE PARAMETERS MAY BE ALTERED.

2.4.5 ADD COMMAND -

ADD/UNITS:<UNIT-LIST>

2.4.6 EFFECT OF ADD COMMAND -

THE UNITS SPECIFIED ARE ADDED TO THE TEST SEQUENCE. EACH UNIT MUST HAVE A P-TABLE IN MEMORY DUE TO AN EARLIER HARDWARE DIALOGUE. THIS COMMAND MUST BE FOLLOWED BY A RESTART OR CONTINUE. THE UNITS SWITCH MUST BE SPECIFIED. THE ADD COMMAND IS MEANINGFUL ONLY FOR UNITS THAT WERE PREVIOUSLY DROPPED.

2.4.7 DROP COMMAND -

DRO(P)/UNITS:<UNIT LIST>

2.4.8 EFFECT OF DROP COMMAND -
THE UNITS SPECIFIED WILL BE DROPPED FROM TESTING. THE UNITS
WILL BE RESELECTED ONLY BY THE EXECUTION OF AN ADD OR START
COMMAND. THE UNITS SWITCH MUST BE ENTERED. THIS COMMAND
MUST BE FOLLOWED BY A RESTART OR A CONTINUE COMMAND.

2.4.9 PRINT COMMAND -

PRI(NT)

2.4.9.1 EFFECT OF PRINT COMMAND -
THE TOTAL NUMBER OF ERRORS FOR EACH UNIT SINCE THE LAST
START OR RESTART COMMAND ARE PRINTED. THE ISR (INHIBIT
STATISTICAL REPORTING) FLAG IS CLEARED.

2.4.10 DISPLAY COMMAND -

DIS(PLAY)/UNITS:<UNIT-LIST>

2.4.10.1 EFFECT OF DISPLAY COMMAND -
THE HARDWARE P-TABLE FOR THE TEST STATION IS PRINTED IN THE
FORMAT IN WHICH IT WAS ENTERED.

2.4.11 FLAGS COMMAND -

FLA(GS)

2.4.11.1 EFFECT OF FLAGS COMMAND -
THE CURRENT SETTINGS OF ALL FLAGS ARE PRINTED.

2.4.12 ZFLAGS COMMAND -

ZFL(AGS)

2.4.13 ZFLAGS COMMAND -

ALL FLAGS ARE CLEARED.

2.4.14 CONTROL CHARACTERS -

- C A CONTROL/C (C) ENTERED DURING THE EXECUTION OF A DIAGNOSTIC CAUSES A RETURN TO COMMAND MODE.
- Z A CONTROL/Z (Z) ENTERED DURING ONE OF THE TWO OPERATOR DIALOGUES-- HARDWARE P-TABLE DIALOGUE OR SOFTWARE P-TABLE DIALOGUE CAUSES THE DEFAULTS TO BE TAKEN FOR THE REMAINDER OF THAT DIALOGUE.
- O A CONTROL/O (O) ENTERED DURING THE EXECUTION OF A DIAGNOSTIC CAUSES ALL TELETYPE OUTPUT TO BE SUPPRESSED FOR THE REMAINDER OF THE DIAGNOSTIC OR UNTIL ANOTHER CONTROL/O IS TYPED, WHICH RESTORES NORMAL TELETYPE OUTPUT.

2.5 HARDWARE QUESTIONS

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

1. CSR ADDRESS - THIS QUESTION REQUESTS THE CSR ADDRESS OF THE SPECIFIED DHU-11. THE DEFAULT ANSWER FOR THIS QUESTION IS ADDRESS 160460 (OCTAL).
2. ACTIVE LINES BIT MAP - THIS QUESTION REQUESTS AN OCTAL BIT MAP OF THE SERIAL COMMUNICATION LINES ON THE DHU11 WHICH ARE BEING SELECTED FOR TESTING. IF THE BIT IN THE BIT MAP IS SET WHICH CORRESPONDS TO A PARTICULAR LINE (I.E. BIT 5 FOR LINE 5) THAT LINE WILL BE TESTED BY THE FVT. THE DEFAULT ANSWER FOR THIS QUESTION IS ALL LINES I.E. 177777.
3. TYPE OF LOOPBACK (1=INTERNAL, 2=H3029 OR H3277, 3=H325)
THIS QUESTION REQUESTS THE TYPE OF LOOPBACK TO BE USED WHEN TESTING THE DHU-11.
THE FOLLOWING TYPES ARE SUPPORTED:
 - 0 INTERNAL - ONLY INTERNAL UART LOOPBACK IS TO BE USED IN TESTING THE DHU-11. SINCE ALL THE TESTS IN THIS PART REQUIRE EITHER STAGGERED OR SINGLE LINE LOOPBACK, SPECIFYING INTERNAL LOOPBACK WILL CAUSE THE TESTS TO BE SKIPPED. THIS WILL NOT HOWEVER CAUSE ANY ERRORS TO BE REPORTED.
 - 0 H3029 OR H3277 - STAGGERED LOOPBACK CONNECTORS ARE PROVIDED ON THE DHU11 DISTRIBUTION PANEL (H3029) IF THIS DISTRIBUTION PANEL IS NOT PRESENT THEN H3277 STAGGERED BERG CONNECTOR(S) MUST BE INSTALLED ON THE BERG CONNECTOR SOCKETS OF THE DHU11.
 - 0 H325 - SINGLE LINE, 25 PIN LOOPBACK CONNECTORS (TYPE H325) ARE INSTALLED ON THE LINES TO BE TESTED.

2.6 SOFTWARE QUESTIONS

AFTER YOU HAVE ANSWERED THE HARDWARE QUESTIONS OR AFTER A RESTART OR CONTINUE COMMAND, THE RUNTIME SERVICES WILL ASK FOR SOFTWARE PARAMETERS. THESE PARAMETERS WILL GOVERN SOME DIAGNOSTIC SPECIFIC OPERATION MODES. YOU WILL BE PROMPTED BY "CHANGE SW (L) ?" IF YOU WISH TO CHANGE ANY PARAMETERS, ANSWER BY TYPING "Y". THE SOFTWARE QUESTIONS AND THE DEFAULT VALUES ARE DESCRIBED IN THE NEXT PARAGRAPH(S).

1. REPORT UNIT NUMBER AS EACH UNIT IS TESTED - THIS QUESTION ASKS WHETHER THE PROGRAM SHOULD REPORT THE NUMBER OF THE UNIT WHICH IT IS TESTING AS IT BEGINS TO TEST THAT UNIT.
2. EXTENDED ERROR REPORTING - THIS QUESTION ASKS WHETHER EXTENDED ERROR INFORMATION IS REQUIRED OTHER THAN THE "TEST FAILED" MESSAGE, ON EACH ERROR REPORTED. THE DEFAULT IS "NO" I.E. ONLY A MESSAGE REPORTING THE FACT THAT THE TEST FAILED WILL BE PRINTED.
3. NUMBER OF INDIVIDUAL DATA ERRORS TO REPORT ON A LINE - THIS QUESTION IS ASKED ONLY IF THE PREVIOUS QUESTION WAS ANSWERED "YES". THE QUESTION ASKS FOR THE NUMBER OF DATA ERRORS WHICH SHOULD BE REPORTED INDIVIDUALLY BY THIS PROGRAM FOR EACH LINE FOR EACH TRANSMISSION TEST. ERRORS WHICH ARE NOT REPORTED INDIVIDUALLY ARE REPORTED IN SUMMARY ERROR REPORTS.

2.7 EXTENDED P-TABLE DIALOGUE

WHEN YOU ANSWER THE HARDWARE QUESTIONS, YOU ARE BUILDING ENTRIES IN A TABLE THAT DESCRIBES THE DEVICES UNDER TEST. THE SIMPLEST WAY TO BUILD THIS TABLE IS TO ANSWER ALL QUESTIONS FOR EACH UNIT TO BE TESTED. IF YOU HAVE A MULTIPLEXED DEVICE SUCH AS A MASS STORAGE CONTROLLER WITH SEVERAL DRIVES OR A COMMUNICATION DEVICE WITH SEVERAL LINES, THIS BECOMES TEDIOUS SINCE MOST OF THE ANSWERS ARE REPETITIOUS.

TO ILLUSTRATE A MORE EFFICIENT METHOD, SUPPOSE YOU ARE TESTING A FICTICNAL DEVICE, THE XY11. SUPPOSE THIS DEVICE CONSISTS OF A CONTROL MODULE WITH EIGHT UNITS (SUB-DEVICES) ATTACHED TO IT. THESE UNITS ARE DESCRIBED BY THE OCTAL NUMBERS 0 THROUGH 7. THERE IS ONE HARDWARE PARAMETER THAT CAN VARY AMONG UNITS CALLED THE Q-FACTOR. THIS Q-FACTOR MAY BE 0 OR 1. BELOW IS A SIMPLE WAY TO BUILD A TABLE FOR ONE XY11 WITH EIGHT UNITS.

0 UNITS (0) ? 8<CR>

UNIT 1

CSR ADDRESS (0) ? 160000<CR>

SUB-DEVICE # (0) ? 0<CR>

Q-FACTOR (0) 0 ? 1<CR>

UNIT 2

CSR ADDRESS (0) ? 160000<CR>

SUB-DEVICE # (0) ? 1<CR>

Q-FACTOR (0) 1 ? 0<CR>

UNIT 3

CSR ADDRESS (0) ? 160000<CR>

SUB-DEVICE # (0) ? 2<CR>

Q-FACTOR (0) 0 ? <CR>

UNIT 4

CSR ADDRESS (0) ? 160000<CR>

SUB-DEVICE # (0) ? 3<CR>

Q-FACTOR (0) 0 ? <CR>

UNIT 5

CSR ADDRESS (0) ? 160000<CR>

SUB-DEVICE # (0) ? 4<CR>

Q-FACTOR (0) 0 ? <CR>

UNIT 6

CSR ADDRESS (0) ? 160000<CR>

SUB-DEVICE # (0) ? 5<CR>

Q-FACTOR (0) 0 ? <CR>

UNIT 7

CSR ADDRESS (0) ? 160000<CR>

SUB-DEVICE # (0) ? 6<CR>

Q-FACTOR (0) 0 ? 1<CR>


```
UNIT 8
CSR ADDRESS (0) 160000<CR>
SUB-DEVICE # (0) ? 7<CR>
Q-FACTOR (0) 1 ? <CR>
```

NOTICE THAT THE DEFAULT VALUE FOR THE Q-FACTOR CHANGES WHEN A NON-DEFAULT RESPONSE IS GIVEN. BE CAREFUL WHEN SPECIFYING MULTIPLE UNITS!

AS YOU CAN SEE FROM THE ABOVE EXAMPLE, THE HARDWARE PARAMETERS DO NOT VARY SIGNIFICANTLY FROM UNIT TO UNIT. THE PROCEDURE SHOWN IS NOT VERY EFFICIENT.

THE RUNTIME SERVICES CAN TAKE MULTIPLE UNIT SPECIFICATIONS HOWEVER. LET'S BUILD THE SAME TABLE USING THE MULTIPLE SPECIFICATION FEATURE.

```
# UNITS (0) ? 8<CR>
```

```
UNIT 1
CSR ADDRESS (0) ? 160000<CR>
SUB-DEVICE # (0) ? 0.1<CR>
Q-FACTOR (0) 0 ? 1.0<CR>
```

```
UNIT 3
CSR ADDRESS (0) ? 160000<CR>
SUB-DEVICE # (0) ? 2-5<CR>
Q-FACTOR (0) 0 ? 0<CR>
```

```
UNIT 7
CSR ADDRESS (0) ? 160000<CR>
SUB-DEVICE # (0) ? 6.7<CR>
Q-FACTOR (0) 0 ? 1<CR>
```

AS YOU CAN SEE IN THE ABOVE DIALOGUE, THE RUNTIME SERVICES WILL BUILD AS MANY ENTRIES AS IT CAN WITH THE INFORMATION GIVEN IN ANY ONE PASS THROUGH THE QUESTIONS. IN THE FIRST PASS, TWO ENTRIES ARE BUILT SINCE TWO SUB-DEVICES AND Q-FACTORS WERE SPECIFIED. THE SERVICES ASSUME THAT THE CSR ADDRESS IS 160000 FOR BOTH SINCE IT WAS SPECIFIED ONLY ONCE. IN THE SECOND PASS, FOUR ENTRIES WERE BUILT. THIS IS BECAUSE FOUR SUB-DEVICES WERE SPECIFIED. THE "-" CONSTRUCT TELLS THE RUNTIME SERVICES TO INCREMENT THE DATA FROM THE FIRST NUMBER TO THE SECOND. IN THIS CASE, SUB-DEVICES 2, 3, 4 AND 5 WERE SPECIFIED. (IF THE SUB-DEVICE WERE SPECIFIED BY ADDRESSES, THE INCREMENT WOULD BE BY 2 SINCE ADDRESSES MUST BE ON AN EVEN BOUNDARY.) THE CSR ADDRESSES AND Q-FACTORS FOR THE FOUR ENTRIES ARE ASSUMED TO BE 160000 AND 0 RESPECTIVELY SINCE THEY WERE ONLY SPECIFIED ONCE. THE LAST TWO UNITS ARE SPECIFIED IN THE THIRD PASS.

THE WHOLE PROCESS COULD HAVE BEEN ACCOMPLISHED IN ONE PASS AS SHOWN BELOW.

```
# UNITS (0) ? 8<CR>
```

F2

UNIT 1
CSR ADDRESS (0) ? 160000<CR>
SUB-DEVICE 0 (0) ? 0-7<CR>
Q-FACTOR (0) 0 ? 0,1,0,...,1,1<CR>

AS YOU CAN SEE FROM THIS EXAMPLE, NULL REPLIES (COMMAS ENCLOSING
A NULL FIELD) TELL THE RUNTIME SERVICES TO REPEAT THE LAST REPLY.

2.8 QUICK START-UP PROCEDURE (XXDP+)

TO START UP THIS PROGRAM:

1. BOOT XXDP+
2. GIVE THE DATE AND ANSWER THE LSI/UNIBUS AND 50HZ (IF THERE IS A CLOCK) QUESTIONS. NOTE, NOT ALL VERSIONS OF XXDP+ ASK FOR THE CLOCK FREQUENCY
3. TYPE "R NAME", WHERE NAME IS THE NAME OF THE BIN OR BIC FILE FOR THIS PROGRAM
4. TYPE "START"
5. ANSWER THE "CHANGE HW" QUESTION WITH "Y"
6. ANSWER ALL THE HARDWARE QUESTIONS
7. ANSWER THE "CHANGE SW" QUESTION WITH "N"

WHEN YOU FOLLOW THIS PROCEDURE YOU WILL BE USING ONLY THE
DEFAULTS FOR FLAGS AND SOFTWARE PARAMETERS. FOR DEFAULT INFORMATION
SEE THE SECTIONS WITHIN THIS DOCUMENT ON FLAGS, AND HARDWARE QUESTIONS.

3.0 ERROR INFORMATION

3.1 TYPES OF ERROR MESSAGES

THERE ARE THREE LEVELS OF ERROR MESSAGES THAT MAY BE ISSUED BY A DIAGNOSTIC: GENERAL, BASIC AND EXTENDED. GENERAL ERROR MESSAGES ARE ALWAYS PRINTED UNLESS THE "IER" FLAG IS SET (SEE THE FLAGS SECTION OF THIS DOCUMENT).

THE GENERAL ERROR MESSAGE IS OF THE FORM:

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

WHERE; NAME = DIAGNOSTIC NAME
TYPE = ERROR TYPE (SYS FATAL, DEV FATAL, HARD OR SOFT)
NUMBER = ERROR NUMBER
UNIT NUMBER = 0 - N (N IS LAST UNIT IN PTABLE)
TST NUMBER = TEST AND SUBTEST WHERE ERROR OCCURRED
PC:XXXXXX = ADDRESS OF ERROR MESSAGE CALL

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

EXTENDED ERROR MESSAGES CONTAIN SUPPLEMENTARY ERROR INFORMATION SUCH AS REGISTER CONTENTS OR GOOD/BAD DATA. THESE ARE ALWAYS PRINTED UNLESS THE "IER", "IBR" OR "IXR" FLAGS ARE SET (SEE THE FLAGS SECTION OF THIS DOCUMENT).
THESE MESSAGES ARE PRINTED AFTER THE ASSOCIATED GENERAL ERROR MESSAGE AND ANY ASSOCIATED BASIC ERROR MESSAGES.

3.2 SPECIFIC ERROR MESSAGES

THIS PROGRAM IS INTENDED TO PROVIDE A GO/NOGO INDICATION OF THE FUNCTIONALITY OF THE DHU-11 BOARDS. TO EXECUTE THE PROGRAM IN THIS MODE THE OPERATOR NEED ONLY ANSWER THE "EXTENDED ERROR REPORTING" SOFTWARE QUESTION WITH "NO". THE PROGRAM WILL THEN ONLY PRINT THE NAME OF THE FAILING TEST THE TEST AND ERROR NUMBERS. FOR A LIST OF THE TEST NAMES IN THIS PROGRAM SEE THE TEST SUMMARIES SECTION OF THIS DOCUMENT. AN EXAMPLE OF SUCH AN ERROR MESSAGE IS THE FOLLOWING:

CZDHW DVC FTL ERR 7802 ON UNIT 00 TST 002 SUB 000 PC: XXXXXX
MODEM CONTROL DTR BIT TEST FAILED

THIS ERROR INDICATES THAT A FATAL ERROR WAS ENCOUNTERED DURING THE TEST WHICH TESTS THE DATA TERMINAL READY CONTROL SIGNAL.

IF THE OPERATOR HAD REQUESTED EXTENDED ERROR REPORTING THE SAME ERROR WOULD BE REPORTED AS FOLLOWS:

CZDHW DVC FTL ERR 7802 ON UNIT 00 TST 002 SUB 000 PC: XXXXXX
MODEM CONTROL DTR BIT TEST FAILED
DTR BIT FAULTY ON LINE 4 DECIMAL.

4.0 PERFORMANCE AND PROGRESS REPORTS

AT THE END OF EACH PASS, THE PASS COUNT IS GIVEN ALONG WITH THE TOTAL NUMBER OF ERRORS REPORTED SINCE THE DIAGNOSTIC WAS STARTED. THE "EOP" SWITCH CAN BE USED TO CONTROL HOW OFTEN THE END OF PASS MESSAGE IS PRINTED. FOR FURTHER INFORMATION SEE THE SWITCHES SECTION OF THIS DOCUMENT.

5.0 TEST SUMMARIES

THE FOLLOWING ARE INCLUDED WITHIN CZDHWB:

1. DEVICE REGISTER ACCESS TEST - VERIFIES THAT THE UUT REGISTERS WILL RESPOND WITH THE CORRECT UNIBUS HANDSHAKING SIGNALS. VERIFIES THAT THE UUT IS AT THE CORRECT ADDRESS.
2. DTR TEST - VERIFIES THAT CHANGING THE STATE OF THE DTR BIT AFFECTS THE STATE OF THE DTR CONTROL LINE.
3. RTS TEST - VERIFIES THAT CHANGING THE STATE OF THE RTS BIT AFFECTS THE STATE OF THE RTS CONTROL LINE.
4. DSR TEST - VERIFIES THAT THE DSR STATUS SIGNAL CORRECTLY REPORTS THE STATE OF THE LOOPED BACK DTR CONTROL LINE.
5. RI TEST - VERIFIES THAT THE RI STATUS SIGNAL CORRECTLY REPORTS THE STATE OF THE LOOPED BACK DTR CONTROL LINE.
6. CTS TEST - VERIFIES THAT THE CTS STATUS SIGNAL CORRECTLY REPORTS THE STATE OF THE LOOPED BACK RTS CONTROL LINE.
7. DCD TEST - VERIFIES THAT THE DCD STATUS SIGNAL CORRECTLY REPORTS THE STATE OF THE LOOPED BACK RTS CONTROL LINE.
8. DTR INTERACTIONS TEST - VERIFIES THAT CHANGING THE STATE OF THE DTR CONTROL SIGNAL ON ANY LINE DOES NOT AFFECT THE STATE OF ANY STATUS SIGNALS THAT IT IS NOT LOOPED BACK TO.
9. RTS INTERACTIONS TEST - VERIFIES THAT CHANGING THE STATE OF THE RTS CONTROL SIGNAL ON ANY LINE DOES NOT AFFECT THE STATE OF ANY STATUS SIGNALS THAT IT IS NOT LOOPED BACK TO.
10. REPORT BMP CODES TEST - THIS PSEUDO TEST REPORTS THE FIRST 32 CHARACTERS WHICH WERE DISCOVERED IN THE FIFO DURING THE EXECUTION OF THE OTHER TESTS. THIS AVOIDS INTERRUPTION OF THE OTHER TESTS BY THESE CODES IF THEY ARE NOT CRITICAL TO THE PERFORMANCE OF THE TESTS.

6.0 EXAMPLE ERROR FREE PASS

THE FOLLOWING IS AN EXAMPLE OF AN ERROR FREE PASS DIALOGUE:

.R CZDHWB0
CZDHWB0.BIN
DRS
CZDHW-B-0
DHU-11 FUNC TST PART3
UNIT IS DHU-11
RESTART ADDR: 147670
DR>STA/PAS:1

CHANGE HW (L) ? Y

* UNITS (D) ? 2

UNIT 0
CSR ADDRESS: (0) 160460 ? +Z

UNIT 1
CSR ADDRESS: (0) 160460 ? 160500
ACTIVE LINE BIT MAP: (0) 177777 ? <CR>
TYPE OF LOOPBACK (1=INTERNAL, 2=H3029 OR H3277, 3=H325): (0) 2 ?

CHANGE SW (L) ? Y

REPORT UNIT NUMBER AS EACH UNIT IS TESTED: (L) Y ? <CR>
EXTENDED ERROR REPORTING: (L) N ? Y
NUMBER OF INDIVIDUAL DATA ERRORS TO REPORT ON A LINE: (D) 0 ? <CR>

TESTING UNIT : 0

TESTING UNIT : 1

CZDHW EOP 1
0 TOTAL ERRS

DR>


```

1021          .LIST SEQ,LOC,BIN,MEB
1022          .NLIST CND
1030
1031
1032          .SBTTL PROGRAM HEADER
1033
1034
1035          .MCALL SVC
1036 000000          SVC          ; INITIALIZE SUPERVISOR MACROS
1037
1038          ;*****
1039          ; IF STRUCTURED MACROS ARE TO BE USED, ADD ".MCALL STRUCT" AND "STRUCT"
1040          ; TO INITIALIZE THE STRUCTURED MACROS.
1041
1042          000001          SVCINS= 1          ; LIST INSTRUCTIONS, SHIFTED RIGHT
1043          000001          SVCTST= 1          ; LIST TEST TAGS, SHIFTED RIGHT
1044          000001          SVCSUB= 1          ; LIST SUBTEST TAGS, SHIFTED RIGHT
1045          000001          SVCGBL= 1          ; LIST GLOBAL TAGS, SHIFTED RIGHT
1046          000001          SVCTAG= 1          ; LIST OTHER TAGS, SHIFTED RIGHT
1047
1048          ; CHANGE THE VALUES OF THE SVC... SYMBOLS TO BE ZERO IF YOU WISH
1049          ; TO ALIGN THE MACRO CALLS AND THEIR EXPANSIONS. CHANGE THE
1050          ; SYMBOLS TO BE MINUS-ONE TO NOT LIST THE EXPANSIONS. YOU MAY
1051          ; CHANGE THE SYMBOLS AT ANY POINT IN YOUR PROGRAM.
1052          ;*****
1053
1054 000000          .ENABL ABS
1055          .ENABL AMA
1056          002000          " 2000
1057
1058 002000          BGNMOD
1059
1060          ;**
1061          ; THE PROGRAM HEADER IS THE INTERFACE BETWEEN
1062          ; THE DIAGNOSTIC PROGRAM AND THE SUPERVISOR.
1063          ;--
1064
1065 002000          POINTER BGNRPT,BGNSW,BGNSFT,BGNDU,ERRTBL
1066
1083
1084          HEADER CZDHW,B,0,10,0,PRI07
1085
1086          002000          103
1087          002001          132
1088          002002          104
1089          002003          110
1090          002004          127
1091          002005          000
1092          002006          000
1093          002007          000
1094          002010          102
1095          002011          060
1096          002012          000000
1097          002014

```

```

L$NAME::
          .ASCII /C/
          .ASCII /Z/
          .ASCII /D/
          .ASCII /H/
          .ASCII /W/
          .BYTE 0
          .BYTE 0
          .BYTE 0
L$REV::
          .ASCII /B/
L$DEPO::
          .ASCII 0
L$UNIT::
          .WORD 0
L$TIML::

```

```

002014 000010
002016
002016 017702
002020
002020 020076
002022
002022 002152
002024
002024 002162
002026
002026 020400
002030
002030 000000
002032
002032 000000
002034
002034 000000
002036
002036 000000
002040
002040 002124
002042
002042 000340
002044
002044 000000
002046
002046 000000
002050
002050 003
002051 003
002052
002052 000000
002054 000000
002056
002056 000000
002060
002060 004060
002062
002062 011552
002064
002064 000000
002066
002066 000000
002070
002070 000000
002072
002072 012410
002074
002074 000000
002076
002076 004070
002100
002100 104035
002102
002102 004010
002104
002104 011566

```

```

L$HPCP:: .WORD 10
L$SPCP:: .WORD L$HARD
L$HPTP:: .WORD L$SOFT
L$SPTP:: .WORD L$HW
L$LADP:: .WORD L$SW
L$STA:: .WORD L$LAST
L$CO:: .WORD 0
L$DTP:: .WORD 0
L$APT:: .WORD 0
L$DTP:: .WORD 0
L$PRID:: .WORD L$DISPATCH
L$ENVI:: .WORD PRI07
L$EXP1:: .WORD 0
L$MREV:: .WORD 0
L$EF:: .BYTE C$REVISION
L$EF:: .BYTE C$EDIT
L$SPC:: .WORD 0
L$DEVP:: .WORD 0
L$REPP:: .WORD L$DVTYP
L$EXP4:: .WORD L$RPT
L$EXP5:: .WORD 0
L$AUT:: .WORD 0
L$DUT:: .WORD L$DU
L$LUN:: .WORD 0
L$DESP:: .WORD L$DESC
L$LOAD:: .WORD E$LOAD
L$ETP:: .WORD L$ERRTBL
L$ICP:: .WORD L$INIT

```


002106
002106 012372
002110
002110 012370
002112
002112 011560
002114
002114 000000
002116
002116 000000
002120
002120 000000
1085

L\$CCP:: .WORD L\$CLEAN
L\$ACP:: .WORD L\$AUTO
L\$PRT:: .WORD L\$PROT
L\$TEST:: .WORD 0
L\$DLY:: .WORD 0
L\$HIME:: .WORD 0

```

1097          .SBTTL  DISPATCH TABLE
1098
1099          ;**
1100          ; THE DISPATCH TABLE CONTAINS THE STARTING ADDRESS OF EACH TEST.
1101          ; IT IS USED BY THE SUPERVISOR TO DISPATCH TO EACH TEST.
1102          ;--
1103
1104          DISPATCH 10
1105          002122 000012
1106          002124 012526
1107          002126 013010
1108          002130 013544
1109          002132 014300
1110          002134 014750
1111          002136 015420
1112          002140 016070
1113          002142 016540
1114          002144 017170
1115          002146 017620
1116
1117          L$DISPATCH::
1118          .WORD 10
1119          .WORD T1
1120          .WORD T2
1121          .WORD T3
1122          .WORD T4
1123          .WORD T5
1124          .WORD T6
1125          .WORD T7
1126          .WORD T8
1127          .WORD T9
1128          .WORD T10

```

DISPATCH TABLE

1120
1121
1122
1123
1124
1125
1126
1127
1128
1129
1130

.SBTTL DEFAULT HARDWARE P-TABLE

; THE DEFAULT HARDWARE P-TABLE CONTAINS DEFAULT VALUES OF
; THE TEST-DEVICE PARAMETERS. THE STRUCTURE OF THIS TABLE
; IS IDENTICAL TO THE STRUCTURE OF THE HARDWARE P-TABLES,
; AND IS USED AS A "TEMPLATE" FOR BUILDING THE P-TABLES.

1131 002150
002150 000003
002152
002152

BGNHW DFPTBL

.WORD L10000-L\$HW/2
L\$HW:;
DFPTBL:;

1132
1133 002152 160460
1134 002154 177777
1135 002156 002
1136
1137
1138 002160
002160

.WORD 160460 ;DEFAULT CSR ADDRESS
.WORD 177777 ;DEFAULT ACTIVE LINES BIT MAP
.BYTE 2 ;DEFAULT LOOPBACK TYPE
.EVEN

ENDHW

L10000;

C3

GZDH80 DHU-11 FUNC 1ST PART3 MACRO M1200 15-MAR-84 09:41 PAGE 27

SEQ 28

```

1147
1148
1149 .SBTTL SOFTWARE P-TABLE
1150
1151 ;**
1152 ; THE SOFTWARE TABLE CONTAINS VARIOUS DATA USED BY THE
1153 ; PROGRAM AS OPERATIONAL PARAMETERS. THESE PARAMETERS ARE
1154 ; SET UP AT ASSEMBLY TIME AND MAY BE VARIED BY THE OPERATOR
1155 ; AT RUN TIME.
1156 ;**
1157
1158 002160 BGNSW SFPTBL
1159 002160 000002 .WORD L10001-L$SW/2
1160 002162 L$SW::
1161 002164 SFPTBL::
1162
1163 002166 OPTION:: .WORD 20 ;BIT MAP OF PROGRAM CONTROL FLAGS
1164 002166 NOERPT:: .WORD 0 ;DEFAULT NUMBER OF INDIVIDUAL DATA ERRORS TO RPT.
1165
1166 ENDSW
1167
1168 L10001:

```

D3

SEQ 29

1172
1173
1174
1184
1185
1186
1187
1188
1189
1190
1191
1192
1193
1194
1195
1196
1197
1198
1199
1200
1201
1202
1203
1204
1205
1206
1207
1208
1209
1210
1211
1212
1227 002166

.SBTTL GLOBAL EQUATES SECTION

; THE GLOBAL EQUATES SECTION CONTAINS PROGRAM EQUATES THAT
; ARE USED IN MORE THAN ONE TEST.

NUMLNS==20 ;NUMBER OF LINES ON DHU11 IS 8.
MAPLNS==177777 ;BIT MAP OF LINES ON DHU11.

***** DEVICE REGISTER OFFSETS FROM THE CSR'S ADDRESS *****
CSR0==0 ;CSR REGISTER OFFSET FROM THE CSR ADDRESS
RBUFO==2 ;RECEIVE REGISTER OFFSET FROM THE CSR ADDRESS
RXTIMO==2 ;RECIEVE TIMER REGISTER OFFSET FROM THE CSR ADDRESS
LPRO==4 ;LINE PARAMETER REGISTER OFFSET FROM THE CSR ADDRESS
FSLSO==6 ;FIFOSIZE/STATUS REGISTER OFFSET FROM THE CSR ADDRESS
FDATE==6 ;FIFODATA REGISTER OFFSET FROM THE CSR ADDRESS
LNCTRO==10 ;LINE CONTROL REGISTER OFFSET FROM THE CSR ADDRESS
TXAD10==12 ;TRANSMIT ADDRESS 1 REGISTER OFFSET FROM THE CSR ADDRESS
TXAD20==14 ;TRANSMIT ADDRESS 2 REGISTER OFFSET FROM THE CSR ADDRESS
TXBFCO==16 ;TRANSMIT COUNT REGISTER OFFSET FROM THE CSR ADDRESS

***** EQUATES USED WITH RESPECT TO THE RX BUFFER *****
RXBETX==16. ;LEVEL OF RX BUFFER AT WHICH TO RE-ENABLE TRANSMISSION.
RXBDTX==24. ;LEVEL OF RX BUFFER AT WHICH TO DISABLE TRANSMISSION.
RXBFUL==64. ;TOTAL CHARACTER CAPACITY OF THE RX BUFFER.

EQUALS

; BIT DIFINITIONS

100000	BIT15==	100000
040000	BIT14==	40000
020000	BIT13==	20000
010000	BIT12==	10000
004000	BIT11==	4000
002000	BIT10==	2000
001000	BIT09==	1000
000400	BIT08==	400
000200	BIT07==	200
000100	BIT06==	100
000040	BIT05==	40
000020	BIT04==	20
000010	BIT03==	10
000004	BIT02==	4
000002	BIT01==	2
000001	BIT00==	1
001000	BIT9==	BIT09
000400	BIT8==	BIT08
000200	BIT7==	BIT07
000100	BIT6==	BIT06

```

000040      BIT5== BIT05
000020      BIT4== BIT04
000010      BIT3== BIT03
000004      BIT2== BIT02
000002      BIT1== BIT01
000001      BIT0== BIT00
;
; EVENT FLAG DEFINITIONS
; EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION
;
000040      EF.START==      32.      ; START COMMAND WAS ISSUED
000037      EF.RESTART==    31.      ; RESTART COMMAND WAS ISSUED
000036      EF.CONTINUE==   30.      ; CONTINUE COMMAND WAS ISSUED
000035      EF.NEW==        29.      ; A NEW PASS HAS BEEN STARTED
000034      EF.PWR==        28.      ; A POWER-FAIL/POWER-UP OCCURRED
;
; PRIORITY LEVEL DEFINITIONS
;
000340      PRI07== 340
000300      PRI06== 300
000240      PRI05== 240
000200      PRI04== 200
000140      PRI03== 140
000100      PRI02== 100
000040      PRI01== 40
000000      PRI00== 0
;
; OPERATOR FLAG BITS
;
000004      EVL==          4
000010      LOT==         10
000020      ADR==         20
000040      IDU==         40
000100      ISR==        100
000200      UAM==        200
000400      BOE==        400
001000      PNT==       1000
002000      PRI==       2000
004000      IXE==       4000
010000      IBE==      10000
020000      IER==      20000
040000      LOE==      40000
100000      HOE==     100000

```



```

1237
1238
1239
1240
1241
1242
1243
1244
1245
1246
1247
1248
1249
1250 002166 000200
1251 002170 000204
1252 002172 177777
1253 002174 000
1254 002175 004
1255 002176 000000
1256
1257
1258
1259
1260 002200
1261 002200 160020
1262 002202 160022
1263 002204 160024
1264 002206 160026
1265
1266 002210 160030
1267 002212 160032
1268 002214 160034
1269 002216 160036
1270
1271
1272
1273
1274 002220 000000
1275 002222 000000
1276 002224 000000
1277 002226 000001
1278 002230 000000
1279 002232 031463
1280 002234 146314
1281 002236 000000
1282 002240 000000
1283 002242 000000
1284 002244 000000
1285 002246 000000
1286 002250 000000
1287 002252 000000
1288 002254 000000
1289
1290
1291
1292 002256 177546
1293 002260 000300

```

```

.SBTTL GLOBAL DATA SECTION

; **
; THE GLOBAL DATA SECTION CONTAINS DATA THAT ARE USED
; IN MORE THAN ONE TEST.
; --

; *****
; UNIT VARIABLE AREA
; *****

RXVECA:: .WORD 200 ;RX VECTOR ADDRESS.
TXVECA:: .WORD 204 ;TX VECTOR ADDRESS.
ACTLNS:: .WORD 177777 ;ACTIVE LINE BIT MAP.
LOPBCK:: .BYTE 0 ;LOOPBACK MODE
BRLEVL:: .BYTE 4 ;INTERRUPT BUS REQUEST LEVEL
UNITN:: .WORD 0 ;UNIT NUMBER.

; *****
; DEVICE REGISTER ADDRESS TABLE
; *****
DRADRT::
CSRA:: .WORD 160020 ;DHU-11 CSR ADDRESS.
RXTMA:: RBUFA:: .WORD 160022 ;DHU-11 RECIEVE BUFFER/TIMER ADDRESS.
LPRA:: .WORD 160024 ;DHU-11 LINE PARAMETER REGISTER ADDRESS.
FDATA:: FSLSA:: .WORD 160026 ;DHU-11 FIFO SIZE/LINE STATUS REGISTER ADDRESS,
;AND FIFO DATA REGISTER ADDRESS.
LNCTRA:: .WORD 160030 ;DHU-11 LINE CONTROL REGISTER ADDRESS.
TXAD1A:: .WORD 160032 ;DHU-11 TRANSMIT BUFFER 1 REGISTER ADDRESS
TXAD2A:: .WORD 160034 ;DHU-11 TRANSMIT BUFFER 2 REGISTER ADDRESS
TXBFCA:: .WORD 160036 ;DHU-11 TRANSMIT BUFFER COUNT REGISTER ADDRESS

; *****
; ASSORTED GLOBAL VARIABLES:
; *****
BUFPTR:: .WORD 0 ;STORAGE FOR RECEIVE CHARACTER BUFFER POINTER.
CTRLCF:: .WORD 0 ;STORAGE FOR THE CONTROL-C FLAG.
EXOERR:: .WORD 0 ; "EXIT ON ERROR" FLAG.
TSTNUM:: .WORD 1 ;STORAGE FOR THE TEST NUMBER.
IES:AT:: .WORD 0 ;STORAGE FOR STATES OF THE DUT INT ENABLE BITS.
LGRP1M:: .WORD 31463 ;BIT MAP OF LINES IN LINE GROUP I.
LGRP2M:: .WORD 146314 ;BIT MAP OF LINES IN LINE GROUP II.
PASCNT:: .WORD 0 ;STO'G FOR PASS COUNT USED IN ROM VERSION# TST.
RXINTC:: .WORD 0 ;STORAGE FOR RECEIVER INTERRUPT FLAGS.
RXINTF:: .WORD 0 ;STORAGE FOR RECEIVER INTERRUPT FLAGS.
TXINTC:: .WORD 0 ;STORAGE FOR TRANSMIT INTERRUPT COUNT.
TXINTF:: .WORD 0 ;STORAGE FOR TRANSMIT INTERRUPT FLAGS.
TP4VEC:: .WORD 0 ;STORAGE FOR THE NORMAL 004 TRAP VECTOR.
TP4FLG:: .WORD 0 ;FLAGS SET WHEN AN EXPECTED 004 TRAP OCCURS.
WORD1:: .WORD 0 ;LOCATION FOR PASSING INDIRECT PARAMETERS.

; *****
; LINE TIME CLOCK VARIABLES AND STORAGE.
; *****
CLKCSR:: .WORD 177546 ;CSR ADDRESS OF THE LTC.
CLKBRL:: .WORD PRI06 ;INTERRUPT PRIORITY LEVEL OF THE LTC.

```

```

1294 002262 000100      CLKVEC:: .WORD 100      ;INTERRUPT VECTOR ADDRESS OF THE LTC.
1295 002264 000074      CLKHRZ:: .WORD 60.      ;INTERRUPT FREQUENCY OF THE LTC.
1296 002266 000000      TIMER1:: .WORD 0        ;HARDWARE CLOCK COUNTER #1.
1297 002270 000000      TIMER2:: .WORD 0        ;HARDWARE CLOCK COUNTER #2.
1298 002272 000170      TIMER3:: .WORD 120.     ;HARDWARE BREAK COUNTER LOCATION.
1299 002274 000170      BCOUNT:: .WORD 120.     ;BREAK COUNT VALUE IN CLOCK TICKS.
1300 002276 000021      MSTICK:: .WORD 17.      ;NUMBER OF MILLI-SECONDS PER LTC TICK.
1301 002300 000062      MSLCNT:: .WORD 62       ;LOOP COUNT (USED BY MSLOOP) TO DELAY 1 MS.
1302
1303 ;*****
1304 ;      MEMMMORY MANAGEMENT VARIABLES AND FLAGS.
1305 ;*****
1306 002302 177572      MMSRO:: .WORD 177572     ;ADDRESS OF MEM MGT STATUS REGISTER #0.
1307 002304 000000      MMPRES:: .WORD 0        ;MEM MGT PRESENT FLAG (0 IF MM NOT PRESENT).
1308 002306 000000      MMENAB:: .WORD 0        ;MEM MGT ENABLED FLAG (0 IF MM NOT ENABLED).
1309
1310 ;*****
1311 ;      TABLE OF WORDS WITH CORRESPONDING BIT SET FOR GENERATION OF BIT MAPS.
1312 ;*****
1313 002310 000001      BITTBL:: .WORD 1          ;BIT 0 SET.
1314 002312 000002      .WORD 2          ;BIT 1 SET.
1315 002314 000004      .WORD 4          ;BIT 2 SET.
1316 002316 000010      .WORD 10         ;BIT 3 SET.
1317 002320 000020      .WORD 20         ;BIT 4 SET.
1318 002322 000040      .WORD 40         ;BIT 5 SET.
1319 002324 000100      .WORD 100        ;BIT 6 SET.
1320 002326 000200      .WORD 200        ;BIT 7 SET.
1321 002330 000400      .WORD 400        ;BIT 8 SET.
1322 002332 001000      .WORD 1000       ;BIT 9 SET.
1323 002334 002000      .WORD 2000       ;BIT 10 SET.
1324 002336 004000      .WORD 4000       ;BIT 11 SET.
1325 002340 010000      .WORD 10000      ;BIT 12 SET.
1326 002342 020000      .WORD 20000      ;BIT 13 SET.
1327 002344 040000      .WORD 40000      ;BIT 14 SET.
1328 002346 100000      .WORD 100000     ;BIT 15 SET.
1329
1330 ;*****
1331 ;      STORAGE AREA FOR THE BMP CODE QUEUE.
1332 ;*****
1333 002350 000000      BMPCQP:: .WORD 0        ;POINTER USED TO ACCESS THE NEXT CELL IN QUE.
1334 002352      BMPCQB:: .BLKW 64.         ;STORAGE FOR 32 CELLS, TEST# PLUS BMP CODE.
1335 002552      BMPCQE::                ;LAST ADDRESS PLUS 2 OF THE BMP CODE QUEUE.
1336
1337 ;*****
1338 ;      STORAGE AREA FOR ERROR SUMMARY TABLE AND FLAGS.
1339 ;*****
1340 002552 000000      ERSMEF:: .WORD 0        ;ERROR SUMMARY FLAGS.
1341 002554      ERCNTB:: .BLKW 16          ;TABLE OF ERROR COUNTS.
1342
1343 ;*****
1344 ;      STORAGE AREA FOR THE CONTENTS OF THE DUT STAT REGISTER STATES.
1345 ;*****
1346 002610      STSTB::                ;BASE OF DUT STAT STORAGE TABLE.
1347 002610 000000      .WORD 0          ;STORAGE FOR STAT REGISTER FOR LINE 0.
1348 002612 000000      .WORD 0          ;STORAGE FOR STAT REGISTER FOR LINE 1.
1349 002614 000000      .WORD 0          ;STORAGE FOR STAT REGISTER FOR LINE 2.
1350 002616 000000      .WORD 0          ;STORAGE FOR STAT REGISTER FOR LINE 3.

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1351 002620 000000      .WORD 0      ; STORAGE FOR STAT REGISTER FOR LINE 4.
1352 002622 000000      .WORD 0      ; STORAGE FOR STAT REGISTER FOR LINE 5.
1353 002624 000000      .WORD 0      ; STORAGE FOR STAT REGISTER FOR LINE 6.
1354 002626 000000      .WORD 0      ; STORAGE FOR STAT REGISTER FOR LINE 7.
1355 002630 000000      .WORD 0      ; STORAGE FOR STAT REGISTER FOR LINE 8.
1356 002632 000000      .WORD 0      ; STORAGE FOR STAT REGISTER FOR LINE 9.
1357 002634 000000      .WORD 0      ; STORAGE FOR STAT REGISTER FOR LINE 10.
1358 002636 000000      .WORD 0      ; STORAGE FOR STAT REGISTER FOR LINE 11.
1359 002640 000000      .WORD 0      ; STORAGE FOR STAT REGISTER FOR LINE 12.
1360 002642 000000      .WORD 0      ; STORAGE FOR STAT REGISTER FOR LINE 13.
1361 002644 000000      .WORD 0      ; STORAGE FOR STAT REGISTER FOR LINE 14.
1362 002646 000000      .WORD 0      ; STORAGE FOR STAT REGISTER FOR LINE 15.
1363 002650      STSTE::      ; END OF OUT STAT STORAGE TABLE.
1364
1365      ; *****
1366      ; GENERAL TABLE AND BUFFER AREA--513 WORDS.
1367      ; *****
1368 002650      BUFBAS::      ; BASE OF MEMORY BUFFER.
1369 002650      ERLTBL::      .BLKW 128. ; FIRST HALF OF GENERAL TABLE OR BUFFER.
1370 003250      BUFMD::      .BLKW 64.  ; SECOND HALF OF GENERAL TABLE OR BUFFER.
1371 003450      BUF3QT::      .BLKW 64.  ; LAST QUARTER OF THE BUFFER AREA.
1372 003650      BUFEND::      ; END OF GENERAL PURPOSE MEMORY BUFFER.
1373 003650      ENDET8::      .BLKW 16.  ; BUFFER OVERFLOW SPACE.
1374
1375      ; *****
1376      ; * TABLE FOR STORAGE OF RX/TX LINE NUMBER ASSOCIATIONS.
1377      ; * THE ASSOCIATIONS ARE STORED AS LINE NUMBER TIMES 2 FOR USE AS OFFSETS
1378      ; * WHEN ACCESSING A TABLE OF WORDS.
1379      ; * NOTE: DO NOT WRITE A NON-ZERO VALUE INTO THE UPPER BYTE OF ANY ENTRY.
1380      ; *****
1381 003710      TXRXLB::      ; BASE OF TX/RX LINE NUMBER ASSOCIATION TABLE.
1382 003710 000000      .WORD 0      ; TX/RX LINE OFFSET FOR RX/TX LINE 0.
1383 003712 000002      .WORD 2.      ; TX/RX LINE OFFSET FOR RX/TX LINE 1.
1384 003714 000004      .WORD 4.      ; TX/RX LINE OFFSET FOR RX/TX LINE 2.
1385 003716 000006      .WORD 6.      ; TX/RX LINE OFFSET FOR RX/TX LINE 3.
1386 003720 000010      .WORD 8.      ; TX/RX LINE OFFSET FOR RX/TX LINE 4.
1387 003722 000012      .WORD 10.     ; TX/RX LINE OFFSET FOR RX/TX LINE 5.
1388 003724 000014      .WORD 12.     ; TX/RX LINE OFFSET FOR RX/TX LINE 6.
1389 003726 000016      .WORD 14.     ; TX/RX LINE OFFSET FOR RX/TX LINE 7.
1390 003730 000020      .WORD 16.     ; TX/RX LINE OFFSET FOR RX/TX LINE 8.
1391 003732 000022      .WORD 18.     ; TX/RX LINE OFFSET FOR RX/TX LINE 9.
1392 003734 000024      .WORD 20.     ; TX/RX LINE OFFSET FOR RX/TX LINE 10.
1393 003736 000026      .WORD 22.     ; TX/RX LINE OFFSET FOR RX/TX LINE 11.
1394 003740 000030      .WORD 24.     ; TX/RX LINE OFFSET FOR RX/TX LINE 12.
1395 003742 000032      .WORD 26.     ; TX/RX LINE OFFSET FOR RX/TX LINE 13.
1396 003744 000034      .WORD 28.     ; TX/RX LINE OFFSET FOR RX/TX LINE 14.
1397 003746 000036      .WORD 30.     ; TX/RX LINE OFFSET FOR RX/TX LINE 15.
1398 003750      TXRXLE::      ; END OF TX/RX LINE NUMBER ASSOCIATION TABLE.
1399      .EVEN      ; GUARANTEE THAT NEXT TABLE IS ON WORD BOUNDARY.
1400
1401      ; *****
1402      ; * TABLE FOR STORAGE OF RX/TX LINE NUMBER ASSOCIATIONS.
1403      ; * THE ASSOCIATIONS ARE STORED AS LINE NUMBERS WHICH CAN BE USED AS SUCH OR
1404      ; * AS OFFSETS WHEN ACCESSING A TABLE OF BYTES.
1405      ; *****
1406 003750      TXRLNB::      ; BASE OF TX/RX LINE NUMBER ASSOCIATION TABLE.
1407 003750 000      .BYTE 0      ; TX/RX LINE FOR RX/TX LINE 0.

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1408 003751      001      .BYTE      1.      ;TX/RX LINE FOR RX/TX LINE 1.
1409 003752      002      .BYTE      2.      ;TX/RX LINE FOR RX/TX LINE 2.
1410 003753      003      .BYTE      3.      ;TX/RX LINE FOR RX/TX LINE 3.
1411 003754      004      .BYTE      4.      ;TX/RX LINE FOR RX/TX LINE 4.
1412 003755      005      .BYTE      5.      ;TX/RX LINE FOR RX/TX LINE 5.
1413 003756      006      .BYTE      6.      ;TX/RX LINE FOR RX/TX LINE 6.
1414 003757      007      .BYTE      7.      ;TX/RX LINE FOR RX/TX LINE 7.
1415 003760      010      .BYTE      8.      ;TX/RX LINE FOR RX/TX LINE 8.
1416 003761      011      .BYTE      9.      ;TX/RX LINE FOR RX/TX LINE 9.
1417 003762      012      .BYTE     10.      ;TX/RX LINE FOR RX/TX LINE 10.
1418 003763      013      .BYTE     11.      ;TX/RX LINE FOR RX/TX LINE 11.
1419 003764      014      .BYTE     12.      ;TX/RX LINE FOR RX/TX LINE 12.
1420 003765      015      .BYTE     13.      ;TX/RX LINE FOR RX/TX LINE 13.
1421 003766      016      .BYTE     14.      ;TX/RX LINE FOR RX/TX LINE 14.
1422 003767      017      .BYTE     15.      ;TX/RX LINE FOR RX/TX LINE 15.
1423 003770      TXRLNE:: ;END OF TX/RX LINE NUMBER ASSOCIATION TABLE.
1424      .EVEN      ;GUARANTEE THAT NEXT TABLE IS ON WORD BOUNDARY.
1425
1426      ;*****
1427      ;* TABLE OF TX/RX LINE NUMBER ASSOCIATIONS IN STAGGERED LOOPBACK.
1428      ;* THE ASSOCIATIONS ARE STORED AS LINE NUMBER TIMES 2 FOR USE AS OFFSETS
1429      ;* WHEN ACCESSING A TABLE OF WORDS.
1430      ;* THIS IS A TABLE OF DATA FOR READING ONLY. USE TO LOAD THE ABOVE TABLE.
1431      ;* NOTE: MUST CONVERT FROM BYTES TO WORDS WHEN LOADING ABOVE TABLE.
1432      ;*****
1433 003770      STGTRB:: ;BASE OF STAGGERED TX/RX LINE NUMBER TABLE.
1434 003770      004      .BYTE      4.      ;TX/RX LINE OFFSET FOR RX/TX LINE 0.
1435 003771      006      .BYTE      6.      ;TX/RX LINE OFFSET FOR RX/TX LINE 1.
1436 003772      000      .BYTE      0.      ;TX/RX LINE OFFSET FOR RX/TX LINE 2.
1437 003773      002      .BYTE      2.      ;TX/RX LINE OFFSET FOR RX/TX LINE 3.
1438 003774      014      .BYTE     12.      ;TX/RX LINE OFFSET FOR RX/TX LINE 4.
1439 003775      016      .BYTE     14.      ;TX/RX LINE OFFSET FOR RX/TX LINE 5.
1440 003776      010      .BYTE      8.      ;TX/RX LINE OFFSET FOR RX/TX LINE 6.
1441 003777      012      .BYTE     10.      ;TX/RX LINE OFFSET FOR RX/TX LINE 7.
1442 004000      024      .BYTE     20.      ;TX/RX LINE OFFSET FOR RX/TX LINE 8.
1443 004001      026      .BYTE     22.      ;TX/RX LINE OFFSET FOR RX/TX LINE 9.
1444 004002      020      .BYTE     16.      ;TX/RX LINE OFFSET FOR RX/TX LINE 10.
1445 004003      022      .BYTE     18.      ;TX/RX LINE OFFSET FOR RX/TX LINE 11.
1446 004004      034      .BYTE     28.      ;TX/RX LINE OFFSET FOR RX/TX LINE 12.
1447 004005      036      .BYTE     30.      ;TX/RX LINE OFFSET FOR RX/TX LINE 13.
1448 004006      030      .BYTE     24.      ;TX/RX LINE OFFSET FOR RX/TX LINE 14.
1449 004007      032      .BYTE     26.      ;TX/RX LINE OFFSET FOR RX/TX LINE 15.
1450      .EVEN      ;GUARANTEE THAT NEXT TABLE IS ON WORD BOUNDARY.
1451
1464 004010      ERRRTBL
1465 004010      000000
1466 004010      000000
1465 004012      000000
1466 004012      000000
1465 004014      000000
1466 004014      000000
1465 004016      000000
1466 004016      000000

ERRRTYP::      .WORD      0
ERRNBR::      .WORD      0
ERRMSG::      .WORD      0
ERRBLK::      .WORD      0

.EVEN

```

```

1468 .SBTTL GPR HANDLING ROUTINES FOR SUBROUTINE CALLS.
1469 *****
1470 ;* THERE ARE 4 ROUTINES AND MACRO DEFINITIONS USED FOR THE HANDLING OF
1471 ;* GPR VALUES DURING SUBROUTINE CALLS WITHIN THIS PROGRAM. THE FOUR
1472 ;* ROUTINES/MACRO CALLS HAVE THE FOLLOWING NAMES:
1473 ;*
1474 ;* SAVE - MACRO DEFINITION USED AT THE BEGINNING OF A SUBROUTINE TO
1475 ;* SAVE THE GPR CONTENTS FOR LATER RESTORATION.
1476 ;* PASS - MACRO DEFINITION USED AT THE END OF A SUBROUTINE TO RESTORE
1477 ;* THE PREVIOUSLY SAVED GPR CONTENTS AND TO LEAVE THE CONTENTS
1478 ;* OF THE SPECIFIED GPR(S) INTACT (NOT RESTORED).
1479 ;* PREG05 - SUBROUTINE WHICH IS CALLED FROM THE SAVE AND PASS MACRO
1480 ;* EXPANSIONS WHICH ACTUALLY PERFORMS THE ACTIONS ON THE GPRS.
1481 ;*
1482 ;* DURING A SUBROUTINE WHICH USES THESE GPR SAVE ROUTINES THE VALUES
1483 ;* OF THE GPRS ARE STORED ON THE STACK IN THE FOLLOWING STACK FRAME:
1484 ;*
1485 ;* SP -> RET PC INTO PREG05 ROUTINE.
1486 ;* SP+2 -> GPR R0 CONTENTS.
1487 ;* SP+4 -> GPR R1 CONTENTS.
1488 ;* SP+6 -> GPR R2 CONTENTS.
1489 ;* SP+8 -> GPR R3 CONTENTS.
1490 ;* SP+10 -> GPR R4 CONTENTS.
1491 ;* SP+12 -> GPR R5 CONTENTS.
1492 ;* SP+14 -> RET PC INTO CALLER OF SUB'TNE WHICH CALLED PREG05.
1493 ;*
1494 ;* EACH LEVEL OF SUB'TNE CALLING USES 8 WORDS OF STACK OVERHEAD.
1495 ;* THE SAVE AND PASS MACROS CAN ALSO BE USED IN "STRAIGHT LINE CODE"
1496 ;* TO SAVE AND RESTORE THE GPR VALUES. IN ANY CASE, AFTER THE
1497 ;* ISSUING OF A PASS CALL THE GPRS WILL BE RESTORED TO THE VALUES
1498 ;* THEY HAD PRIOR TO THE LAST SAVE CALL (EXCEPT FOR THE EXCEPTED,
1499 ;* OR PASSED INTACT, GPRS SPECIFIED AS PARAMETERS TO THE PASS CALL)
1500 ;* AND THE SP WILL ALSO BE RESTORED TO ITS CONDITION BEFORE THE LAST
1501 ;* SAVE CALL. THE PROGRAMMER MUST BE SURE AT THE SP HAS THE SAME
1502 ;* VALUE WHEN THE PASS MACRO IS CALLED AS IT HAD IMMEDIATELY AFTER
1503 ;* THE SAVE MACRO WAS CALLED.
1504 *****

```

```
1506          .SBTTL GPR FRAME ACCESS EQUATES
1507          ;***
1508          ;EQUATES THAT ALLOW ACCESS TO THE STACK FRAME.  THESE ARE THE
1509          ;OFFSETS INTO THE STACK FOR REGISTERS SAVED DURING THE PREG05
1510          ;ROUTINE.
1511          ;---
1512
1513          000036      LPCSLT**      36      ;OFFSET FOR LAST RETURN PC.
1514          000016      PCSLOT**     16      ;OFFSET FOR RETURN PC.
1515          000014      R5SLOT**     14      ;OFFSET FOR R5.
1516          000012      R4SLOT**     12      ;OFFSET FOR R4.
1517          000010      R3SLOT**     10      ;OFFSET FOR R3.
1518          000006      R2SLOT**      6      ;OFFSET FOR R2.
1519          000004      R1SLOT**      4      ;OFFSET FOR R1.
1520          000002      ROSLOT**      2      ;OFFSET FOR R0.
```

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```
.SBTTL GLOBAL MACRO DEFINITION          - SAVE -
;*****
;*   THIS MACRO IS USED AT THE BEGINNING OF A SUBROUTINE TO SAVE THE
;*   CONTENTS OF THE GPRS R0 THRU R5.
;*
;* INPUTS:      SP - UNCHANGED SINCE SUBROUTINE WAS ENTERED
;*              R5SLOT - OFFSET TO STACK SLOT FOR R5 (EQUATED TO 14 OCTAL)
;*
;* OUTPUTS:     GPR SAVE AREA ON THE STACK IS LOADED WITH THE CONTENTS OF GPRS
;*              TOP OF STACK - LOADED WITH THE RETURN ADDRESS INTO PREG05
;*
;* CALLING SEQUENCE:  SAVE
;*
;* COMMENTS:     NO ARGUMENTS ARE ALLOWED.
;*              THE PASS MACRO SHOULD BE CALLED TO RESTORE THE GPR VALUES.
;*
;* SUBORDINATE ROUTINES CALLED: PREG05.
;*****
;
;MACRO SAVE
;LIST
;
;JSR      R5,PREG05      ;CALL REGISTER SAVE SUBRT.
;NLIST
;ENDM SAVE
```

```
1547 .SBTTL GLOBAL MACRO DEFINITION - PASS -
1548 ;*****
1549 ;* THIS MACRO IS USED IN CONJUNCTION WITH THE SAVE MACRO. IT IS
1550 ;* CALLED AT END OF A SUBROUTINE TO PASS PARAMETERS IN GPRS BACK TO THE
1551 ;* CALLING ROUTINE BY ALTERING THE GPR SAVE AREA ON THE STACK AND THEN
1552 ;* RETURNING TO PREG05 TO RESTORE THE GPRS TO THEIR SAVED VALUES.
1553 ;*
1554 ;* INPUTS: ONLY ALLOWED ARGUMENTS ARE "R0" THRU "R5".
1555 ;* ROSLOT THRU R5SLOT MUST BE EQUATED TO THEIR RESPECTIVE GPR SAVE
1556 ;* SLOT OFFSETS BEFORE CALLING THIS MACRO.
1557 ;*
1558 ;* OUTPUTS: THE GPR VALUES ARE PUT IN THEIR RESPECTIVE SLOTS ON THE STACK.
1559 ;*
1560 ;* CALLING SEQUENCE: PASS R0,R1,...
1561 ;*
1562 ;* COMMENTS: ANY COMBINATION OF GPR ARGUMENTS MAY BE LISTED IN ANY ORDER.
1563 ;* FOR EXAMPLE, THE FOLLOWING ARE LEGAL:
1564 ;* PASS R1
1565 ;* PASS R4,R0,R2
1566 ;* THE GPRS LISTED AS ARGUMENTS WILL BE PASSED INTACT TO THE
1567 ;* CALLING ROUTINE, ALL OTHER GPRS WILL BE RESTORED.
1568 ;* THE SP MUST BE AT ITS ORIGINAL VALUE WHEN PASS IS CALLED.
1569 ;*
1570 ;* THE MACRO CALL
1571 ;* PASS R0,R3
1572 ;* EXPANDS INTO THE FOLLOWING ASSEMBLY CODE:
1573 ;* MOV R0,ROSLOT(SP) ;PUT R0 IN STACK SLOT.
1574 ;* MOV R3,R3SLOT(SP) ;PUT R3 IN STACK SLOT.
1575 ;* JSR PC,@(SP)+ ;RETURN TO PREG05 SUBRT.
1576 ;* IN THIS EXAMPLE GPRS R1, R2, R4, AND R5 WILL BE RESTORED TO
1577 ;* THEIR VALUES CONTAINED IN THE STACK FRAME AND R0 AND R3
1578 ;* WILL BE LEFT AT THEIR VALUES PRIOR TO THIS PASS CALL.
1579 ;*
1580 ;* SUBORDINATE ROUTINES CALLED: (PREGRT - LABEL WITHIN PREG05, VALUE ON STACK.)
1581 ;*****
1582
1583 .MACRO PASS A,B,C,D,E,F
1584 .IRP X,<A,B,C,D,E,F>
1585 .IF NB,X
1586 .LIST
1587 MOV X,X'SLOT(SP) ;PUT X IN STACK SLOT.
1588 .NLIST
1589 .ENDC
1590 .ENDM
1591 .LIST
1592 JSR PC,@(SP)+ ;RETURN TO PREG05 SUBRT.
1593 .NLIST
1594 .ENDM PASS
```



```
1596 .SBTTL GLOBAL SUBROUTINE - PREG05 -
1597 ;*****
1598 ; PRESERVE REGISTERS R0 THROUGH R5 FOR SUBROUTINE CALLS.
1599 ;
1600 ; INPUTS: THE RETURN ADDRESS BACK INTO THE CALLING ROUTINE MUST BE IN
1601 ; GPR R5. (I.E.- MACROS USE "JSR R5,PREG05".)
1602 ;
1603 ; OUTPUTS: REGISTERS R0 THROUGH R5 ARE SAVED ON THE STACK.
1604 ;
1605 ; CALLING SEQUENCE: SAVE ;MACRO EXPANSION CALLS PREG05.
1606 ; [SUBROUTINE CODE]...
1607 ; PASS ;MACRO EXPANSION RECALLS PREG05.
1608 ;
1609 ; COMMENTS: THIS ROUTINE IS RE-ENTRANT.
1610 ;
1611 ; PARAMETERS MAY BE PASSED OUT OF A SUBROUTINE BY MODIFYING THE
1612 ; REGISTER SAVE AREA ON THE STACK. USE THE PASS GPRN MACRO
1613 ; TO RETURN GPR VALUES INTACT.
1614 ; USE THE RNSLOT OFFSETS FROM THE SP TO PASS OTHER PARAMETERS.
1615 ; [EXAMPLE: MOV VALUE,RNSLOT(SP) ]
1616 ; MAKE SURE THE SP IS AT ITS ORIGINAL VALUE WHEN YOU DO THIS.
1617 ;
1618 ; SUBORDINATE ROUTINES CALLED: NONE.
1619 ;*****
1620
1621 004020 PREG05: ;R5 HAS BEEN LOADED ON THE STACK BY THE SUBROUTINE CALL
1622 004020 010446 MOV R4,-(SP) ;SAVE R4
1623 004022 010346 MOV R3,-(SP) ;SAVE R3
1624 004024 010246 MOV R2,-(SP) ;SAVE R2
1625 004026 010146 MOV R1,-(SP) ;SAVE R1
1626 004030 010046 MOV R0,-(SP) ;SAVE R0
1627 004032 010546 MOV R5,-(SP) ;PUSH RETURN PC ON TOP OF STACK
1628 004034 016605 000014 MOV R5,RNSLOT(SP),R5 ;RESTORE R5 TO VALUE IT HAD BEFORE CALLS
1629
1630 004040 004736 JSR PC,@(SP)+ ;CALL THE SUBROUTINE AT THE RETURN ADDRESS
1631 ; FROM THE PREG05 CALL, PUTTING THE PRESENT
1632 ; PC ON THE STACK AS A RETURN ADDRESS INTO
1633 ; THIS (PREG05) ROUTINE.
1634
1635 ;+++
1636 ; THE FOLLOWING CODE IS EXECUTED WHEN THE CALLING ROUTINE DOES A
1637 ; "RETURN" (JSR PC,@(SP)+) USING THE PC DEPOSITED ON THE STACK ABOVE.
1638 ;---
1639
1640 004042 012605 PREGRT: MOV (SP)+,R5 ;PUT RETURN PC IN R5.
1641 004044 012600 MOV (SP)+,R0 ;RESTORE R0.
1642 004046 012601 MOV (SP)+,R1 ;RESTORE R1.
1643 004050 012602 MOV (SP)+,R2 ;RESTORE R2.
1644 004052 012603 MOV (SP)+,R3 ;RESTORE R3.
1645 004054 012604 MOV (SP)+,R4 ;RESTORE R4.
1646
1647 004056 000205 RTS R5 ;RETURN TO THE SUBROUTINE WHICH CALLED PREG05.
1648 ; RESTORING R5 IN THE PROCESS.
```

```
1650          .SBTTL  GLOBAL TEXT SECTION
1658
1659
1660          ;
1661          ; THE GLOBAL TEXT SECTION CONTAINS FORMAT STATEMENTS,
1662          ; MESSAGES, AND ASCII INFORMATION THAT ARE USED IN
1663          ; MORE THAN ONE TEST.
1664          ;
1665
1666          ;
1667          ; NAMES OF DEVICES SUPPORTED BY PROGRAM
1668          ;
1669          DEVTYP  <DHU-11>
          004060
          004060          104      110      125
          004060          055      061      061
          004066          000
          ;
1670
1676
1677          ; TEST DESCRIPTION
1678          ;
1679          DESCRIPT  <DHU-11 FUNC TST PART3>
          004070
          004070          104      110      125
          004073          055      061      061
          004076          040      106      125
          004101          116      103      040
          004104          124      123      124
          004107          040      120      101
          004112          122      124      063
          004115          000
          ;
1680          .EVEN
1681
1688
```

L\$DVTYP::,ASCIIZ /DHU-11/

.EVEN

L\$DESC::,ASCIIZ /DHU-11 FUNC TST PAR

.EVEN


```

1697
1698      .NLIST BIN
1699
1700
1701      ; ***** FORMAT STATEMENTS USED IN PRINT CALLS *****
1702
1703
1704 004116 EF0503:: .ASCIZ /#T#N/
1705 004123 EF1601:: .ASCIZ /#A #T#A, TEST ABORTED #N/
1706 004155 EF7801:: .ASCIZ /#T#A ON LINE #D2#A DECIMAL.#N/
1707 004213 EF8401:: .ASCIZ /#A #T#A FOR LINE #D2#A(D) AFFECTS OTHER MODEM SIGNALS.#N/
1708 004305 EF8402:: .ASCIZ /#A          CHANGING #T#A FOR LINE #D2#A(D) AFFECTED /
1709 004371      .ASCIZ /#T#A FOR LINE #D2#A(D).#N/
1710 004423 EF9301:: .ASCIZ /#A #T#D2#A(D), BMP CODE REPORTED :#03#A(O)#N/
1711 004501 EF9302:: .ASCIZ /#A OVERFLOW OCCURRED (MORE THAN 31 BMP CODES FOUND IN QUEUE)#N/
1712 004601 MFUNIT:: .ASCIZ /#N#A TESTING UNIT :#D4#N/
1713      .EVEN
1714      .LIST BIN

```

```

1723
1724      .NLIST BIN
1725
1726
1727      ;***** GLOBAL ERROR MESSAGES *****
1728
1729 004632 EM0103:: .ASCIZ /DEVICE REGISTER ACCESS ERRORS/
1730 004670 EM1601:: .ASCIZ /TIMEOUT OCCURRED WAITING FOR MASTER RESET TO CLEAR/
1731 004753 EM7801:: .ASCIZ /MODEM CONTROL DTR BIT TEST FAILED/
1732 005015 EM7802:: .ASCIZ / DTR BIT FAULTY/
1733 005035 EM7901:: .ASCIZ /MODEM CONTROL RTS BIT TEST FAILED/
1734 005077 EM7902:: .ASCIZ / RTS BIT FAULTY/
1735 005117 EM8001:: .ASCIZ /DSR MODEM STATUS SIGNAL TEST FAILED/
1736 005163 EM8002:: .ASCIZ / DSR MODEM STATUS SIGNAL DEFECTIVE/
1737 005227 EM8101:: .ASCIZ /RI MODEM STATUS SIGNAL TEST FAILED/
1738 005272 EM8102:: .ASCIZ / RI MODEM STATUS SIGNAL DEFECTIVE/
1739 005335 EM8201:: .ASCIZ /CTS MODEM STATUS SIGNAL TEST FAILED/
1740 005401 EM8202:: .ASCIZ / CTS MODEM STATUS SIGNAL DEFECTIVE/
1741 005445 EM8301:: .ASCIZ /DCD MODEM STATUS SIGNAL TEST FAILED/
1742 005511 EM8302:: .ASCIZ / DCD MODEM STATUS SIGNAL DEFECTIVE/
1743 005555 EM8401:: .ASCIZ /DTR MODEM CONTROL SIGNAL INTERACTIONS TEST FAILED/
1744 005637 EM8402:: .ASCIZ /DTR/
1745 005643 EM8403:: .ASCIZ /DSR/
1746 005647 EM8404:: .ASCIZ /RI/
1747 005652 EM8405:: .ASCIZ /DCD/
1748 005656 EM8406:: .ASCIZ /CTS/
1749 005662 EM8501:: .ASCIZ /RTS MODEM CONTROL SIGNAL INTERACTIONS TEST FAILED/
1750 005747 EM8502:: .ASCIZ /RTS/
1751 005750 EM9301:: .ASCIZ /BMP CODES WERE REPORTED DURING THIS DIAGNOSTIC/
1752 006027 EM9302:: .ASCIZ /BMP CODE FOUND IN TEST /
1753 006057 EM9303:: .ASCIZ /THE LAST BMP CODE WAS FOUND IN TEST /
1754 006124 EM9304:: .ASCIZ /UNEXPECTED BMP CODES FOUND DURING THIS PASS/
1755      .EVEN
1756      .LIST BIN

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.SBTTL GLOBAL ERROR REPORT SECTION

!---
; THE GLOBAL ERROR REPORT SECTION CONTAINS MESSAGE PRINTING AREAS
; USED BY MORE THAN ONE TEST TO OUTPUT ADDITIONAL ERROR INFORMATION. PRINTB
; (BASIC) AND PRINTX (EXTENDED) CALLS ARE USED TO CALL PRINT SERVICES.
!---

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1775 .SBTTL GLOBAL ERROR REPORTING ROUTINE - ER0101 -
1776 ;*****
1777 ;* THIS IS AN ERROR REPORTING SUBROUTINE WHICH PRINTS ADDITIONAL ERROR
1778 ;* INFORMATION IF AN ERROR IS DETECTED IN TEST 1 (REGISTER ADDRESS
1779 ;* ACCESS TEST). IF THE "EXTENDED ERROR INFO" OPTION HAS BEEN SELECTED
1780 ;* THEN THIS SUBROUTINE WILL REPORT THE TYPE OF ACCESS (READ OR WRITE OR
1781 ;* BOTH) WHICH CAUSED A BUS TIME-OUT TRAP (004 TRAP). A MESSAGE INDICATING
1782 ;* THAT THE DHU MAY BE AT THE WRONG UNIBUS ADDRESS IS ALSO PRINTED.
1783 ;*
1784 ;* INPUTS:      R5 - ERROR FLAG WORD.
1785 ;*              IF BIT 0 IS SET, A READ ERROR OCCURED.
1786 ;*              IF BIT 1 IS SET, A WRITE ERROR OCCURED.
1787 ;*
1788 ;* OUTPUTS:     MESSAGES ARE PRINTED AT THE OPERATOR CONSOLE.
1789 ;*
1790 ;* CALLING SEQUENCE:  INCLUDE THE LABEL "ER0101" AS THE MESSAGE POINTER
1791 ;*                    PARAMETER IN THE DRS ERROR REPORT MACRO CALL.
1792 ;*
1793 ;* COMMENTS:
1794 ;*
1795 ;* SUBORDINATE ROUTINES USED: NONE.
1796 ;*****
1797
1798 BGNMSG ER0101
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1815 006312          6$:    PASS          ;RESTORE THE GPR CONTENTS.
      006312 004736          JSR          PC,0(SP)+      ;RETURN TO PREG05 SUBRT.
1816 006314          ENDMSG
      006314          L10002:
      006314 104423          TRAP      C$MSG
1817
1818 006316          045      101      102  MSG1:: .ASCIZ /*ABUS TIME-OUT TRAP CAUSED BY READ ATTEMPT.*N/
      006321          125      123      040
      006324          124      111      115
      006327          105      055      117
      006332          125      124      040
      006335          124      122      101
      006340          120      040      103
      006343          101      125      123
      006346          105      104      040
      006351          102      131      040
      006354          122      105      101
      006357          104      040      101
      006362          124      124      105
      006365          115      120      124
      006370          056      045      116
      006373          000
1819 006374          045      101      102  MSG2:: .ASCIZ /*ABUS TIME-OUT TRAP CAUSED BY WRITE ATTEMPT.*N/
      006377          125      123      040
      006402          124      111      115
      006405          105      055      117
      006410          125      124      040
      006413          124      122      101
      006416          120      040      103
      006421          101      125      123
      006424          105      104      040
      006427          102      131      040
      006432          127      122      111
      006435          124      105      040
      006440          101      124      124
      006443          105      115      120
      006446          124      056      045
      006451          116      000
1820 006453          045      101      104  MSG3:: .ASCIZ /*ADHU MAY BE AT THE WRONG UNIBUS ADDRESS.*N*N/
      006456          110      125      040
      006461          115      101      131
      006464          040      102      105
      006467          040      101      124
      006472          040      124      110
      006475          105      040      127
      006500          122      117      116
      006503          107      040      125
      006506          116      111      102
      006511          125      123      040
      006514          101      104      104
      006517          122      105      123
      006522          123      056      045
      006525          116      045      116
      006530          000
1821
1822          ,EVEN

```

```
1824 .SBTTL GLOBAL ERROR REPORTING ROUTINE - ERO503 -
1825 ;*****
1826 ;* THIS IS AN ERROR REPORTING SUBROUTINE WHICH PRINTS AN ADDITIONAL ERROR
1827 ;* MESSAGE WHOSE ADDRESS IS PASSED AS AN INPUT PARAMETER, PROVIDED
1828 ;* EXTENDED ERROR REPORTING HAS BEEN REQUESTED.
1829 ;*
1830 ;* INPUTS: R1 - ADDRESS OF THE MESSAGE TO PRINT.
1831 ;*
1832 ;* OUTPUTS: A MESSAGES IS PRINTED AT THE OPERATOR CONSOLE.
1833 ;*
1834 ;* CALLING SEQUENCE: LOAD THE ADDRESS OF THE MESSAGE IN R1.
1835 ;* INCLUDE THE LABEL "ERO503" AS THE MESSAGE POINTER
1836 ;* PARAMETER IN THE DIAG SUPER ERROR REPORT MACRO CALL.
1837 ;*
1838 ;* COMMENTS: THE MESSAGE IS PRINTED AS BASIC ERROR INFORMATION.
1839 ;*
1840 ;* SUBORDINATE ROUTINES USED: NONE.
1841 ;*****
1842
1843 006532 BGNMSG ERO503
1844 006532 ERO503::
1845 006532 012700 000100 MOV 08IT06,R0 ;TRY TO CLEAR THE
1846 006536 046700 173420 BIC OPTION,R0 ;EXT'D ERROR REPORTING FLAG
1847 006542 001011 BNE 2$ ;EXIT IF FLAG NOT SET.
1848
1849
1850 006544 PRINTB 0EF0507 R1 ;PRINT THE MESSAGE.
1851 006544 010146 MOV R1,-(SP)
1852 006546 012746 004116 MOV 0EF0503,-(SP)
1853 006552 012746 000002 MOV 02,-(SP)
1854 006556 010600 MOV SP,R0
1855 006560 104414 TRAP C$PNTB
1856 006562 062706 000006 ADD 06,SP
1857
1858 006566 2$: ENDMMSG
1859 006566
1860 006566 104423 L10003: TRAP C$MSG
```



```

1854 .SBTTL GLOBAL ERROR REPORTING ROUTINE - ER1603 -
1855 ;*****
1856 ;* THIS ERROR REPORTING ROUTINE IS USED TO PRINT OUT A BASIC ERROR
1857 ;* MESSAGE, ALONG WITH A MESSAGE INFORMING THE OPERATOR WHICH TEST IS
1858 ;* ABOUT TO BE ABORTED, PROVIDED EXTENDED ERROR INFORMATION HAS BEEN
1859 ;* REQUESTED, OTHERWISE ONLY A "TEST FAILURE" MESSAGE WILL BE PRINTED.
1860 ;*
1861 ;* INPUTS: R1 - CONTAINS THE ADDRESS OF THE MESSAGE TO BE PRINTED.
1862 ;* ERRMSG - CONTAINS THE ADDRESS OF THE MESSAGE THAT INDICATES
1863 ;* THE TEST THAT IS BEING PERFORMED, EG DMA, BREAK ETC.
1864 ;*
1865 ;* OUTPUTS: MESSAGES ARE PRINTED AT THE OPERATORS CONSOLE.
1866 ;* "TESTNAME TEST ABORTED"
1867 ;*
1868 ;* CALLING SEQUENCE: INCLUDE THE LABEL "ER1603" AS THE MESSAGE POINTER
1869 ;* PARAMETER IN THE DRS ERROR REPORT MACRO CALL.
1870 ;*
1871 ;* COMMENTS:
1872 ;*
1873 ;*
1874 ;* SUBORDINATE ROUTINES CALLED: NONE.
1875 ;*****
1876 006570 BGNMSG ER1603
1877 006570 ER1603::
1878 006570 004567 175224 SAVE JSR ;SAVE THE CONTENTS OF THE GPRS.
1879 006574 012700 000100 R5,PREG05 ;CALL REGISTER SAVE SUBRT.
1880 006600 046700 173356 MOV #BIT06,R0 ;TRY TO CLEAR THE
1881 006604 001024 BNE 2$ ;EXT'D ERROR REPORTING FLAG
1882 ;EXIT IF FLAG NOT SET.
1883
1884 006606 PRINTB #EF0503,R1 ;PRINT BASIC MESSAGE ON OPERATORS CONSOLE.
1885 006606 010146 MOV R1,-(SP)
1886 006610 012746 004116 MOV #EF0503,-(SP)
1887 006614 012746 000002 MOV #2,-(SP)
1888 006620 010600 MOV SP,R0
1889 006622 104414 TRAP C$PNTB
1890 006624 062706 000006 ADD #6,SP
1891
1892 006630 016702 175160 MOV ERRMSG,R2 ;GET THE "TEST MESSAGE".
1893 006634 010246 PRINTB #EF1601,R2 ;PRINT "TEST ABORTED" MESSAGE.
1894 006636 012746 004123 MOV R2,-(SP)
1895 006642 012746 000002 MOV #EF1601,-(SP)
1896 006646 010600 MOV #2,-(SP)
1897 006650 104414 MOV SP,R0
1898 006652 062706 000006 TRAP C$PNTB
1899 ADD #6,SP
1900
1901 2$: PASS ;RESTORE THE CONTENTS OF THE GPRS.
1902 006656 004736 JSR PC,@(SP) ;RETURN TO PREG05 SUBRT.
1903 006660 ENDMG
1904 006660 104423 L10004:
1905 006660 104423 TRAP C$MSG

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19131914 006652
0066621915
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1919 006662 032767 000100 173272

1920 006670 001412

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006672 010346
006674 010146
006676 012746 004155
006702 C12746 000003
006706 010600
006710 104414
006712 062706 000010

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006716
006716
006716 104423

```
.SBTTL GLOBAL ERROR REPORTING ROUTINE - ER7801 -
*****
; THIS IS AN ERROR REPORTING SUBROUTINE WHICH PRINTS AN ADDITIONAL ERROR
; MESSAGE WHOSE ADDRESS IS PASSED AS AN INPUT PARAMETER. A LINE NUMBER
; IS INCLUDED AT THE END OF THE MESSAGE. THE MESSAGE IS PRINTED ONLY IF
; EXTENDED ERROR REPORTING IS REQUESTED.
;
; INPUTS: R1 - ADDRESS OF THE MESSAGE TO PRINT.
; R3 - NUMBER OF LINE ON WHICH ERROR OCCURRED.
;
; OUTPUTS: A MESSAGE IS PRINTED AT THE OPERATOR CONSOLE.
;
; CALLING SEQUENCE: LOAD THE ADDRESS OF THE MESSAGE IN R1.
; LOAD THE LINE NUMBER INTO R3.
; INCLUDE THE LABEL "ER7801" AS THE MESSAGE POINTER
; PARAMETER IN THE DIAG SUPER ERROR REPORT MACRO CALL.
;
; COMMENTS: THE MESSAGE IS PRINTED AS BASIC ERROR INFORMATION.
;
; SUBORDINATE ROUTINES USED: NONE.
*****
```

BGNMSG ER7801

ER7801::

```
;
; EXIT IF EXTENDED ERROR REPORTING HAS NOT BEEN ENABLED
;-
```

```
BIT 0BIT06,OPTION ;EXIT WITH TEST FAILURE MESSAGE IF
BEQ 2$ ;NO EXTENDED ERROR REPORTING HAS BEEN REQUESTED
;DURING THE SOFTWARE QUESTIONS.
```

PRINTB 0EF7801,R1,R3 ;PRINT THE MESSAGE.

```
MOV R3,-(SP)
MOV R1,-(SP)
MOV 0EF7801,-(SP)
MOV 03,-(SP)
MOV SP,R0
TRAP C$PNTB
ADD #10,SP
```

2\$: ENDMSG

L10005: TRAP C\$MSG


```

1927 .SBTTL GLOBAL ERROR REPORTING ROUTINE - ER8401 -
1928 ;*****
1929 ;* THIS ERROR REPORTING SUBROUTINE IS INTENDED TO REPORT INTERACTIONS
1930 ;* WHICH HAVE BEEN FOUND BETWEEN A MODEM SIGNAL AND OTHER MODEM SIGNALS.
1931 ;* IT ANALYZES THE MODEM STATUS WHICH IS STORED IN THE STAT STORAGE AREA
1932 ;* AND REPORTS ANY DISCREPANCIES WHICH ARE FOUND BETWEEN THIS STORED DATA
1933 ;* AND THE PRESENT STATE OF THE STAT REGISTERS. SPECIFIED BITS ON THE
1934 ;* LINE ASSOCIATED WITH THE SPECIFIED LINE ARE IGNORED.
1935 ;*
1936 ;* INPUTS: R1 - ADDRESS OF SIGNAL NAME MESSAGE.
1937 ;* R2 - BIT MAP OF BITS TO IGNORE ON SPECIFIED LINE.
1938 ;* R3 - NUMBER OF SPECIFIED LINE.
1939 ;* CSRA - CONTAINS THE ADDRESS OF THE OUT CSR.
1940 ;* NUMLNS - EQUATED TO THE NUMBER OF LINES ON THE OUT.
1941 ;* FLSA - CONTAINS THE ADDRESS OF THE OUT STAT REGISTER.
1942 ;* STSTB - LABEL AT BASE OF STAT STORAGE TABLE.
1943 ;* TXRLNB - LABEL AT BASE OF TX/RX LINE NUMBER ASSOCIATION TABLE.
1944 ;*
1945 ;* OUTPUTS: A MESSAGE IS PRINTED AT THE OPERATOR CONSOLE.
1946 ;*
1947 ;* CALLING SEQUENCE: INCLUDE THE LABEL "ER8401" AS THE MESSAGE POINTER
1948 ;* PARAMETER IN THE DIAG SUPER ERROR REPORT MACRO CALL.
1949 ;*
1950 ;* COMMENTS: THE MESSAGE IS PRINTED AS BASIC AND EXTENDED ERROR INFORMATION.
1951 ;*
1952 ;* SUBORDINATE ROUTINES USED: NONE.
1953 ;*****
1954
1955 006720 RGNMSG ER8401
1956 006720 ER8401::
1957 006720 SAVE JSR ;PRESERVE THE CONTENTS OF THE GPRS.
1958 006720 004567 175074 R5,PREG05 ;CALL REGISTER SAVE SUBRT.
1959
1960 ;*
1961 ;* EXIT THE TEST IF EXTENDED ERROR REPORTING HAS NOT BEEN ENABLED
1962 ;*
1963 ;*
1964 ;*
1965 006734 PRINTB 0EF8401,R1,R3 ;PRINT THE BASIC MESSAGE.
1966 006734 010346 MOV R3,-(SP)
1967 006736 010146 MOV R1,-(SP)
1968 006740 012746 004213 MOV 0EF8401,-(SP)
1969 006744 012746 000003 MOV 03,-(SP)
1970 006750 010600 MOV SP,R0
1971 006752 104414 TRAP C$PNTB
1972 006754 062706 000010 ADD 010,SP
1973
1974 006760 010167 000204 MOV R1,44$ ;SAVE THE ADDRESS OF THE SIGNAL NAME MESSAGE.
1975 006764 005001 CLR R1 ;CLEAR THE LINE COUNTER.
1976 006766 012704 002610 MOV 0STSTB,R4 ;SET UP STAT STORAGE POINTER TO BASE OF TABLE.
1977 006772 010177 173202 MOV R1,0CSRA ;SET UP THE CSR IND.ADR.REG FIELD.
1978 006776 017700 173204 MOV 0FLSA,R0 ;GET THE CONTENTS OF THIS LINE'S STAT REGISTER.
1979 007002 011405 MOV (R4),R5 ;GET THE PREVIOUS CONTENTS FROM STORAGE.
1980 007004 040005 BIC R0,R5
1981 007006 042400 BIC (R4),R0

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```
1975 007010 050005      BIS    R0,R5      ;XOR PRESENT AND STORED STAT VALUES.
1976 007012 012700 043777  MOV    44$777,R0    ;PREPARE TO MASK OUT UNUSED BITS.
1977 007016 120163 003750  CMPB   R1,TXRNA(R3) ;IS THIS LINE ASSOCIATED WITH SPECIFIED LINE?
1978 007022 001002      BNE    4$      ;DON'T MASK OUT SPECIFIED BITS IF IT IS NOT.
1979 007024 056600 000006      BIS    R2SLOT(SP),R0 ;MASK OUT SPECIFIED BITS.
1980 007030 040005      BIC    R0,R5      ;GET BIT MAP OF UNDESIRED CHANGES.
1981 007032 032705 100000 4$:    BIT    4BIT15,R5    ;CHECK FOR DSR SIGNAL INTERACTION.
1982 007036 001404      BEQ    6$      ;SKIP PRINTING LINE IF NO DSR INTERACTION.
1983 007040 012702 005643      MOV    4EM8403,R2    ;SELECT DSR ERROR MESSAGE.
1984 007044 004767 000064      JSR    PC,40$    ;PRINT THE LINE OF THE ERROR MESSAGE.
1985 007050 032705 020000 6$:    BIT    4BIT13,R5    ;CHECK FOR RI SIGNAL INTERACTION.
1986 007054 001404      BEQ    8$      ;SKIP PRINTING LINE IF NO RI INTERACTION.
1987 007056 012702 005647      MOV    4EM8404,R2    ;SELECT RI ERROR MESSAGE.
1988 007062 004767 000046      JSR    PC,40$    ;PRINT THE LINE OF THE ERROR MESSAGE.
1989 007066 032705 010000 8$:    BIT    4BIT12,R5    ;CHECK FOR DCD SIGNAL INTERACTION.
1990 007072 001404      BEQ    10$     ;SKIP PRINTING LINE IF NO DCD INTERACTION.
1991 007074 012702 005652      MOV    4EM8405,R2    ;SELECT DCD ERROR MESSAGE.
1992 007100 004767 000030      JSR    PC,40$    ;PRINT THE LINE OF THE ERROR MESSAGE.
1993 007104 032705 004000 10$:   BIT    4BIT11,R5    ;CHECK FOR CTS SIGNAL INTERACTION.
1994 007110 001404      BEQ    12$     ;SKIP PRINTING LINE IF NO CTS INTERACTION.
1995 007112 012702 005656      MOV    4EM8406,R2    ;SELECT CTS ERROR MESSAGE.
1996 007116 004767 000012      JSR    PC,40$    ;PRINT THE LINE OF THE ERROR MESSAGE.
1997
1998 007122 005201 12$:    INC    R1      ;SELECT NEXT LINE.
1999 007124 020127 000020      CMP    R1,4NUMLNS    ;ALL LINES DONE?
2000 007130 002720      BLT    2$      ;LOOP IF NOT ALL LINES DONE.
2001 007132 000417      BR     60$     ;EXIT THIS ROUTINE.
2002
2003      ;+
2004      ; LOCAL ERROR MESSAGE LINE PRINTING ROUTINE.
2005      ;-
2005 007134 40$:    PRINTX  4EF8402,44$,R3,R2,R1
2005 007134 010146      MOV    R1,-(SP)
2005 007136 010246      MOV    R2,-(SP)
2005 007140 010346      MOV    R3,-(SP)
2005 007142 016746 000022      MOV    44$,-(SP)
2005 007146 012746 004305      MOV    4EF8402,-(SP)
2005 007152 012746 000005      MOV    45,-(SP)
2005 007156 010600      MOV    SP,R0
2005 007160 104415      TRAP   C$PNYX
2005 007162 062706 000014      ADD    414,SP
2006 007166 000207
2007 007170 000000 44$:    .WORD  0      ;LOCAL STORAGE FOR ADDRESS OF SIGNAL NAME.
2008 007172 004736 60$:    PASS      ;RESTORE ALL THE GPRS TO THE PRESERVED VALUES.
2008 007174      JSR    PC,4(SP)+ ;RETURN TO PREG05 SUBRT.
2009 007174      ENDMSG
2009 007174 104423      L10006: TRAP   C$MSG
```

```
2011 .SBTTL GLOBAL ERROR REPORTING ROUTINE - ER9301 -
2012 ;*****
2013 ;* THIS IS AN ERROR REPORTING SUBROUTINE WHICH PRINTS ANY BMP CODES
2014 ;* THAT ARE FOUND IN THE BMP CODE QUEUE, TOGETHER WITH THE THE NUMBER OF
2015 ;* THE TEST THAT WAS EXECUTING AT THE TIME THE BMP CODE WAS LOGGED.
2016 ;* PROVIDED EXTENDED ERROR REPORTING HAS BEEN ENABLED.
2017 ;*
2018 ;* INPUTS: R1 - THE ADDRESS OF THE FIRST MESSAGE TO BE REPORTED.
2019 ;* R2 - THE ADDRESS OF THE NEXT EMPTY CELL IN THE QUEUE.
2020 ;*
2021 ;* OUTPUTS: THE TEST NUMBER FOLLOWED BY THE BMP CODE ARE PRINTED AT THE
2022 ;* OPERATOR CONSOLE.
2023 ;*
2024 ;* CALLING SEQUENCE: INCLUDE THE LABEL "ER9301" AS THE MESSAGE POINTER
2025 ;* PARAMETER IN THE DIAG SUPER ERROR REPORT MACRO CALL.
2026 ;*
2027 ;* COMMENTS: THE MESSAGE IS PRINTED AS BASIC ERROR INFORMATION.
2028 ;*
2029 ;* SUBORDINATE ROUTINES USED: NONE.
2030 ;*****
2031
2032 007176 BGNMSG ER9301
2033 007176 ER9301::
2034 007176 SAVE JSR ;SAVE THE GPRS ON THE STACK.
2035 007176 004567 174616 R5,PREG05 ;CALL REGISTER SAVE SUBRT.
2036 007202 012700 000100 MOV #BIT06,R0 ;TRY TO CLEAR THE
2037 007206 046700 172750 BIC OPTION,R0 ;EXT'D ERROR REPORTING FLAG
2038 007212 001064 BNE 60$ ;EXIT IF FLAG NOT SET.
2039 007214 PRINTB #EF0503,R1 ;REPORT UNEXPECTED BMP CODES FOUND.
2040 007214 010146 MOV R1,-(SP)
2041 007216 012746 004116 MOV #EF0503,-(SP)
2042 007222 012746 000002 MOV #2,-(SP)
2043 007226 010600 MOV SP,R0
2044 007230 104414 TRAP C$PNTB
2045 007232 062706 000006 ADD #6,SP
2046 007236 012703 002352 MOV #BMPCQB,R3 ;GET THE START ADDRESS OF THE BMP CODE QUEUE.
2047 007242 012705 006027 MOV #EM9302,R5 ;GET THE MESSAGE TO BE REPORTED.
2048 2$: MOV (R3)+,R1 ;GET THE NUMBER OF THE TEST THAT WAS EXECUTING.
2049 MOV (R3)+,R4 ;GET BMP CODE THAT WAS REPORTED OFF THE QUEUE.
2050 JSR PC,50$ ;GO REPORT THE BMP CODE.
2051 CMP R3,R2 ;CHECK IF ALL CODES HAVE BEEN REPORTED.
2052 BLO 2$ ;IF IT IS NOT THE LAST BMP CODE THEN LOOP.
2053 ;*
2054 ; CHECK IF OVERFLOW HAS OCCURRED.
2055 ; THE CONDITIONS FOR OVERFLOW ARE: THE POINTER CONTAINS THE ADDRESS OF THE
2056 ; LAST CELL IN THE QUEUE, AND A BMP CODE HAS ALREADY BEEN WRITTEN INTO THAT
2057 ; CELL.
2058 ;*
2059 007262 020227 002546 CMP R2,#BMPCQE-4 ;CHECK IF THE POINTER IS AT THE LAST LOCATION.
2060 007266 001036 BNE 60$ ;EXIT IF NOT AT THE LAST LOCATION.
2061 007270 005762 000002 TST 2(R2) ;CHECK FOR A BMP CODE IN THE LAST CELL.
2062 007274 001433 BEQ 60$ ;EXIT IF NO OVERFLOW HAS OCCURED, CELL EMPTY.
2063 007276 012301 MOV (R3)+,R1 ;GET THE TEST NUMBER OFF THE QUEUE.
2064 007300 011304 MOV (R3),R4 ;GET THE BMP CODE OFF THE QUEUE.
2065 007302 012705 006057 MOV #EM9303,R5 ;SELECT THE MESSAGE TO BE REPORTED.
```

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007306      PRINTX   #EF9302          ;REPORT OVERFLOW CONDITION.      MOV     #EF9302,-(SP)
007306      012746    004501                                     MOV     #1,-(SP)
007312      012746    000001                                     MOV     SP,R0
007316      010600                                         TRAP     C$PNTX
007320      104415                                       ADD      #4,SP
007322      062706    000004
2061 007326      004767    000002      JSR      PC,50$           ;REPORT THE LAST BMP CODE PLACED ON THE QUEUE.
2062 007332      000414      BR        60$             ;EXIT.
2063
2064      50$:      PRINTX   #EF9301,R5,R1,R4      ;PRINT TIME MESSAGE.      MOV     R4,-(SP)
                                MOV     R1,-(SP)
                                MOV     R5,-(SP)
                                MOV     #EF9301,-(SP)
                                MOV     #4,-(SP)
                                MOV     SP,R0
                                TRAP     C$PNTX
                                ADD      #12,SP
007334      010446
007336      010143
007340      010546
007342      012746    004423
007346      012746    000004
007352      010600
007354      104415
007356      062706    000012
2065 007362      000207      RTS       PC              ;RETURN.
2066 007364      004736      PASS      60$:      JSR      PC,@(SP)+         ;RESTORE THE GPR CONTENTS.
                                           ;RETURN TO PREG05 SUBRT.
2067
2068      ENDMSG
                                L10007:
007366      104423                                      TRAP     C$MSG

```

B5

CZDHWB0 DHU-11 FUNC TST PART3 MACRO M1200 15-MAR-84 09:41 PAGE 45
GLOBAL SUBROUTINES SECTION

SEQ 53

2070
2078
2079
2080
2081
2082
2083

.SBTTL GLOBAL SUBROUTINES SECTION

!--
; THE GLOBAL SUBROUTINES SECTION CONTAINS THE SUBROUTINES
; THAT ARE USED IN MORE THAN ONE TEST.
!--

```

2085 .SBTTL GLOBAL SUBROUTINE - ALTFLD -
2086 *** *****
2087 * ALTER DEVICE REGISTER FIELDS ROUTINE -
2088 * THIS SUBROUTINE ALTERS THE SPECIFIED FIELD OF THE SPECIFIED DEVICE
2089 * REGISTER FOR THE SPECIFIED LINES. THIS ROUTINE CAN BE USED TO SET
2090 * OR CLEAR BITS WITHIN SELECTED FIELDS OF SELECTED REGISTERS.
2091 * USE EXAMPLES: SET RX.BAUD.RATE FIELDS ON LINES 3 AND 6.
2092 * CLEAR TX.DMA BITS ON ALL LINES.
2093 *
2094 * INPUTS: R1 - ADDRESS OF THE REGISTERS TO ALTER.
2095 * R2 - BIT FIELDS SET TO DESIRED STATES.
2096 * R3 - BIT MAP OF LINES FOR WHICH TO ALTER REGISTER.
2097 * R4 - MASK OF BITS TO ALTER (1 INDICATES CHANGE BIT).
2098 * CSRA - CONTAINS THE ADDRESS OF THE DEVICE CSR.
2099 * IESTAT - SAVED STATES OF THE INTERRUPT ENABLE BITS.
2100 *
2101 * OUTPUTS: DEVICE REGISTERS - SPECIFIED REGISTER FIELDS ALTERED.
2102 * CSR IND.ADR.REG FIELD - DESTROYED.
2103 *
2104 * CALLING SEQUENCE: JSR PC,ALTFLD
2105 *
2106 * COMMENTS: THIS ROUTINE READS THE SPECIFIED REGISTERS FOR ALL LINES
2107 * WITH NUMBERS LOWER THAN THE HIGHEST SPECIFIED LINE.
2108 * THIS ROUTINE DOES NOT READ THE CSR.
2109 *
2110 * SUBROUTINES CALLED: NONE.
2111 * - *****
2112
2113 007370 ALTFLD:: SAVE ;SAVE CONTENTS OF GPRS R0 THRU R5.
2114 007370 004567 174424 JSR R5,PREG05 ;CALL REGISTER SAVE SUBRT.
2115
2116 *
2117 * SET UP TO LOOP FOR EACH LINE:
2118 * PREPARE THE WORD TO BE ORED INTO THE REGISTER CONTENTS.
2119 * SET UP THE WORD TO WRITE INTO THE IND.ADR.REG FIELD OF THE CSR.
2120
2120 007374 010400 MOV R4,R0 ;CALCULATE THE NEW CONTENTS OF THE
2121 007376 005100 COM R0 ; REGISTER FIELDS WHICH ARE TO BE
2122 007400 040002 BIC R0,R2 ; ALTERED BY THIS ROUTINE.
2123 007402 016705 172622 MOV IESTAT,R5 ;SET UP TO WRITE IND.ADR.REG FIELD TO 0.
2124
2125 *
2126 * LOOP ONCE FOR EACH LINE, ALTERING THE SPECIFIED FIELD IN THE SPECIFIED
2127 * REGISTER IF THE LINE HAS BEEN SELECTED FOR ALTERING.
2128 * EXIT THE LOOP IF NO MORE LINES TO ALTER, OR IF WE HAVE ALTERED THE MAX
2129 * ALLOWABLE NUMBER OF LINES (AS SPECIFIED BY NUMLNS).
2130
2130 007406 000241 CLC ;PREPARE FOR ROTATE, "TST R5" DOES THIS BELOW.
2131 007410 006003 2$: ROR R3 ;GET THE LINE SELECT BIT FOR THIS LINE.
2132 007412 103006 BCC 4$ ;SKIP SETUP IF LINE IS NOT SELECTED.
2133 007414 010577 172560 MOV R5,CSRA ;SET OUT CSR IND.ADR.REG FIELD TO THIS LINE.
2134 007420 011100 MOV (R1),R0 ;GET THE PRESENT CONTENTS OF THE REG TO ALTER.
2135 007422 040400 BIC R4,R0 ;CLEAR THE BIT FIELDS WE ARE TO ALTER.
2136 007424 050200 BIS R2,R0 ;OR IN THE NEW STATES OF THE FIELDS.
2137 007426 010011 MOV R0,(R1) ;WRITE THE NEW REGISTER CONTENTS TO THE REG.
2138 007430 005205 4$: INC R5 ;SET LINE NUMBER TO THE NEXT LINE.
2139 007432 005703 TST R3 ;CHECK FOR UNHANDLED LINES, CLEAR CARRY FLAG.
2140 007434 001365 BNE 2$ ;LOOP IF SELECTED LINE(S) IS NOT HANDLED.

```


05

CZDHWB0 DHU 11 FUNC 1ST PART3 MACRO M1200 15-MAR-84 09:41 PAGE 46-1
GLOBAL SUBROUTINE - ALTFLD

SEQ 55

2141						
2142	007436		604:	PASS		RESTORE GPRS.
	007436	004736			JSR	PC,8(SP)+ RETURN TO PREGOS SUBRT.
2143	007440	000207		RTS	PC	RETURN TO CALLING ROUTNE.

2145 .SBTTL GLOBAL SUBROUTINE - ASLNTL -
2146 ;+ *****
2147 ;+ - SETUP ASSOCIATED LINE NUMBER TABLES ROUTINE -
2148 ;+ THIS ROUTINE SETS UP THE TWO TABLES WHICH ARE CONTAIN INFORMATION
2149 ;+ ABOUT THE TX/RX LINE WHICH IS ASSOCIATED WITH A PARTICULAR RX/TX
2150 ;+ LINE. ONE TABLE IS A TABLE OF WORDS WHICH CONTAINS WORD OFFSET
2151 ;+ VALUES AND THE OTHER TABLE IS A TABLE OF BYTES WHICH CONTAINS
2152 ;+ LINE NUMBER VALUES.
2153 ;+
2154 ;+ INPUTS: LOPBCK - STORAGE FOR THE TYPE OF LOOPBACK ON THE OUT.
2155 ;+ NUMLNS - EQUATED TO THE NUMBER OF LINES ON THE OUT.
2156 ;+ STGTRB - LABEL AT BASE OF STAGGERED LINE ASSOCIATION TBL.
2157 ;+ TXRLNB - LABEL AT BASE OF BYTE TX/RX LINE NUMBER TABLE.
2158 ;+ TXRXLB - LABEL AT BASE OF WORD TX/RX LINE NUMBER TABLE.
2159 ;+ TXRXLE - LABEL AT END OF WORD TX/RX LINE NUMBER TABLE.
2160 ;+
2161 ;+ OUTPUTS: TXRXL, TXRLN - TABLES INITIALIZED FOR SELECTED LOOPBACK.
2162 ;+
2163 ;+ CALLING SEQUENCE: JSR PC,ASLNTL
2164 ;+
2165 ;+ COMMENTS:
2166 ;+
2167 ;+ SUBORDINATE ROUTINES CALLED: NONE.
2168 ;+ *****
2169
2170 007442 ASLNTL:: SAVE ;SAVE CONTENTS OF GPRS R0 THRU R5.
2171 007442 004567 174352 JSR R5,PREG05 ;CALL REGISTER SAVE SUBRT.
2172 007446 126727 172522 000002 CMPB LOPBCK,02 ;TEST FOR STAGGERED LOOPBACK.
2173 BEQ 4\$;GO SET UP STAGGERED TABLE IF STAGGERED LPBCK.
2174 ;+
2175 ;+ SET UP THE WORD TABLE FOR NON-STAGGERED LOOPBACK.
2176 007456 005005 ;+
2177 007460 010565 003710 2\$: CLR R5 ;CLEAR THE LINE COUNTER
2178 007464 005205 MOV R5,TXRXLB(R5) ;SET UP A WORD OF THE TABLE.
2179 007466 005205 INC R5
2180 007470 020527 000040 INC R5 ;SET LINE COUNTER TO NEXT LINE OFFSET.
2181 007474 002771 CMP R5,02*NUMLNS ;TEST FOR ALL LINES DONE.
2182 007476 000411 BLT 2\$;LOOP UNTIL ALL LINES DONE.
2183 BR 8\$;GO SET UP THE BYTE TABLE.
2184 ;+
2185 ;+ SET UP THE WORD TABLE FOR STAGGERED LOOPBACK.
2186 007500 012701 003770 4\$: MOV 0STGTRB,R1 ;SET UP THE SOURCE POINTER.
2187 007504 012702 003710 MOV 0TXRXLB,R2 ;SET UP THE DESTINATION POINTER.
2188 007510 112122 6\$: MOV8 (R1)+,(R2)+ ;MOVE A BYTE INTO THE TABLE.
2189 007512 105022 CLRB (R2)+ ;CLEAR THE UPPER BYTE OF WORD TABLE ENTRY.
2190 007514 020227 003750 CMP R2,0TXRXLE ;COMPARE POINTER WITH END ADR OF TABLE.
2191 007520 002773 BLT 6\$;LOOP IF NOT AT END YET.
2192 ;+
2193 ;+ SET UP THE BYTE TABLE BASED ON THE WORD ASSOCIATION TABLE.
2194 ;+
2195 007522 012701 003710 8\$: MOV 0TXRXLB,R1 ;SET UP THE SOURCE POINTER.
2196 007526 012702 003750 MOV 0TXRLNB,R2 ;SET UP THE DESTINATION POINTER.
2197 007532 012103 10\$: MOV (R1)+,R3 ;GET THE WORD OFFSET VALUE FROM WORD TABLE.
2198 007534 006203 ASR R3 ;DIVIDE BY 2 TO GET LINE NUMBER VALUE.
2199 007536 110322 MOV8 R3,(R2)+ ;LOAD THE BYTE LINE NUMBER INTO TABLE.
2200 007540 020127 003750 CMP R1,0TXRXLE ;COMPARE SOURCE POINTER WITH ADR OF TABLE END.

F5

CZDHWB0 DHU-11 FUNC TST PART3
GLOBAL SUBROUTINE

MACRO M1200 15-MAR-84 09:41 PAGE 47-1
- ASLNTL -

SEQ 57

2201	007544	002772		BLT	10\$			;LOOP IF NOT AT END OF TABLE YET,
2202								
2203	007546		60\$:	PASS				;RESTORE GPRS.
	007546	004736				JSR		PC,0(SP)+
2204	007550	000207		RTS	PC			;RETURN TO PREG05 SUBRT.

```

2206 .SBTTL GLOBAL SUBROUTINE - CALMSL -
2207 ;+ *****
2208 ;* - CALIBRATE MILLI SECOND LOOP COUNT SUBROUTINE -
2209 ;* THIS SUBROUTINE CALIBRATES THE TIMING LOOP WHICH IS USED IN THE MSLOOP
2210 ;* ROUTINE. THIS SUBROUTINE CALCULATES A VALUE FOR THE MSLCNT VARIABLE
2211 ;* WHICH IS THE NUMBER OF SOFTWARE LOOPS WHICH TAKES 1 MS TO EXECUTE IN
2212 ;* THE MSLOOP ROUTINE. THIS ROUTINE CALIBRATES THE COUNT BY USING THE
2213 ;* LINE TIME CLOCK (LTC), SO IF NO LTC IS AVAILABLE THE DEFAULT VALUE FOR
2214 ;* THE DELAY COUNT MUST BE USED.
2215 ;*
2216 ;*
2217 ;* INPUTS: MSLCNT - DEFAULT 1 MS DELAY LOOP COUNT VALUE, OR
2218 ;* VALUE FROM PREVIOUS CALIBRATION.
2219 ;* MSTICK - NUMBER OF MS PER LTC CLOCK TICK.
2220 ;* TIMER1 - TIMER COUNTER CHANGED BY LTC INTERRUPT SERVICE RTN.
2221 ;* CLKHRZ - NUMBER OF LTC CLICKS PER SECOND (50 OR 60).
2222 ;*
2223 ;* OUTPUTS: CARRY - SET IF LTC IS AVAILABLE, AND NEW CALIBRATION PERFORMED.
2224 ;* MSLCNT - NEW 1 MS DELAY LOOP COUNT VALUE IF LTC AVAILABLE, OR
2225 ;* UNCHANGED IF NO LTC IS AVAILABLE.
2226 ;*
2227 ;* CALLING SEQUENCE: JSR PC,CALMSL
2228 ;*
2229 ;* COMMENTS:
2230 ;*
2231 ;* SUBORDINATE ROUTINES CALLED: UNSDIV,OOPS.
2232 ;+ *****
2233
2234 007552 CALMSL:: SAVE JSR ;SAVE CONTENTS OF GPRS R0 THRU R5.
2235 007552 004567 174242 R5,PREG05 ;CALL REGISTER SAVE SUBRT.
2236 007556 005067 000210 CLR 62$ ;CLEAR THE 2ND TIME FLAG.
2237 ;+
2238 ; SYNCHRONIZE WITH THE LTC.
2239 ;+
2239 007562 012705 000001 2$: MOV #1,R5 ;SET OUTER LOOP COUNTER TO 1 LOOP.
2240 ; INCREASE THE VALUE LOADED INTO THIS COUNTER IF THE <+
2241 ; FOLLOWING LOOP FAILS ON FUTURE, FASTER PROCESSORS. <+
2242 007566 005000 CLR R0 ;CLEAR THE WAIT FOR CLOCK INT COUNTER.
2243 007570 012767 000001 172470 MOV #1,TIMER1 ;SET UP COUNT OF 1 TO SYNCH WITH LTC.
2244 007576 005767 172464 4$: TST TIMER1 ;CHECK FOR COUNTER HAVING GONE TO ZERO.
2245 007602 001410 BEQ 6$ ;JUMP OUT OF LOOP IF LTC HAS INTERRUPTED.
2246 007604 005200 INC R0 ;COUNT THIS ITERATION OF THE INNER LOOP.
2247 007606 001373 BNE 4$ ;LOOP IF COUNTER HAS NOT TURNED OVER.
2248 007610 005305 DEC R5 ;DECREMENT THE INNER LOOP COUNTER.
2249 007612 003371 BGT 4$ ;LOOP IF OUTER LOOP COUNT NOT UP.
2250 ;+
2251 ; IF WE GOT NO LTC INTERRUPT, INDICATE THAT THERE IS NO LTC AVAILABLE.
2252 ; LTC MUST BE FLAKEY, OR NOT REALLY AN LTC AT ALL.
2253 ;+
2254 007614 005067 172444 CLR CLKHRZ ;CLEAR LTC FREQUENCY WORD TO INDICATE NO LTC.
2255 007620 000241 CLC ;INDICATE FAILURE FOR RETURN.
2256 007622 000461 BR 60$ ;BYPASS THE FOLLOWING CALIBRATION PROCEDURES.
2257 ;+
2258 ; WE ARE NOW SYNCHRONIZED WITH THE LTC.
2259 ; SET UP FOR THE CALIBRATION LOOP.
2260 ;+
2261 007624 012704 002266 6$: MOV #TIMER1,R4 ;WILL TEST TIMER1 IN THE LOOP BELOW.

```

```
2262 007630 005001          CLR    R1          ;CLEAR THE OUTER LOOP COUNTER.
2263 007632 005002          CLR    R2          ;INDICATE TO CHECK ALL BITS OF TIMER1.
2264 007634 005003          CLR    R3          ;INDICATE TO CHECK FOR TIMER1 CLEAR.
2265 007636 012714 000001    MOV    #1,(R4)    ;LOAD TIMER1 WITH COUNT OF 1.
2266
2267 007642 016705 172432    8$:    MOV    MSLCNT,R5    ;LOAD MS LOOP COUNT.
2268 007646 011400          10$:    MOV    (R4),R0    ;GET THE TIMER1 VALUE.
2269 007650 010067 000120    MOV    R0,64$    ;SAVE WORD (LIKE IN THE REAL LOOP).
2270 007654 040200          BIC    R2,R0    ;LEAVE ALL THE BITS.
2271 007656 020003          CMP    R0,R3    ;COMPARE AGAINST ZERO.
2272 007660 000261          SEC          ;SET CARRY IN CASE OF SUCCESS.
2273 007662 001406          BEQ    12$    ;EXIT LOOP IF TIMER1 HAS CLEARED.
2274 007664 005305          DEC    R5    ;COUNT DOWN THE INSIDE MS LOOP COUNT.
2275 007666 001367          BNE    10$    ;LOOP IF MS NOT UP.
2276 007670 005301          DEC    R1    ;DECREMENT THE MS TIME COUNT.
2277 007672 001363          BNE    8$    ;KEEP LOOPING.
2278 007674 004767 000432    JSR    PC,OOPS    ;WE OVERFLOWED, SOMETHING IS WRONG, ABORT.
2279
2280          ;*
2281          ; WE HAVE NOW HAVE LOOP COUNT INFORMATION FOR ONE CLOCK TICK.
2282          ; WE HAVE NEGATIVE OF NUMBER OF OUTER LOOPS IN R1, EACH IS MSLCNT INNER LOOPS.
2283          ; WE HAVE THE PORTION OF THE LAST OUTER LOOP NOT EXECUTED, IN R5.
2284          ; NOW WE CALCULATE THE TOTAL NUMBER OF INNER LOOPS EXECUTED.
2285          ;*
2285 007700 005401          12$:    NEG    R1    ;GET NUMBER OF OUTER LOOPS.
2286 007702 016702 172372    MOV    MSLCNT,R2    ;GET THE NUMBER OF INNER LOOPS PER OUTER LOOP.
2287 007706 010203          MOV    R2,R3    ;COPY NUMBER OF LOOPS FOR MULTIPLY.
2288 007710 160502          SUB    R5,R2    ;CALC # OF INNER LOOPS DONE IN LAST OUTER LOOP
2289 007712 010204          MOV    R2,R4    ; AND ADD TO ACCUMULATOR LSWORD.
2290 007714 005005          CLR    R5    ;CLEAR ACCUMULATOR MSWORD.
2291 007716 005301          14$:    DEC    R1    ;CHECK R1 FOR 0 CONDITION
2292 007720 100403          BMI    16$    ; SKIP MULTIPLICATION IF ZERO
2293 007722 060304          ADD    R3,R4    ;MULTIPLY NUMBER OF INNER
2294 007724 005505          ADC    R5    ; LOOPS PER OUTER LOOP BY
2295 007726 000773          BR     14$    ;NUMBER OF OUTER LOOPS PERFORMED.
2296
2297          ;*
2298          ; DIVIDE THE TOTAL NUMBER OF INNER LOOPS BY THE NUMBER OF MS PER LTC TICK.
2299          ;*
2299 007730 016701 172342    16$:    MOV    MSTICK,R1    ;# OF MS PER LTC TICK IS DIVISOR.
2300 007734 010403          MOV    R4,R3    ;LSWORD OF LOOP COUNT IS LSWORD OF DIVIDEND.
2301 007736 010502          MOV    R5,R2    ;MSWORD OF LOOP COUNT IS MSWORD OF DIVIDEND.
2302 007740 004767 001200    JSR    PC,UNSDIV    ;DIVIDE NUMBER OF LOOPS BY MS PER LTC TICK.
2303 007744 103402          BCS    18$    ;BYPASS OOPS IF WE'RE OK.
2304 007746 004767 000360    JSR    PC,OOPS    ;CLOCK ROUTINES ARE NOT LONG ENOUGH, OR BUS.
2305 007752 010167 172322    18$:    MOV    R1,MSLCNT    ;SET NEW VALUE FOR MS LOOP COUNT.
2306 007756 005167 000010    COM    62$    ;SET THE 2ND ITERATION FLAGS IF 1ST ITERATION.
2307 007762 001277          BNE    2$    ;BRANCH IF ONLY ONE ITERATION DONE.
2308 007764 000261          SEC          ;SET THE SUCCESS FLAG FOR EXIT.
2309
2310 007766          60$:    PASS          ;RESTORE GPRS.
2311 007766 004736          JSR    PC,@(SP)+    ;RETURN TO PREG05 SUBRT.
2312 007770 000207          RTS    PC    ; CARRY - SUCCESS FLAG, SET IF SUCCESS.
2313
2313 007772 000000          62$:    .WORD    0    ;2ND CALIBRATION ITERATION FLAGS.
2314 007774 000000          64$:    .WORD    0    ;DUMMY WORD FOR STORAGE OF THE READ WORD.
```

```

2316 .SBTTL GLOBAL SUBROUTINE - CKTRAP -
2317 ;*****
2318 ;* CHECK TRAP ROUTINE -
2319 ;* THIS SUBROUTINE IS USED TO CHECK FOR A BUS TIME-OUT TRAP (004 TRAP)
2320 ;* WHICH IS CAUSED BY AN ACCESS TO A NON-EXISTENT MEMORY OR I/O LOCATION.
2321 ;* IF THE TRAP DOES NOT OCCUR, THIS ROUTINE RETURNS A SUCCESS INDICATION.
2322 ;*
2323 ;* INPUTS: R0 - SOURCE ADDRESS FOR MOVE.
2324 ;* R1 - DESTINATION ADDRESS FOR MOVE.
2325 ;* (R0) - SOURCE FOR THE MOVE.
2326 ;*
2327 ;* OUTPUTS: (R1) - WRITTEN TO THE CONTENTS OF (R0).
2328 ;* CARRY FLAG - SET ON RETURN IF NO 004 TRAP DETECTED.
2329 ;* TP4FLG - NONZERO IF TRAP OCCURRED, CLEARED OTHERWISE.
2330 ;*
2331 ;* CALLING SEQUENCE: JSR PC,CKTRAP
2332 ;*
2333 ;* COMMENTS: IF THIS SUBROUTINE CAUSES A TRAP, EITHER THE ADDRESS WHICH
2334 ;* IS LABELED ADRPTR WILL BE THE TRAP PC ADDRESS ON THE STACK.
2335 ;*
2336 ;* SUBORDINATE ROUTINES CALLED: NONE.
2337 ;*****
2338
2339 007776 CKTRAP:: SAVE ;SAVE CONTENTS OF GPRS R0 THRU R5.
007776 004567 174016 R5,PREG05 ;CALL REGISTER SAVE SUBRT.
2340 010002 005067 172244 CLR TP4FLG ;CLEAR THE 004 TRAP FLAGS.
2341 010006 011011 MOV (R0),(R1) ;PERFORM THE MOVE IN QUESTION.
2342 010010 005767 172236 ADRPTR:: TST TP4FLG ;CHECK FOR OCCURENCE OF TRAP.
2343 010014 000261 SEC ;INDICATE SUCCESS.
2344 010016 001401 BEQ 60$ ;EXIT WITH SUCCESS IF TRAP DID NOT OCCUR.
2345 010020 000241 CLC ;INDICATE FAILURE.
2346 010022 004736 60$: PASS ;RESTORE GPRS.
010022 004736 JSR PC,0(SP) ;RETURN TO PREG05 SUBRT.
2347 010024 000207 RTS PC

```

```
2349 .SBTTL GLOBAL SUBROUTINE - CLNRST -
2350 ;*****
2351 ;* - CLEAN RESET OF THE DEVICE UNDER TEST -
2352 ;* THIS SUBROUTINE IS USED TO RESET THE DUT TO A KNOWN STATE.
2353 ;* THE DUT'S SELF-TEST IS SKIPPED, AND THE FIFO IS PURGED OF ANY ERROR
2354 ;* CODES, ETC.
2355 ;* IF THE RESET DOES NOT SUCCESSFULLY COMPLETE, THEN THE CARRY BIT IS
2356 ;* PASSED BACK TO THE CALLING ROUTINE (CLEAR).
2357 ;*
2358 ;* INPUTS: CSRA - CONTAINS THE ADDRESS OF THE CSR
2359 ;* TXBFCA - CONTAINS ADDRESS OF DUT DMA BUFFER COUNT REGISTER.
2360 ;* ERRNBR - ERROR NUMBER FOR POSSIBLE ERROR REPORT.
2361 ;* ERRLBL - ERRTP,ERNBR,AND ERRMSG SET UP CORRECTLY.
2362 ;*
2363 ;* OUTPUTS: THE DUT PERFORMS ITS RESET FUNCTION INTO A KNOWN STATE.
2364 ;* CARRY - CLEAR INDICATES THE TEST IS TO BE ABORTED.
2365 ;* ERRBLK - VALUE MAY BE DESTROYED.
2366 ;* IESTAT - TX AND RX INTERRUPT FLAGS ARE CLEARED.
2367 ;* TX AND RX INTERRUPT ENABLE BITS IN THE DUT'S CSR ARE CLEARED.
2368 ;*
2369 ;* CALLING SEQUENCE: JSR PC,CLNRST
2370 ;*
2371 ;* COMMENTS: THIS SUBROUTINE CAN REPORT ERRORS WITH NUMBERS ERRNBR.
2372 ;* THIS ROUTINE DOES NOT DESTROY THE VALUE OF ERRNBR.
2373 ;*
2374 ;* SUBORDINATE ROUTINES CALLED: DELAY,MSLGET,PUFIFO,RESETT.
2375 ;*****
2376
2377 010026 CLNRST:: SAVE ;SAVE CONTENTS OF GPRS R0 THRU R5.
010026 004567 173766 JSR R5,PREG05 ;CALL REGISTER SAVE SUBRT.
2378 ;*
2379 ;* RESET THE DUT.
2380 ;* THIS ROUTINE REPORTS ERRORS WITH NUMBERS FROM ERRNBR THRU ERRNBR+2.
2381 ;*
2382 010032 004767 000604 JSR PC,RESETT ;RESET THE DUT TO A KNOWN STATE.
2383 010036 103002 BCC 60$ ;EXIT ROUTINE WITH ABORT TEST INDICATOR.
2384 ;*
2385 ;* PURGE THE FIFO OF ERROR CODES, SAVE ANY BMP CODES FOUND.
2386 ;*
2387 010040 004767 000514 JSR PC,PUFIFO ;PURGE THE FIFO.
2388
2389 010044 60$: ;EXIT THE TEST USING RESETT OR PUFIFO STATUS.
2390 010044 PASS ;RESTORE GPRS, PASS THE FOLLOWING INTACT:
010044 004736 JSR PC,@(SP). ;RETURN TO PREG05 SUBRT.
2391 ;CARRY BIT:IF CLEAR, THEN ABORT THE TEST.
2392 010046 000207 RTS PC
```

```

2394 .SBTTL GLOBAL SUBROUTINE - CMPMST -
2395 ;* *****
2396 ;* - COMPARE MODEM STATUS ROUTINE -
2397 ;* THIS ROUTINE IS USED TO COMPARE THE PRESENT MODEM STATUS AGAINST THE
2398 ;* MODEM STATUS WHICH IS STORED IN THE MODEM STATUS STORAGE TABLE. IT
2399 ;* IGNORES THE STATES OF THE SPECIFIED SIGNALS ON A SPECIFIED LINE.
2400 ;*
2401 ;* INPUTS: R1 - LINE NUMBER OF SPECIFIED LINE.
2402 ;* R2 - BIT MAP OF BITS TO IGNORE ON SPECIFIED LINE.
2403 ;* CSRA - CONTAINS THE ADDRESS OF THE DUT CSR.
2404 ;* NUMLNS - EQUATED TO THE NUMBER OF LINES ON THE DUT.
2405 ;* FSLSA - CONTAINS THE ADDRESS OF THE DUT STAT REGISTER.
2406 ;* STSTB - LABEL AT BASE OF STAT STORAGE TABLE.
2407 ;* TXRLNB - LABEL AT BASE OF TX/RX LINE NUMBER ASSOCIATION TABLE.
2408 ;*
2409 ;* OUTPUTS: CARRY - SUCCESS FLAG (SET IF NO DISCREPANCIES WERE FOUND).
2410 ;*
2411 ;* CALLING SEQUENCE: JSR PC,CMPMST
2412 ;*
2413 ;* COMMENTS:
2414 ;*
2415 ;* SUBORDINATE ROUTINES CALLED: NONE.
2416 ;* -- *****
2417
2418 010050 CMPMST:: SAVE ;SAVE CONTENTS OF GPRS R0 THRU R5.
2419 010050 004567 173744 JSR R5,PREG05 ;CALL REGISTER SAVE SUBRT.
2420 010054 005003 CLR R3 ;CLEAR THE LINE COUNTER.
2421 010056 012704 002610 MOV #STSTB,R4 ;SET UP STAT STORAGE POINTER TO BASE OF TABLE.
2422 010062 010377 172112 2$: MOV R3,0CSRA ;SET UP THE CSR IND.ADR.REG FIELD.
2423 010066 017700 172114 MOV #FSLSA,R0 ;GET THE CONTENTS OF THIS LINE'S STAT REGISTER.
2424 010072 011405 MOV (R4),R5 ;GET THE PREVIOUS CONTENTS FROM STORAGE.
2425 010076 042400 BIC R0,R5
2426 010100 050005 BIC (R4)+,R0
2427 010102 012700 043777 BIS R0,R5 ;XOR PRESENT AND STORED STAT VALUES.
2428 010106 120301 MOV #43777,R0 ;PREPARE TO MASK OUT UNUSED BITS.
2429 010110 001001 CMPB R3,R1 ;TEST FOR THIS BEING SPECIFIED LINE.
2430 010112 050200 BNE 10$ ;DON'T MASK OUT SPECIFIED BITS IF IT IS NOT.
2431 010114 040005 10$: BIS R2,R0 ;MASK OUT SPECIFIED BITS.
2432 010116 001006 BIC R0,R5 ;GET BIT MAP OF UNDESIRED CHANGES.
2433 010120 005203 BNE 50$ ;EXIT WITH FAILURE IF CHANGES OCCURRED.
2434 010122 020327 000020 INC R3 ;SELECT NEXT LINE.
2435 010126 002755 CMP R3,#NUMLNS ;ALL LINES DONE?
2436 010130 000261 BLT 2$ ;LOOP IF NOT ALL LINES DONE.
2437 010132 000401 SEC ;INDICATE SUCCESS.
2438 BR 60$ ;EXIT THIS ROUTINE WITH SUCCESS.
2439 010134 000241 50$: CLC ;INDICATE FAILURE.
2440
2441 010136 004736 60$: PASS ;RESTORE GPRS.
2442 010140 000207 RTS PC JSR PC,0(SP)+ ;RETURN TO PREG05 SUBRT.
; CARRY - SUCCESS FLAG (SET IF SUCCESS).

```



```
2444 .SBTTL GLOBAL SUBROUTINE - DELAY -
2445 ;*****
2446 ;* - DELAY SUBROUTINE -
2447 ;* THIS SUBROUTINE IS USED TO DELAY A VARIABLE NUMBER OF MILLI-SECONDS.
2448 ;*
2449 ;* INPUTS: R4 - CONTAINS THE NUMBER OF MS TO DELAY.
2450 ;* MSLCNT.
2451 ;*
2452 ;* OUTPUTS: NONE.
2453 ;*
2454 ;* CALLING SEQUENCE: JSR PC,DELAY
2455 ;*
2456 ;* COMMENTS: IF NO HARDWARE CLOCK INTERRUPTS ARE OCCURRING, CONTROL-CS WILL
2457 ;* NOT BE HONORED FOR THE DURATION OF THE DELAY.
2458 ;*
2459 ;* SUBORDINATE ROUTINES CALLED: NONE.
2460 ;*****
2461
2462 010142 DELAY:: SAVE .SAVE CONTENTS OF GPRS R0 THRU R5.
2463 010142 004567 173652 JSR R5,PREG05 ;CALL REGISTER SAVE SUBRT.
2464 010146 010401 MOV R4,R1 ;PASS NUMBER OF MS DELAY AS TIME-OUT VALUE.
2465 010150 012702 177777 MOV #1,R2 ;TELL MSLOOP ROUTINE TO CHECK ALL BITS.
2466 010154 005003 CLR R3 ;TELL MSLOOP RTN TO CHECK FOR ALL BITS CLEAR.
2467 010156 012704 010200 MOV #62$,R4 ;TELL MSLOOP TO CHECK DUMMY NON-ZERO WORD.
2468 010162 004767 000130 JSR PC,MSLOOP ;DELAY THE REQUESTED # OF MS.
2469 010166 103002 BCC 60$ ;EXIT ROUTINE IF WE TIMED-OUT.]
2470 010170 004767 000136 JSR PC,DOOPS ;IF NO TIME-OUT, BAD PROGRAM OR HOST MACHINE.
2471 010174 004736 60$: PASS ;RESTORE GPRS.
2472 010176 000207 JSR PC,0(SP). ;RETURN TO PREG05 SUBRT.
2473 010200 177777 62$: .WORD -1 ;DUMMY, NON-ZERO WORD.
```

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2475 .SBTTL GLOBAL SUBROUTINE - MSLGET -
2476 ;*****
2477 ;* - MILLI SECONDS LOOP WHICH RETURNS READ WORD AND REMAINING TIME -
2478 ;* THIS SUBROUTINE IS A GENERAL PURPOSE TEST LOOP SUBROUTINE. IT IS USED
2479 ;* TO VERIFY THAT A CERTAIN ACTION OCCURS BEFORE A TIME-OUT PERIOD. THE
2480 ;* CALLING ROUTINE PASSES IN WHICH BITS SHOULD BE SET AND CLEARED FOR THE
2481 ;* DESIRED CONDITION AND THE TIME-OUT VALUE IN MILLI-SECONDS.
2482 ;* THIS ROUTINE CHECKS FOR THE DESIRED CONDITION UPON ENTRANCE INTO THE
2483 ;* ROUTINE AND THEN ONCE EACH MILLI-SECOND THERE AFTER.
2484 ;* UPON RETURN, THE LAST WORD WHICH WAS READ TO CHECK FOR THE CONDITION
2485 ;* IS RETURNED BY THIS SUBROUTINE.
2486 ;*
2487 ;* INPUTS: R1 - TIME-OUT VALUE IN MILLI-SECONDS (UP TO 64K MS).
2488 ;* R2 - BIT MAP OF BITS TO TEST (1 INDICATES TO TEST THE BIT).
2489 ;* R3 - DESIRED STATES OF THE INDICATED FIELDS IN R2.
2490 ;* R4 - ADDRESS OF THE WORD TO TEST.
2491 ;* MSLCNT - MILLI SECOND SOFTWARE LOOP COUNT.
2492 ;*
2493 ;* OUTPUTS: R0 - THE LAST WORD WHICH WAS READ TO CHECK FOR THE CONDITION.
2494 ;* R1 - REMAINING NUMBER OF MS IN TIME-OUT TIME.
2495 ;* CARRY - SUCCESS FLAG (SET IF CONDITION IS MET BEFORE TIME-OUT).
2496 ;*
2497 ;* CALLING SEQUENCE: JSR PC,MSLGET
2498 ;*
2499 ;* COMMENTS: THIS ROUTINE WORKS WITH OR WITHOUT A HARDWARE CLOCK, BUT THE
2500 ;* CALIBRATION IS ONLY GUARENTEED WHEN A LINE CLOCK IS AVAILABLE
2501 ;* ON THE SYSTEM.
2502 ;* THIS ROUTINE CAN BE USED AS A DELAY ROUTINE, BY SPECIFYING THE
2503 ;* DESIRED DELAY AS THE TIME-OUT AND SPECIFYING A CONDITION TO
2504 ;* LOOK FOR WHICH WILL NOT BE MET DURING THE DELAY.
2505 ;* IF A TIME-OUT VALUE OF 0 IS SPECIFIED, THIS ROUTINE CHECKS FOR
2506 ;* THE DESIRED CONDITION BEFORE RETURNING. IT INDICATES SUCCESS
2507 ;* IF THE CONDITION IS MET, FAILURE OTHERWISE.
2508 ;*
2509 ;*
2510 ;* SUBORDINATE ROUTINES CALLED: NONE.
2511 ;*****
2512
2513 010202 MSLGET:: SAVE ;SAVE CONTENTS OF GPRS R0 THRU R5.
010202 004567 173612 JSR R5,PREG05 ;CALL REGISTER SAVE SUBRT.
2514 ;*
2515 ;* SET UP MASK FOR REMOVING UNUSED BITS IN THE TEST WORD, AND CLEAR UNUSED
2516 ;* BITS IN THE DESIRED STATE WORD TO ALLOW DIRECT COMPARISON.
2517 ;*
2518 010206 005102 COM R2 ;GET MASK OF UNUSED BITS.
2519 010210 040203 BIC R2,R3 ;MASK OUT UNUSED BITS IN DESIRED STATE WORD.
2520 ;*
2521 ;* HANDLE THE TEST AND EXIT IF WE HAVE A 0 TIME-OUT VALUE.
2522 ;*
2523 010212 005701 TST R1 ;TEST THE TIME-OUT VALUE FOR ZERO.
2524 010214 001011 BNE 2$ ;IF NON-ZERO TIME-OUT, GO LOOP AND TEST.
2525 010216 011400 MOV (R4),R0 ;SET THE WORD TO TEST BEFORE EXITING.
2526 010220 010067 000070 MOV R0,62$ ;SAVE VALUE SO WE CAN RETURN IT.
2527 010224 040200 BIC R2,R0 ;MASK OUT UNTESTED BITS OF WORD.
2528 010226 020003 CMP R0,R3 ;COMPARE AGAINST DESIRED STATE WORD.
2529 010230 000261 SEC ;INDICATE SUCCESS IN CASE WORDS ARE EQUAL.
2530 010232 001420 BEQ 6$ ;EXIT WITH SUCCESS IF WORDS ARE EQUAL.

```



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2531 010234 000241          CLC          ;INDICATE FAILURE (TIME-OUT).
2532 010236 000416          BR          6$ ;EXIT WITH FAILURE, WORDS AREN'T EQUAL.
2533                          ;+
2534                          ; NON-ZERO TIME-OUT VALUE. LOOP, WAITING FOR CONDITION OR TIME-OUT.
2535                          ;-
2536 010240 016705 172034    2$: MOV      MSLCNT,R5      ;LOAD MS LOOP COUNT.
2537 010244 011400          4$: MOV      (R4),R0        ;GET THE WORD TO TEST.
2538 010246 010067 000042    MOV      R0,62$          ;SAVE WORD IN CASE THIS IS THE LAST.
2539 010252 040200          BIC      R2,R0             ;MASK OUT UNTESTED BITS OF WORD.
2540 010254 020003          CMP      R0,R3             ;COMPARE AGAINST DESIRED STATE WORD.
2541 010256 000261          SEC                          ;SET CARRY IN CASE OF SUCCESS.
2542 010260 001405          BEQ      6$                ;EXIT WITH SUCCESS IF WORDS ARE EQUAL.
2543 010262 005305          DEC      R5                ;COUNT DOWN THE INSIDE MS LOOP COUNT.
2544 010264 001367          BNE      4$                ;LOOP IF MS NOT UP.
2545 010266 005301          DEC      R1                ;DECREMENT THE MS TIME COUNT.
2546 010270 001363          BNE      2$                ;IF TIME NOT UP, LOOP TO COUNT ANOTHER MS.
2547 010272 000241          CLC          ;CLEAR CARRY, WE TIMED-OUT.
2548                          ;+
2549                          ; HAVE EITHER FOUND CONDITION, OR TIMED-OUT (POSSIBLY FROM 0 TIME-OUT VALUE).
2550                          ; RESTORE THE LAST CONTENTS READ FROM THE TEST WORD. EXIT ROUTINE.
2551                          ;-
2552 010274 016700 000014    6$: MOV      62$,R0        ;PASS OUT THE LAST READ WORD.
2553 010300          60$: PASS      R0,R1              ;RESTORE GPRS, EXCEPT THE FOLLOWING:
2554                          MOV      R0,R0SLOT(SP)    ;PUT R0 IN STACK SLOT.
2555                          MOV      R1,R1SLOT(SP)    ;PUT R1 IN STACK SLOT.
2556                          JSR      PC,@(SP)+        ;RETURN TO PREG05 SUBRT.
2557                          ;R0 - LAST READ WORD CHECKED FOR CONDITION.
2558                          ;R1 - REMAINING TIME (0 IF TIME-OUT OCCURED).
2559                          ;CARRY - SET IF SUCCESS, CLEAR IF TIME-OUT.
2560 010314 000000          RTS      PC
                          ;+
                          ; LOCAL STORAGE.
                          ;-
62$: .WORD 0                ;STORAGE FOR THE LAST READ WORD.

```

```

2562      .SBTTL GLOBAL SUBROUTINE          - MSLOOP -
2563      |*****
2564      |*      - TEST LOOP SUBROUTINE -
2565      |*      THIS SUBROUTINE IS A GENERAL PURPOSE TEST LOOP SUBROUTINE. IT IS USED
2566      |*      TO VERIFY THAT A CERTAIN ACTION OCCURS BEFORE A TIME-OUT PERIOD. THE
2567      |*      CALLING ROUTINE PASSES IN WHICH BITS SHOULD BE SET AND CLEARED FOR THE
2568      |*      DESIRED CONDITION AND THE TIME-OUT VALUE IN MILLI-SECONDS.
2569      |*      THIS ROUTINE CHECKS FOR THE DESIRED CONDITION UPON ENTRANCE INTO THE
2570      |*      ROUTINE AND THEN ONCE EACH MILLI-SECOND THEREAFTER.
2571      |*
2572      |* INPUTS:      R1 - TIME-OUT VALUE IN MILLI-SECONDS (UP TO 64K MS).
2573      |*              R2 - BIT MAP OF BITS TO TEST (1 INDICATES TO TEST THE BIT).
2574      |*              R3 - DESIRED STATES OF THE INDICATED FIELDS IN R2.
2575      |*              R4 - ADDRESS OF THE WORD TO TEST.
2576      |*              MSLCNT - MILLI SECOND SOFTWARE LOOP COUNT.
2577      |*
2578      |* OUTPUTS:     CARRY - SUCCESS FLAG (SET IF CONDITION IS MET BEFORE TIME-OUT).
2579      |*
2580      |* CALLING SEQUENCE:  JSR      PC,MSLOOP
2581      |*
2582      |* COMMENTS:     THIS ROUTINE WORKS WITH OR WITHOUT A HARDWARE CLOCK, BUT THE
2583      |*                CALIBRATION IS ONLY GUARENTEED WHEN A LINE CLOCK IS AVAILABLE
2584      |*                ON THE SYSTEM.
2585      |*                THIS ROUTINE CAN BE USED AS A DELAY ROUTINE, BY SPECIFYING THE
2586      |*                DESIRED DELAY AS THE TIME-OUT AND SPECIFYING A CONDITION TO
2587      |*                LOOK FOR WHICH WILL NOT BE MET DURING THE DELAY.
2588      |*                IF A TIME-OUT VALUE OF 0 IS SPECIFIED, THIS ROUTINE CHECKS FOR
2589      |*                THE DESIRED CONDITION BEFORE RETURNING. IT INDICATES SUCCESS
2590      |*                IF THE CONDITION IS MET, FAILURE OTHERWISE.
2591      |*
2592      |* SUBORDINATE ROUTINES CALLED: MSLGET.
2593      |*****
2594
2595 010316      MSL00P:: SAVE                      ;SAVE CONTENTS OF GPRS R0 THRU R5.
2596 010316 004567 173476      JSR      R5,PREG05      ;CALL REGISTER SAVE SUBRT.
2597
2598      |*
2599      |* CALLING THE MSLGET ROUTINE FROM THE MSLOOP ROUTINE ISOLATES THE CALLER OF
2600      |* MSLOOP FROM THE RETURNED TEST WORD AND REMAINING TIME-OUT VALUES.
2601
2601 010322 004767 177654      JSR      PC,MSLGET      ;CALL THE MULTI-PURPOSE MS LOOP AND SEARCH RTN.
2602
2603 010326      60$: PASS                      ;RESTORE GPRS.
2604 010326 004736      JSR      PC,B(SP)+      ;RETURN TO PREG05 SUBRT.
2604 010330 000207      RTS      PC              ;CARRY - SET IF SUCCESS, CLEAR IF TIME-OUT.

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2606 .SBTTL GLOBAL SUBROUTINE - OOPS -
2607 ;* *****
2608 ;* - PROGRAM ABORT SUBROUTINE -
2609 ;* THIS SUBROUTINE IS USED TO ABORT THE PROGRAM WHEN A FATAL ERROR IS
2610 ;* DETECTED IN THE PROGRAM OR THE HOST SYSTEM HARDWARE. AN ERROR MESSAGE
2611 ;* IS PRINTED GIVING SOME INFORMATION ABOUT THE NATURE OF THE ABORT.
2612 ;*
2613 ;* INPUTS: R1 - ERROR CODE GIVING REASON FOR ABORT.
2614 ;*
2615 ;* OUTPUTS: AN ERROR MESSAGE IS PRINTED.
2616 ;* A LIST OF RETURN PC VALUES FOR ALL SUBROUTINE CALLS IS PRINTED.
2617 ;*
2618 ;* CALLING SEQUENCE: JSR PC,OOPS
2619 ;*
2620 ;* COMMENTS:
2621 ;*
2622 ;* SUBORDINATE ROUTINES CALLED: NONE.
2623 ;* - *****
2624
2625 010332 OOPS:: SAVE ;SAVE CONTENTS OF GPRS R0 THRU R5.
2626 010332 004567 173462 ; R5,PREG05 ;CALL REGISTER SAVE SUBRT.
2627 010336 ; REPORT "HOST COMPUTER HARDWARE OR SOFTWARE BUG ENCOUNTERED." ERROR.
2628 010336 104454 ERRSF 101,EM0101
2629 010340 000145 TRAP C1ERSF
2630 010342 010376 .WORD 101
2631 010344 000000 .WORD EM0101
2632 .WORD 0
2633 ; REPORT "PROGRAM HUNG, WAITING FOR A CONTROL-C."
2634 PRINTF 0EM0102
2635 010346 012746 010462 MOV 0EM0102,-(SP)
2636 010352 012746 000001 MOV 01,-(SP)
2637 010356 010600 MOV SP,R0
2638 010360 104417 TRAP C1PNTF
2639 010362 062706 000004 ADD 04,SP
2640 2$: BREAK ;LOOK FOR OPERATOR CONTROL-C INPUT.
2641 010366 104422 TRAP C1BRK
2642 2631 010370 000776 BR 2$ ;INFINITE LOOP.
2643 2632 010372 004736 60$: PASS ;DON'T NEED THIS, BUT SOMEBODY MAY CHANGE THIS
2644 010372 000207 JSR PC,0(SP). ;RETURN TO PREG05 SUBRT.
2645 RTS PC ; ROUTINE IN THE FUTURE, SO BE CONSISTANT.
2646
2647 EM0101:: .ASCIIZ /HOST COMPUTER HARDWARE OR SOFTWARE BUG ENCOUNTERED./
2648 010401 124 040 103
2649 010404 117 115 120
2650 010407 125 124 105
2651 010412 122 040 110
2652 010415 101 122 104
2653 010420 127 101 122
2654 010423 105 040 117
2655 010426 122 040 123
2656 010431 117 106 124
2657 010434 127 101 122
2658 010437 105 040 102
2659 010442 125 107 040
2660 010445 105 116 103
2661 010450 117 125 116
2662 010453 124 105 122

```

D6

	010456	105	104	056	
	010461	000			
2636	010462	045	116	045	EM0102:: .ASCIZ /N*APROGRAM HUNG, WAITING FOR A CONTROL-C. <*****NNN/
	010465	101	120	122	
	010470	117	107	122	
	010473	101	115	040	
	010476	110	125	116	
	010501	107	054	040	
	010504	127	101	111	
	010507	124	111	116	
	010512	107	040	106	
	010515	117	122	040	
	010520	101	040	103	
	010523	117	116	124	
	010526	122	117	114	
	010531	055	103	056	
	010534	040	074	052	
	010537	052	052	052	
	010542	052	052	052	
	010545	052	052	052	
	010550	052	052	052	
	010553	045	116	045	
2637	010556	116	000		

.EVEN

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2639 .SBTTL GLOBAL SUBROUTINE - PUFIFO -
2640 ;*****
2641 ;* - PURGE THE FIFO
2642 ;* THIS ROUTINE TRIES TO REMOVE ALL THE CHARACTERS FROM THE FIFO.
2643 ;* ANY BMP CODES THAT ARE FOUND ARE SAVED ON THE BMP CODE QUEUE.
2644 ;*
2645 ;* INPUTS: RBUFA- CONTAINS THE ADDRESS OF THE RECEIVER.
2646 ;*
2647 ;*
2648 ;* OUTPUTS: CARRY BIT - INDICATES THE STATE OF THE FIFO, SET: = PURGED.
2649 ;* BMPCQ - THE CONTENTS OF THE BMP CODE QUEUE MAY BE UPDATED.
2650 ;*
2651 ;* CALLING SEQUENCE: JSR PC,PUFIFO
2652 ;*
2653 ;* COMMENTS:
2654 ;*
2655 ;* SUBORDINATE ROUTINES CALLED: SAVBMP.
2656 ;*****
2657
2658 010560 PUFIFO::SAVE ;SAVE CONTENTS OF GPRS R0 THRU R5.
2659 010560 004567 173234 JSR R5,PREG05 ;CALL REGISTER SAVE SUBRT.
2660 010564 012701 001000 MOV #512,R1 ;SET MAXIMUM TRY COUNT C 512.
2661 010570 016704 171406 MOV RBUFA,R4 ;GET ADDRESS OF THE RECEIVER BUFFER REGISTER.
2662 010574 011402 2$: MOV (R4),R2 ;GET THE CONTENTS OF THE RECEIVER BUFFER REG.
2663 010576 100016 BPL 6$ ;EXIT IF THE FIFO IS EMPTY, DATA_VALID CLR.
2664 ;*
2665 ;* CHECK IF THE READ CHARACTER IS ACTUALLY A BMP CODE.
2666 ;* IF IT IS, THEN SAVE IT ON THE BMP CODE QUEUE TO BE REPORTED LATER.
2667 ;*
2668 010600 012700 070000 MOV #70000,R0 ;GENERATE A BIT MAP OF CHAR ERROR BITS
2669 010604 040200 BIC R2,R0 ;WHICH ARE NOT SET FOR CHAR.
2670 010606 001006 BNE 4$ ;THROW CHAR AWAY IF NOT BMP OR SELFTEST CODE.
2671 ;*
2672 ;* CHECK IF THE READ DATA IS MODEM STATUS , BMP OR SELFTEST?.
2673 ;*
2674 010610 012700 000301 MOV #301,R0 ;CHECK IF BMP.
2675 010614 040200 BIC R2,R0 ;TRY TO CLEAR BMP FLAGS IN THE READ DATA.
2676 010616 001002 BNE 4$ ;IF IT IS MODEM OR SELFTEST CODE THROW IT AWAY.
2677 010620 004767 000130 JSR PC,SAVBMP ;SAVE BMP CODE ON THE QUEUE.
2678 ;*
2679 010624 005301 4$: DEC R1 ;DECREMENT THE TRY COUNT.
2680 010626 001362 BNE 2$ ;LOOP TO TRY AGAIN.
2681 010630 000241 CLC ;CLEAR CARRY, TO INDICATE FIFO NOT PURGED.
2682 010632 000401 BR 60$ ;EXIT WITH CARRY CLEAR.
2683 010634 000261 6$: SEC ;SET CARRY, TO INDICATE FIFO PURGED.
2684 ;*
2685 010636 60$: PASS ;RESTORE GPRS.
2686 010636 004736 JSR PC,@(SP)+ ;RETURN TO PREG05 SUBRT.
2687 010640 000207 RTS PC ;CARRY BIT, SET INDICATES FIFO PURGED.

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```
2689 .SBTTL GLOBAL SUBROUTINE - RESETT -
2690 *****
2691 ;* - RESET DEVICE UNDER TEST -
2692 ;* THIS SUBROUTINE IS USED TO RESET THE DUT TO A KNOWN STATE.
2693 ;* IF RESET DOES NOT SUCCESSFULLY COMPLETE, IE. TIME-OUT OCCURS, THEN
2694 ;* AN ABORT TEST ERROR MESSAGE IS REPORTED.
2695 ;*
2696 ;* INPUTS: CSRA - CONTAINS THE ADDRESS OF THE CSR
2697 ;* TXBFCA - CONTAINS ADDRESS OF DUT DMA BUFFER COUNT REGISTER.
2698 ;* ERRBLK - ERRTP,ERNBR,AND ERRMSG SET UP CORRECTLY.
2699 ;*
2700 ;* OUTPUTS: THE DUT PERFORMS ITS RESET FUNCTION INTO A KNOWN STATE.
2701 ;* CARRY - CLEAR INDICATES THE TEST IS TO BE ABORTED.
2702 ;* ERRBLK - VALUE MAY BE DESTROYED.
2703 ;* IESTAT - TX AND RX INTERRUPT FLAGS ARE CLEARED.
2704 ;* TX AND RX INTERRUPT ENABLE BITS IN THE DUT'S CSR ARE CLEARED.
2705 ;*
2706 ;* CALLING SEQUENCE: JSR PC,RESETT
2707 ;*
2708 ;* COMMENTS: THIS SUBROUTINE CAN REPORT ERRORS WITH NUMBERS INITIAL ERNBR
2709 ;* THIS ROUTINE DOES NOT DESTROY THE VALUE OF ERNBR.
2710 ;*
2711 ;* SUBORDINATE ROUTINES CALLED: DELAY,MSLGET.
2712 *****
2713
2714 010642 RESETT:: SAVE ;SAVE CONTENTS OF GPRS R0 THRU R5.
2715 010642 004567 173152 JSR R5,PREG05 ;CALL REGISTER SAVE SUBRT.
2716 010646 012702 000040 MOV #BIT05,R2 ;SET BIT MASK OF MASTER RESET BIT.
2717 ;*
2718 ;* TEST THE STATE OF THE MASTER RESET BIT IN THE CSR.
2719 ;* IF MR IS SET THEN WAIT FOR SELF-TEST TO COMPLETE.
2720 ;* IF TIME-OUT OCCURS, REPORT THE ERROR AND PASS-OUT ABORT TEST INDICATOR.
2721 ;*
2721 010652 016704 171322 MOV CSRA,R4 ;GET THE ADDRESS OF THE DUT'S CSR.
2722 010656 030214 BIT R2,(R4) ;CHECK STATE OF MASTER RESET BIT.
2723 010660 001406 BEQ 2$ ;DON'T DELAY IF MR IS ALREADY CLEAR.
2724 010662 005003 CLR R3 ;SET UP DESIRED STATE OF MASTER RESET BIT.
2725 010664 012701 011610 MOV #5000.,R1 ;PASS TIME-OUT VALUE OF 5 SECONDS.
2726 010670 004767 177306 JSR PC,MSLGET ;WAIT FOR SELF-TEST TO COMPLETE, MR CLEAR.
2727 010674 103012 BCC 4$ ;GO REPORT ERROR IF TIMEOUT OCCURRED.
2728
2729 ;*
2730 ;* SET MASTER RESET BIT IN CSR. CLEAR TX AND RX ENABLE BITS, ETC.
2731 ;* SKIP THE SELFTEST.
2732 ;* TIME-OUT OF 5 SECS, JUST IN CASE THE SELF-TEST EXECUTES.
2733 ;*
2734 010676 010277 171276 2$: MOV R2,DCSRA ;SET MASTER RESET BIT, DISABLE TX AND RX INTS.
2735 010702 004767 000160 JSR PC,SKPSTS ;TRY TO SKIP THE SELFTEST.
2736 ;*
2737 ;* SET SELF-TEST TIME-OUT OF 5 SECONDS, AND WAIT FOR M.R TO CLEAR.
2738 ;* IF TIME-OUT OCCURS, THEN REPORT THE FATAL ERROR AND PASS-OUT THE ABORT
2739 ;* TEST INDICATOR.
2740 ;*
2741 010706 005003 CLR R3 ;SET UP DESIRED STATE OF MASTER RESET BIT.
2742 010710 012701 011610 MOV #5000.,R1 ;PASS TIME-OUT VALUE OF 5 SECONDS.
2743 010714 004767 177262 JSR PC,MSLGET ;WAIT FOR SELF-TEST TO COMPLETE, MR CLEAR.
2744 010720 103410 BCS 6$ ;SKIP ERROR REPORT IF MR CLEARED IN TIME.
```



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2745
2746      ; SET UP ERROR MESSAGE TO REPORT "FATAL ERROR FOUND DURING RESET,TEST ABORTED".
2747      ; INDICATE TEST IS TO BE ABORTED BY CLEARING THE CARRY BIT.
2748      ;
2749 010722 012701 004670      4$:  MOV    #EM1601,R1      ;PASS ERROR MESSAGE TO REPORT.
2750 010726 012767 006570 173062  MOV    #ER1603,ERRBLK ;PASS ADDRESS OF ERROR HANDLING ROUTINE.
2751      ;REPORT ERROR "TIME-OUT OCCURRED WAITING FOR MASTER RESET TO CLEAR"
2752      ; "TEST ABORTED"
2753 010734      ERROR                                ;          >>>>> ERROR <<<<<
2754      010734 104460                                TRAP    C$ERROR
2755 010736 000241      CLC                                ;INDICATE TEST IS TO BE ABORTED.
2756 010740 000403      BR      60$                        ;EXIT THIS SUBROUTINE, ABORT TEST INDICATOR.
2757      ;
2758      ; CLEAR TX AND RX INTERRUPT ENABLE STATUS FLAGS IN IESTAT.
2759      ; EXIT WITH CONTINUE TEST INDICATOR SET (IE,CARRY SET).
2760 010742 005067 171262      6$:  CLR    IESTAT          ;CLEAR TX AND RX INTERRUPT STATUS FLAGS.
2761 010746 000261      SEC                                ;INDICATE SUCCESS, CONTINUE TEST.
2762
2763 010750      60$:  PASS                                ;RESTORE GPRS, PASS THE FOLLOWING INTACT;
2764      010750 004736      JSR    PC,@(SP)+              ;RETURN TO PREG05 SUBRT.
2765      RTS      PC      ;CARRY BIT:IF CLEAR,INDICATES ABORT TEST.
2766

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2768 .SBTTL GLOBAL SUBROUTINE - SAVBMP -
2769 ;* *****
2770 ;* - SAVE BMP CODES ROUTINE -
2771 ;* THIS ROUTINE SAVES THE PARAMETER PASSED IN, ONTO THE BMP CODE QUEUE
2772 ;* TOGETHER WITH THE NUMBER OF THE CURRENTLY EXECUTING TEST.
2773 ;*
2774 ;* INPUTS: R2 - CONTAINS THE BMP CODE THAT IS TO BE PLACED ON THE QUEUE.
2775 ;* BMPCQP - CONTAINS ADDRESS OF NEXT LOCATION IN THE BMP QUEUE.
2776 ;* BMPCQB - LABEL AT BASE OF THE BMP CODE QUEUE.
2777 ;* BMPCQE - LABEL OF NEXT LOCATION AFTER THE END OF THE BMP QUEUE.
2778 ;* TSTNUM - CONTAINS THE NUMBER OF THE CURRENT TEST.
2779 ;*
2780 ;* OUTPUTS: BMPCQP - INCREMENTED BY 4.
2781 ;* THE CONTENTS OF THE BMP CODE QUEUE ARE UPDATED.
2782 ;*
2783 ;* CALLING SEQUENCE: JSR PC,SAVBMP
2784 ;*
2785 ;* COMMENTS: IF THE OVERFLOW OCCURS THEN THE LAST LOCATION WILL BE
2786 ;* OVERWRITTEN BY ANY SUBSEQUENT ATTEMPTS TO UPDATE THE QUEUE.
2787 ;*
2788 ;* SUBORDINATE ROUTINES CALLED: NONE.
2789 ;* - *****
2790
2791 010754 SAVBMP:: SAVE ;SAVE CONTENTS OF GPRS R0 THRU R5.
2792 010754 004567 173040 JSR R5,PREG05 ;CALL REGISTER SAVE SUBRT.
2793 010760 016704 171364 MOV BMPCQP,R4 ;GET THE POINTER TO THE NEXT LOCATION IN QUEUE.
2794 010764 116724 171236 MOVB TSTNUM,(R4)+ ;SAVE THE CURRENT TEST NUMBER ON THE QUEUE.
2795 010770 005204 INC R4 ;INCREMENT THE POINTER TO GIVE AN EVEN ADDRESS.
2796 010772 042702 177400 BIC #177400,R2 ;CLEAR THE UNWANTED BITS FROM THE BMP CODE.
2797 010776 010224 MOV R2,(R4)+ ;SAVE THE BMP CODE ON THE QUEUE.
2798 011000 020427 002552 CMP R4,#BMPCQE ;CHECK IF OVERFLOW WILL OCCUR THE NEXT TIME.
2799 011004 103402 BLJ 2$ ;GO SAVE THE POINTER IF WE WILL NOT OVERFLOW.
2800 011006 162704 000004 SUB #4,R4 ;RESET THE POINTER TO THE LAST LOCATION IN QUE.
2801 011012 010467 171332 2$: MOV R4,BMPCQP ;SAVE THE POINTER.
2802 011016 004736 60$: PASS ;RESTORE GPRS.
2803 011020 000207 RTS PC JSR PC,@(SP)+ ;RETURN TO PREG05 SUBRT.

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2805      .SBTTL  GLOBAL SUBROUTINE                      - SAVMST -
2806      ; * *****
2807      ; * - SAVE MODEM STATUS ROUTINE -
2808      ; * THIS ROUTINE SAVES THE PRESENT CONTENTS OF THE DUT STAT REGISTERS IN
2809      ; * THE STAT STORAGE TABLE.
2810      ; *
2811      ; * INPUTS:      CSRA - CONTAINS THE ADDRESS OF THE DUT CSR.
2812      ; *              IESTAT - STATE OF THE DUT CSR INTERRUPT ENABLE BITS.
2813      ; *              NUMLNS - EQUATED TO THE NUMBER OF LINES ON THE DUT.
2814      ; *              FSLSA - CONTAINS THE ADDRESS OF THE DUT STAT REGISTER.
2815      ; *              STSTB - LABEL AT BASE OF THE STAT STORAGE TABLE.
2816      ; *
2817      ; * OUTPUTS:     STST TABLE - OVERWRITTEN WITH PRESENT STAT CONTENTS.
2818      ; *              CSR IND.ADR.REG FIELD - DESTROYED.
2819      ; *
2820      ; * CALLING SEQUENCE:  JSR      PC,SAVMST
2821      ; *
2822      ; * COMMENTS:      IF THE CONTENTS OF IESTAT CHANGES DURING THIS TEST THE CSR
2823      ; *                  INTERRUPT ENABLE BITS WILL NOT TRACK THE CHANGE.
2824      ; *
2825      ; * SUBORDINATE ROUTINES CALLED: NONE.
2826      ; * - *****
2827
2828      SAVMST:: SAVE                                ;SAVE CONTENTS OF GPRS R0 THRU R5.
2829      011022 004567 172772                        R5,PREG05 ;CALL REGISTER SAVE SUBRT.
2830      011026 016701 171176                        MOV    IESTAT,R1 ;GET IE STATES FOR UPDATING IND.ADR.REG FIELD.
2831      011032 012702 002610                        MOV    @STSTB,R2 ;SET UP STAT STORAGE POINTER TO BASE OF TABLE.
2832      011036 012703 000020                        MOV    @NUMLNS,R3
2833      011042 050103                                BIS    R1,R3 ;FORM COMPLETION COMPARISON WORD.
2834      011044 010177 171130 2$: MOV    R1,@CSRA ;SET UP THE CSR IND.ADR.REG FIELD.
2835      011050 017722 171132                        MOV    @FSLSA,(R2)+ ;SAVE CONTENTS OF THIS LINE'S STAT REGISTER.
2836      011054 005201                                INC    R1 ;SET LINE COUNTER TO NEXT LINE.
2837      011056 020103                        CMP    R1,R3 ;CHECK FOR ALL LINES DONE.
2838      011060 002771                        BLT    2$ ;LOOP IF NOT ALL LINES DONE.
2839      011062                                60$: PASS ;RESTORE GPRS.
2840      011062 004736                                PC, @SP)+ ;RETURN TO PREG05 SUBRT.
2840      011064 000207                        RTS    PC

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2842 .SBTTL GLOBAL SUBROUTINE - SKPSTS -
2843 ;* *****
2844 ;* - SKIP SELFTEST ROUTINE -
2845 ;* THIS SUBROUTINE IS USED TO SKIP THE SELFTEST AFTER A DUT RESET HAS BEEN
2846 ;* INITIATED. IT MUST BE ENTERED IMMEDIATELY AFTER SETTING THE DUT MASTER
2847 ;* RESET ROUTINE OR AFTER THE EXECUTION OF A BUS RESET (BECAUSE OF TIMING
2848 ;* CONSIDERATIONS).
2849 ;*
2850 ;* INPUTS: CSRA - CONTAINS ADDRESS OF THE DUT CSR,
2851 ;* TXBFCA - CONTAINS ADDRESS OF DUT DMA BUFFER COUNT REGISTER.
2852 ;*
2853 ;* OUTPUTS: SKIP SELFTEST CODES ARE WRITTEN TO THE DUT REGISTERS.
2854 ;*
2855 ;* CALLING SEQUENCE: JSR PC,SKPSTS
2856 ;*
2857 ;* COMMENTS:
2858 ;*
2859 ;* SUBORDINATE ROUTINES CALLED: DELAY.
2860 ;* - *****
2861
2862 011066 SKPSTS:: SAVE ;SAVE CONTENTS OF GPRS R0 THRU R5.
2863 011066 004567 172726 JSR R5,PREG05 ;CALL REGISTER SAVE SUBRT.
2864 011072 012704 000012 MOV #10,R4 ;PASS DELAY VALUE OF 10 MILLI-SECONDS.
2865 011076 004767 177040 JSR PC,DELAY ;DELAY FOR 10 MILLI-SECONDS.
2866 ;*
2867 ;* WRITE SKIP SELF-TEST CODE (52525) TO ALL THE INDEXED DUT REGISTERS.
2868 ;*
2868 011102 012701 000060 MOV #NUMLNS!BIT05,R1 ;FORM IND.ADR.REG FIELD (PLUS M.R. BIT) WORD.
2869 ;* THE ABOVE INCLUSION OF THE M.R. BIT IS NECESSARY BECAUSE OF THE
2870 ;* LACK OF A M.R. BIT WRITE LOCK-OUT ON THE DHU-11.
2871 011106 012703 052525 MOV #52525,R3 ;INITIALISE THE SKIP SELF-TEST CODE.
2872 011112 005301 4$: DEC R1 ;SELECT THE NEXT SET OF DEVICE REGISTERS.
2873 011114 016704 171060 MOV CSRA,R4 ;GET THE ADDRESS OF THE CSR OF THE DUT.
2874 011120 010124 MOV R1,(R4)+ ;SELECT A BANK OF DUT REGISTERS.
2875 011122 010324 6$: MOV R3,(R4)+ ;WRITE THE CODE TO A DUT REGISTER.
2876 011124 020467 171066 CMP R4,TXBFCA ;COMPARE POINTER WITH LAST REGISTER ADDRESS.
2877 011130 103774 BLO 6$ ;LOOP IF NOT ALL REGS DONE IN THIS BANK.
2878 011132 032701 000017 BIT #17,R1 ;TEST FOR IND.ADR.REG FIELD DECREMENTED TO 0.
2879 011136 001365 BNE 4$ ;LOOP UNTIL ALL REGISTERS CONTAIN THE CODE.
2880
2881 011140 60$: PASS ;RESTORE GPRS.
2882 011140 004736 JSR PC,@(SP)+ ;RETURN TO PREG05 SUBRT.
2882 011142 000207 RTS PC
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2884 .SBTTL GLOBAL SUBROUTINE - UNSDIV -
2885 ;* *****
2886 ;* - UNSIGNED DIVIDE ROUTINE -
2887 ;* THIS SUBROUTINE IS USED TO DIVIDE A 32 BIT UNSIGNED DIVIDEND BY A
2888 ;* 16 BIT UNSIGNED DIVISOR GIVING A 16 BIT QUOTIENT. ALL NUMBERS ARE
2889 ;* CONSIDERED TO BE UNSIGNED. A SUCCESS FLAG IS NOT SET ON RETURN IF
2890 ;* THE QUOTIENT WAS TOO BIG TO BE CONTAINED IN 16 BITS.
2891 ;*
2892 ;* INPUTS: R1 - THE DIVISOR, UNSIGNED, 16 BITS.
2893 ;* R2 - MOST SIGNIFICANT WORD OF THE DIVIDEND, UNSIGNED, 16 BITS.
2894 ;* R3 - LEAST SIGNIFICANT WORD OF THE DIVIDEND, UNSIGNED, 16 BITS.
2895 ;*
2896 ;* OUTPUTS: R1 - QUOTIENT, UNSIGNED, 16 BITS (177777 IF OVERFLOW).
2897 ;* CARRY - SUCCESS FLAG, SET IF COMPLETE QUOTIENT FITS IN 16 BITS.
2898 ;*
2899 ;* CALLING SEQUENCE: JSR PC,UNSDIV
2900 ;*
2901 ;* COMMENTS: IF THE DIVISOR IS 0 THE QUOTIENT IS RETURNED AS ALL ONES
2902 ;* (177777) AND THE CARRY IS CLEAR REGARDLESS OF THE DIVIDEND.
2903 ;*
2904 ;* SUBORDINATE ROUTINES CALLED: NONE.
2905 ;* - *****
2906
2907 011144 UNSDIV:: SAVE ;SAVE CONTENTS OF GPRS R0 THRU R5.
2908 011144 004567 172650 JSR R5,PREG05 ;CALL REGISTER SAVE SUBRT.
2909 ;*
2910 ;* CHECK FOR QUOTIENT GREATER THAN 16 BITS CONDITION.
2911 ;*
2912 011150 010204 MOV R2,R4 ;GET MSW OF DIVIDEND FOR SUBTRACT.
2913 011152 160104 SUB R1,R4 ;SUBTRACT DIVISOR FROM MSW OF DIVIDEND.
2914 011154 103403 BCS 2$ ;IF IT DIDN'T GO, WE HAVE QUOTIENT < 16 BITS.
2915 011156 012701 177777 MOV 0-1,R1 ;SET QUOTIENT TO ALL ONES (177777),
2916 011162 000442 BR 60$ ;EXIT WITH CARRY CLEAR.
2917 ;*
2918 ;* SET UP COUNTERS AND VARIOUS WORKING GPRS.
2919 011164 005004 2$: CLR R4 ;CLEAR THE LSW OF THE DIVISOR.
2920 011166 000241 CLC ;CLEAR CARRY FOR THE SHIFT OF THE DIVISOR.
2921 011170 006001 ROR R1 ;DIVISOR BY
2922 011172 006004 ROR R4 ;2(UNSIGNED)
2923 011174 012700 000020 MOV 016.,R0 ;SET UP INITIAL SHIFT COUNT TO 16.
2924 ;*
2925 ;* THE SUBTRACT AND SHIFT LOOP.
2926 ;*
2927 011200 010246 4$: MOV R2,-(SP) ;SAVE MSWORD OF DIVIDEND.
2928 011202 010346 MOV R3,-(SP) ;SAVE LSWORD OF DIVIDEND.
2929 011204 160403 SUB R4,R3 ;LSWORD DIVIDEND - LSWORD OF DIVISOR.
2930 011206 005602 SBC R2 ;MSWORD DIVIDEND - BORROW.
2931 011210 103402 BCS 6$ ;IF BORROW FROM BORROW SUBTRACT, IT DIDN'T GO.
2932 011212 160102 SUB R1,R2 ;MSWORD DIVIDEND - MSWORD OF DIVISOR.
2933 011214 103003 BCC 8$ ;IF NO BORROW, IT WENT, CARRY IS CLEAR.
2934 ;*
2935 ;* IT DIDN'T GO, SO WE SHIFT A 1 INTO THE QUOTIENT (COMPLEMENTED LATER).
2936 ;* CARRY IS SET.
2937 ;*
2938 011216 012603 6$: MOV (SP)+,R4 ;RESTORE LSWORD OF DIVIDEND.
2939 011220 012602 MOV (SP)+,R2 ;RESTORE MSWORD OF DIVIDEND.
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```
2940 011222 000401          BR      10$          ;GOTO SHIFT 1 INTO THE QUOTIENT.
2941                      ;+
2942                      ; IT WENT, SO WE RESTORE THE STACK AND SHIFT A 0 INTO QUOTIENT (WILL BE
2943                      ; COMPLEMENTED LATER). CARRY IS CLEAR.
2944                      ;+
2945 011224 012626      8$:  MOV      (SP)+,(SP)+      ;POP THE SAVED DIVIDEND OFF OF THE STACK.
2946                      ;+
2947                      ; SHIFT THE RESULT OF THE SUBTRACT ATTEMPT INTO THE QUOTIENT SHIFT REG.
2948                      ;+
2949 011226 006105      10$:  ROL      R5              ;SHIFT NEXT BIT INTO THE INVERTED QUOTIENT.
2950 011230 000241          CLC                      ;DIVIDE THE
2951 011232 006001          ROR      R1              ; DIVISOR BY
2952 011234 006004          ROR      R4              ; 2 (UNSIGNED).
2953 011236 005300          DEC      R0              ;COUNT THIS SHIFT AND SUBTRACT.
2954 011240 001357          BNE      4$              ;LOOP FOR ANOTHER SHIFT & SUB IF NOT DONE.
2955 011242 005105          COM      R5              ;GET QUOTIENT FROM INVERTED QUOTIENT.
2956                      ;+
2957                      ; NOW WE EITHER ROUND UP OR LEAVE QUOTIENT ALONE.
2958                      ;+
2959 011244 000241          CLC                      ;CLEAR THE CARRY FOR THE SHIFT OF THE DIVIDEND.
2960 011246 006103          ROL      R3              ;MULTIPLY LSWORD OF DIVIDEND BY 2, MSWORD IS 0.
2961 011250 103402          BCS      12$            ;IF CARRY FROM SHIFT, ROUND UP.
2962 011252 160403          SUB      R4,R3          ;SUBTRACT DIVISOR FROM DIVIDEND.
2963 011254 103403          BCS      14$            ;IF BORROW, DON'T ROUND UP.
2964                      ;+
2965                      ; ROUND UP, EXTRA SUBTRACT WENT.
2966                      ;+
2967 011256 005205      12$:  INC      R5              ;INCREMENT THE QUOTIENT BY ONE.
2968 011260 001001          BNE      14$            ;IF NO OVERFLOW, WE LEAVE THE ROUND UP.
2969 011262 005305          DEC      R5              ;DON'T LET ROUNDING CAUSE OVERFLOW.
2970                      ;+
2971                      ; ALL DONE, PASS QUOTIENT AND EXIT.
2972                      ;+
2973 011264 010501      14$:  MOV      R5,R1          ;PASS QUOTIENT BACK IN R1.
2974 011266 000261          SEC                      ;INDICATE NO OVERFLOW.
2975                      ;+
2976 011270          60$:  PASS      R1              ;RESTORE GPRS, LEAVE THE FOLLOWING INTACT:
2977 011270 010166 000004          MOV      R1,R1SLOT(SP) ;PUT R1 IN STACK SLOT.
2978 011274 004736          JSR      PC,8(SP)+      ;RETURN TO PREG05 SUBRT.
2979                      ;R1 - 16 BIT, UNSIGNED QUOTIENT.
2980                      ;CARRY - SET INDICATES NO OVERFLOW (SUCCESS).
```

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2980      ,SBTTL GLOBAL SUBROUTINE                - WAIBIC -
2981      ;* *****
2982      ;* - WAIT FOR BIT CLEAR ROUTINE -
2983      ;* THIS SUBROUTINE WAITS FOR THE SPECIFIED BIT TO BECOME CLEAR. IF THE
2984      ;* SPECIFIED BIT GOES TO A CLEAR STATE WITHIN THE SPECIFIED TIME-OUT
2985      ;* PERIOD A SUCCESS INDICATION IS RETURNED BY THIS ROUTINE.
2986      ;* THE LAST VALUE WHICH IS READ LOOKING FOR THE CONDITION IS RETURNED TO
2987      ;* ALLOW THE USE OF THIS ROUTINE TO LOOK FOR DESTRUCTIVE READ CONDITIONS.
2988      ;*
2989      ;* INPUTS:      R1 - TIME-OUT VALUE AND BIT NUMBER INDICATION:
2990      ;*                BITS 15 THRU 12 - NUMBER OF BIT TO TEST (RANGE 0 THRU 15).
2991      ;*                BITS 11 THRU 0 - TIME-OUT VALUE IN MILLI-SECONDS (4095 MAX).
2992      ;*      R2 - ADDRESS OF WORD CONTAINING THE BIT TO TEST.
2993      ;*                MSLCNT.
2994      ;*
2995      ;* OUTPUTS:     R2 - THE LAST WORD WHICH WAS READ TO CHECK FOR THE CONDITION.
2996      ;*                CARRY - SUCCESS FLAG (CARRY SET IF BIT CLR BEFORE TIME-OUT).
2997      ;*
2998      ;* CALLING SEQUENCE:  MOV      #130040,R1      ;PASS BIT 11 (13 OCTAL) AND
2999      ;*                                ; 32 (40 OCTAL) MS DELAY.
3000      ;*                                MOV      #LABEL,R2      ;TEST BIT IN WORD AT "LABEL".
3001      ;*                                JSR      PC,WAIBIC      ;WAIT 32 MS FOR BIT 11 TO CLR.
3002      ;*
3003      ;* COMMENTS:
3004      ;*
3005      ;* SUBORDINATE ROUTINES CALLED: MSLGET.
3006      ;* - *****
3007
3008 011300      WAIBIC:: SAVE                      ;SAVE CONTENTS OF GPRS R0 THRU R5.
3009      011300 004567 172514                      R5,PREG05      ;CALL REGISTER SAVE SUBRT.
3010      MOV      R2,R4                      ;SET UP THE ADDRESS PARAMETER FOR MSLGET.
3011      MOV      R1,R2
3012      BIC      #170000,R1
3013      BIC      #7777,R2
3014      SWAB     R2
3015      ASR      R2
3016      ASR      R2
3017      ASR      R2
3018      MOV      BITTBL(R2),R2
3019      CLR      R3
3020      JSR      PC,MSLGET
3021      MOV      R0,R2
3022 60$: PASS    R2
3023      MOV      R2,R2SLOT(SP)      ;PUT R2 IN STACK SLOT.
3024      JSR      PC,@(SP),      ;RETURN TO PREG05 SUBRT.
3025      ; R2 - LAST VALUE READ LOOKING FOR CONDITION.
3026      ; CARRY - SUCCESS FLAG (SET IF BIT FOUND CLR).
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3026 .SBTTL GLOBAL SUBROUTINE - WAIBIS -
3027 ;* *****
3028 ;* - WAIT FOR BIT SET ROUTINE -
3029 ;* THIS SUBROUTINE WAITS FOR THE SPECIFIED BIT TO BECOME SET. IF THE
3030 ;* SPECIFIED BIT GOES TO A SET STATE WITHIN THE SPECIFIED TIME-OUT
3031 ;* PERIOD A SUCCESS INDICATION IS RETURNED BY THIS ROUTINE.
3032 ;* THE LAST VALUE WHICH IS READ LOOKING FOR THE CONDITION IS RETURNED TO
3033 ;* ALLOW THE USE OF THIS ROUTINE TO LOOK FOR DESTRUCTIVE READ CONDITIONS.
3034 ;*
3035 ;* INPUTS: R1 - TIME-OUT VALUE AND BIT NUMBER INDICATION:
3036 ;* BITS 15 THRU 12 - NUMBER OF BIT TO TEST (RANGE 0 THRU 15).
3037 ;* BITS 11 THRU 0 - TIME-OUT VALUE IN MILLI-SECONDS (4095 MAX).
3038 ;* R2 - ADDRESS OF WORD CONTAINING THE BIT TO TEST.
3039 ;* MSLCNT.
3040 ;*
3041 ;* OUTPUTS: R2 - THE LAST WORD WHICH WAS READ TO CHECK FOR THE CONDITION.
3042 ;* CARRY - SUCCESS FLAG (CARRY SET IF BIT SET BEFORE TIME-OUT).
3043 ;*
3044 ;* CALLING SEQUENCE: MOV #130040,R1 ;PASS BIT 11 (13 OCTAL) AND
3045 ;* ; 32 (40 OCTAL) MS DELAY.
3046 ;* MOV #LABEL,R2 ;TEST BIT IN WORD AT "LABEL".
3047 ;* JSR PC,WAIBIS ;WAIT 32 MS FOR BIT 11 TO SET.
3048 ;*
3049 ;* COMMENTS:
3050 ;*
3051 ;* SUBORDINATE ROUTINES CALLED: MSLGET.
3052 ;* - *****
3053
3054 011354 WAIBIS:: SAVE ;SAVE CONTENTS OF GPRS R0 THRU R5.
011354 004567 172440 JSR R5,PREG05 ;CALL REGISTER SAVE SUBRT.
3055 011360 010204 MOV R2,R4 ;SET UP THE ADDRESS PARAMETER FOR MSLGET.
3056 011362 010102 MOV R1,R2
3057 011364 042701 170000 RLC #170000,R1 ;SEPERATE DELAY COUNT OUT OF PASSED PARAMETER.
3058 011370 042702 007777 BIC #7777,R2 ;SEPERATE LINE NUMBER FIELD OF PASSED PARAM.
3059 011374 000302 SWAB R2 ;PUT LINE NUMBER FIELD IN LS BYTE.
3060 011376 006202 ASR R2 ;SHIFT THE LINE NUMBER FIELD INTO THE PROPER
3061 011400 006202 ASR R2 ; POSITION TO USE IT AS A WORD TABLE OFFSET
3062 011402 006202 ASR R2 ; FOR THE TABLE LOOKUP OF THE LINE BIT MAP.
3063 011404 016202 002310 MOV BITTBL(R2),R2 ;GET BIT MAP OF LINE TO TEST FROM TABLE.
3064 011410 010203 MOV R2,R3 ;INDICATE THAT THE BIT SHOULD BE SET.
3065 011412 004767 176564 JSR PC,MSLGET ;WAIT FOR THE BIT TO BE SET WITHIN TIME-OUT.
3066 ; CARRY IS CORRECT UPON MSLGET RETURN.
3067 011416 010002 MOV R0,R2 ;PASS LAST VALUE READ AS OUTPUT PARAMETER.
3068 011420 60$: PASS R2 ;RESTORE GPRS, EXCEPT THE FOLLOWING:
011420 010266 000006 MOV R2,R2SLOT(SP) ;PUT R2 IN STACK SLOT.
011424 004736 JSR PC,@(SP) ;RETURN TO PREG05 SUBRT.
3069 ; R2 LAST VALUE READ LOOKING FOR CONDITION.
3070 011426 000207 RTS PC ; CARRY - SUCCESS FLAG (SET IF BIT FOUND SET).
```


3072 .SBTTL GLOBAL SUBROUTINE - WTWLNC -
3073 ; * *****
3074 ; * - LINE CONTROL REGISTER SETUP ROUTINE
3075 ; * THIS SUBROUTINE IS USED TO SET THE DEVICE UNDER TEST (DUT) LINE
3076 ; * CONTROL REGISTERS (LNCTRL) TO THE SPECIFIED STATE. ONLY THE LNCTRLS
3077 ; * FOR THE SPECIFIED LINES ARE ALTERED.
3078 ; *
3079 ; * INPUTS: R0 - NEW LINE PARAMETERS.
3080 ; * R5 - BIT MAP OF LINES TO BE ALTERED.
3081 ; * CSRA - CONTAINS ADDRESS OF THE DUT CSR.
3082 ; * IESTAT - CONTAINS THE CURRENT STATE OF THE TX AND RX INTERRUPT
3083 ; * ENABLE BITS IN THE CSR.
3084 ; * LNCTRA - CONTAINS ADDRESS OF THE DUT LNCTRL REGISTERS.
3085 ; *
3086 ; * OUTPUTS: LNCTRL - SPECIFIED DUT LINE CONTROL REGISTERS ARE ALTERED.
3087 ; *
3088 ; * CALLING SEQUENCE: JSR PC,WTWLNC
3089 ; *
3090 ; * COMMENTS:
3091 ; *
3092 ; * SUBORDINATE ROUTINES CALLED: ALTFLD.
3093 ; * *****
3094
3095 011430 WTWLNC:: SAVE ;SAVE CONTENTS OF GPRS R0 THRU R5.
011430 004567 172364 JSR R5,PREG05 ;CALL REGISTER SAVE SUBRT.
3096
3097 ; SET UP THE PARAMETERS FOR THE CALL TO ALTFLD.
3098 ; *
3099 011434 016701 170550 MOV LNCTRA,R1 ;SET UP THE REGISTER ADDRESS PARAMETER.
3100 011440 010002 MOV R0,R2 ;SET UP THE DESIRED REGISTER CONTENTS.
3101 011442 010503 MOV R5,R3 ;SET UP THE BIT MAP OF LINES TO ALTER.
3102 011444 012704 177777 MOV 0,R4 ;SELECT ALL REGISTER BITS TO BE ALTERED.
3103
3104 ; CALL THE SUBROUTINE WHICH ALTERS THE REGISTER CONTENTS.
3105 ; *
3106 011450 004767 175714 JSR PC,ALTFLD ;ALTER THE REGISTER CONTENTS.
3107
3108 011454 PASS 601: ;RESTORE GPRS.
011454 004736 JSR PC,0(SP)+ ;RETURN TO PREG05 SUBRT.
3109 011456 000207 RTS PC

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3111 .SBTTL INTERRUPT SERVICE ROUTINE - CLKINT -
3112 ;* *****
3113 ;* THIS ROUTINE IS EXECUTED CLKHRZ TIMES PER SECOND. IT DECREMENTS THE
3114 ;* TWO TIMER COUNTERS DOWN TO ZERO.
3115 ;*
3116 ;* INPUTS:    TIMER1 - TIMER COUNTER #1.
3117 ;*           TIMER2 - TIMER COUNTER #2.
3118 ;*           TIMER3 - TIMER COUNTER FOR CALL OF BREAK MACRO.
3119 ;*
3120 ;* OUTPUTS:   THE 2 TIMER COUNTERS ARE DECREMENTED IF THEY ARE NOT ZERO.
3121 ;*
3122 ;* CALLING SEQUENCE: PUT #CLKINT IN THE CLOCK INTERRUPT VECTOR SLOT.
3123 ;*                   PUT THE DESIRED TIME PERIOD (SECONDS TIMES CLKHRZ) IN
3124 ;*                   EITHER TIMER1 OR TIMER2 AND POLL THE RESPECTIVE TIMER
3125 ;*                   COUNTER TO DETECT ITS GOING TO 0 ON TIME-OUT.
3126 ;*
3127 ;* COMMENTS:  THE 2 COUNTERS WILL NOT WRAPAROUND BUT WILL STOP AT 0. THIS
3128 ;*             ALLOWS THE DETECTION OF A TIME-OUT ANY TIME AFTER THE TIME-OUT
3129 ;*             HAS OCCURRED UNTIL THE TIMER COUNTER IS SET TO ANOTHER VALUE.
3130 ;*
3131 ;* SUBORDINATE ROUTINES CALLED: NONE.
3132 ;* *****
3133
3134 011460 005767 170602 CLKINT:: TST    TIMER1      ;CHECK FOR TIMER1 AT ZERO.
3135 011464 001402      BEQ     2$      ;BRANCH TO LEAVE IT AT ZERO IF IT IS ZERO.
3136 011466 005367 170574      DEC     TIMER1    ;DECREMENT TIME COUNT.
3137 011472 005767 170572 2$: TST    TIMER2    ;CHECK FOR TIMER2 AT ZERO.
3138 011476 001402      BEQ     4$      ;BRANCH TO LEAVE IT ALONE IF IT'S ALREADY ZERO.
3139 011500 005367 170564      DEC     TIMER2    ;DECREMENT TIME COUNT.
3140 011504 005367 170562 4$: DEC     TIMER3    ;DECREMENT THE BREAK COUNT.
3141 011510 001006      BNE     60$      ;EXIT IF NOT TIME TO CALL BREAK.
3142 011512 016767 170556 170552 MOV    BCOUNT,TIMER3 ;SET UP TIME TILL NEXT BREAK.
3143 011520 010046      MOV     RO,-(SP)    ;SAVE CONTENTS OF RO FROM BREAK MACRO.
3144 011522      BREAK      ;CHECK FOR OPERATOR CONTROL/C.
3145 011524 012600      MOV     (SP)+,RO    ;RESTORE CONTENTS OF RO.
3146 011526 000002 60$: RTI

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3148 .SETTL GLOBAL TRAP SERVICE ROUTINE - TP4RTN -
3149 ;*****
3150 ;* BUS TIME-OUT TRAP (004 TRAP) SERVICE ROUTINE -
3151 ;* THIS ROUTINE DETERMINES IF THE 004 TRAP WAS CAUSED BY
3152 ;* AN "EXPECTED" ERROR OR NOT BY EXAMINING THE RETURN PC VALUE ON THE
3153 ;* STACK. IF THE TRAP IS UNEXPECTED, THIS ROUTINE JUMPS TO THE NORMAL
3154 ;* DIAGNOSTIC SUPERVISOR 004 TRAP HANDLING ROUTINE.
3155 ;*
3156 ;*
3157 ;* INPUTS: SP - POINTS TO THE PC WHERE THE TRAP OCCURED.
3158 ;* ADRPTR - LABEL AT THE ADDRESS WHERE "EXPECTED" TRAPS OCCUR.
3159 ;* TP4FLG - 004 TRAP FLAGS.
3160 ;*
3161 ;* OUTPUTS: TP4FLG - BIT 15 IS SET IF "EXPECTED" TRAP OCCURED.
3162 ;*
3163 ;* CALLING SEQUENCE: PUT ADDRESS POINTED TO BY TP4RTN IN 004 VECTOR.
3164 ;* OCCURENCE OF 004 TRAP VECTORS TO THIS ROUTINE.
3165 ;*
3166 ;* COMMENTS: ANY 004 TRAP WHICH OCCURS AT AN ADDRESS OTHER THAN THAT LABELED
3167 ;* ADRPTR WILL BE HANDLED BY THE NORMAL 004 TRAP SERVICE ROUTINE.
3168 ;*
3169 ;* SUBORDINATE ROUTINES CALLED: NONE.
3170 ;*****
3171
3172 011530 021627 010010 TP4RTN:; CMP (SP),ADRPTR ;COMPARE EXPECTED ADR AGAINST TRAP RET PC.
3173 011534 001402 BEQ 2; ;IF THEY MATCH, CONTINUE THIS ROUTINE.
3174 011536 000177 170506 JMP @TP4VEC ;IF NOT,JUMP TO NORMAL 004 TRAP SERVICE RTN.
3175 011542 052767 100000 170502 2; BIS @BIT15,TP4FLG ;SET THE 004 TRAP OCCURED FLAG.
3176 011550 000002 RTI ;ALL DONE, GO BACK TO THE TEST.
```

E7

CZDHW80 DHU-11 FUNC TST PART3
GLOBAL TRAP SERVICE ROUTINEMACRO M1200 15-MAR-84 09:41 PAGE 67
- TP4RTN -

SEQ 82

3185
3186
3187
3188
3189
3190
3191
3192
31933194 011552
011552
3195
3196 011552
011552 000167
011554 0000003197
3198
31993200 011556
011556
011556 104425

.SBTTL REPORT CODING SECTION

; ++
; THE REPORT CODING SECTION CONTAINS THE
; "PRINTS" CALLS THAT GENERATE STATISTICAL REPORTS.
; --

BGNRPT

EXIT RPT

.EVEN

ENDRPT

L\$RPT::

.WORD J\$JMP
.WORD L10010-2-.L10010:
TRAP C\$RPT

3202

3210

3211

3212

3213

3214

3215

3216

3217 011560

011560

3218

3219 011560 177777

3220 011562 177777

3221 011564 177777

3222

3223 011566

3224

.SBTTL PROTECTION TABLE

; **

; THIS TABLE IS USED BY THE RUNTIME SERVICES
; TO PROTECT THE LOAD MEDIA.

; --

BGNPROT

L\$PROT;;

-1

; OFFSET INTO P-TABLE FOR CSR ADDRESS

-1

; OFFSET INTO P-TABLE FOR MASSBUS ADDRESS

-1

; OFFSET INTO P-TABLE FOR DRIVE NUMBER

ENDPROT

3246				.SBTTL INITIALIZE SECTION	
3247				;	
3248				*****	
3249				;	
3250				*****	
3251				;	
3252				THIS SECTION CONTAINS THE CODE WHICH IS PERFORMED AT THE BEGINNING OF	
3253				EACH PASS OR AFTER A CONTINUE COMMAND.	
3254				THIS CODE PERFORMS THE FOLLOWING ACTIONS:	
3255				;	
3256				MOVES THE INFORMATION HELD IN THE HARDWARE P-TABLE INTO THE GLOBAL	
3257				DATA AREA.	
3258				;	
3259				*****	
3260	011566			;	
	011566			---	
				BGNINIT	
3261					L\$INIT::
3262	011566			;SEE IF PROGRAM JUST STARTED, BR IF YES	
	011566	012700	000040	READEF \$EF.START	
	011572	104447			MOV \$EF.START,RO
3263	011574				TRAP C\$REFG
	011574	103416		BCOMPLETE NEWSTA	BCS NEWSTA
3264				;SEE IF PROGRAM JUST RESTARTED, BR IF YES	
3265	011576			READEF \$EF.RESTART	
	011576	012700	000037		MOV \$EF.RESTART,RO
	011602	104447			TRAP C\$REFG
3266	011604			BCOMPLETE NEWRES	BCS NEWRES
	011604	103556			
3267				;SEE IF THIS IS A NEW PASS, BR IF YES	
3268	011606			READEF \$EF.NEW	
	011606	012700	000035		MOV \$EF.NEW,RO
	011612	104447			TRAP C\$REFG
3269	011614			BCOMPLETE NEWPAS	BCS NEWPAS
	011614	103555			
3270				;SEE IF PROGRAM WAS JUST CONTINUED	
3271	011616			READEF \$EF.CONTINUE	
	011616	012700	000036		MOV \$EF.CONTINUE,RO
	011622	104447			TRAP C\$DEFG
3272	011624			BNCOMPLETE GETPRM	BCC GETPRM
	011624	103161			
3273	011626	000167	000522	JMP ENDIT	
3274	011632			NEWSTA:	
3275	011632			BRESET	;RESET THE BUS TO PREVENT ILLEGAL INTERRUPTS.
	011632	104433			TRAP C\$RESET
3276				;	
3277				;SET UP FOR LINE TIME CLOCK INTERRUPTS.	
3278				;	
3279	011634			CLOCK L,R1	;GET THE CLOCK PARAMETERS.
	011634	012700	000114		MOV \$L,RO
	011640	104462			TRAP C\$CLK
	011642	010001			MOV RO,R1
3280	011644	012167	170406	MOV (R1)+,CLKCSR	;STORE CLOCK CSR ADDRESS.
3281	011650	012167	170404	MOV (R1)+,CLKBRL	;STORE CLOCK BUS REQ INT LEVEL.
3282	011654	012167	170402	MOV (R1)+,CLKVEC	;STORE CLOCK INTERRUPT VECTOR.
3283	011660	012167	170400	MOV (R1)+,CLKHRZ	;STORE CLOCK FREQUENCY.
3284	011664	026727	170374	CMP CLKHRZ,\$50.	;TEST FOR 50HZ LINE FREQUENCY.
3285	011672	001004	000062	BNE 2\$	;BRANCH IF CLOCK IS NOT 50HZ.

```

3286 011674 012767 000024 170374      MOV    #20.,MSTICK      ;INDICATE 20MS PER CLOCK TICK.
3287 011702 000403                    BR      4$
3288 011704 012767 000021 170364 2$:  MOV    #17.,MSTICK      ;INDICATE 17 MS PER CLOCK TICK.
3289 011712                    4$:  SETVEC  CLKVEC,#CLKINT,#PRI06 ;INITIALIZE CLOCK INTERRUPT VECTOR.
                                MOV    #PRI06,-(SP)
                                MOV    #CLKINT,-(SP)
                                MOV    CLKVEC,-(SP)
                                MOV    #3,-(SP)
                                TRAP    C$SVEC
                                ADD     #10,SP
3290 011740 016700 170320      MOV    CLKHRZ,R0      ;INITIALIZE THE BREAK COUNT
3291 011744 006300      ASL     R0      ; TO CAUSE A BREAK
3292 011746 010067 170322      MOV    R0,BCOUNT      ; EVERY 2 SECONDS.
3293 011752      SETPRI  #PRI05      ;ALLOW CLOCK INTERRUPTS DISABLE OTHERS.
                                MOV    #PRI05,R0
                                TRAP    C$SPRI
3294
3295      ;+
3296      ; ENABLE THE LINE TIME CLOCK (LTC) CHECKING TO MAKE SURE THAT THE CSR
3297      ; IS ACCESSABLE.
3298      ; FIRST SET UP TO CATCH ANY 004 TRAPS WHICH OCCUR:
3299 011760 016767 166020 170262      MOV    4,TP4VEC      ;SAVE THE EXISTING 004 TRAP VECTOR.
3300 011766 012767 011530 166010      MOV    #TP4RTN,4      ;SET 004 TRAP VECTOR TO OUR SERVICE RTN ADR.
3301
3302      ;+
3303      ; ENABLE LTC CHECKING FOR 004 TRAP IN CASE CSR IS NOT THERE.
3304 011774 005067 170252      CLR     TP4FLG      ;CLEAR THE 004 TRAP FLAG.
3305 012000 012767 000100 170246      MOV    #BIT6,WORD1      ;SET UP TO SET BIT6 OF THE LTC CSR.
3306 012006 012700 002254      MOV    #WORD1,R0      ;SET UP WORD1 AS THE CKTRAP MOVE SOURCE.
3307 012012 016701 170240      MOV    CLKCSR,R1      ;SET UP LTC CSR AS DESTINATION FOR CKTRAP MOVE.
3308 012016 004767 175754      JSR     PC,CKTRAP      ;MOVE AND CHECK FOR TRAP.
3309 012022 016767 170222 165754      MOV    TP4VEC,4      ;RESTORE THE NORMAL 004 TRAP VECTOR.
3310 012030 103403      BCS     6$      ;IF NO TRAP, LTC IS THERE SO CONTINUE.
3311 012032 005067 170226      CLR     CLKHRZ      ;CLEAR LTC FREQUENCY WORD TO INDICATE NO LTC.
3312 012036 000402      BR      8$      ;BYPASS THE FOLLOWING CALIBRATION PROCEDURES.
3313
3314      ;+
3315      ; CALIBRATE THE DELAY ROUTINE MILLI-SECOND DELAY COUNT VALUE.
3316 012040 004767 175506      6$:  JSR     PC,CALMSL
3317
3318      ;+
3319      ; CHECK FOR MEMORY MANAGEMENT PRESENT ON THIS MACHINE.
3320      ; IF MEM MGT IS PRESENT, DISABLE IT.
3321 012044 016767 165734 170176      8$:  MOV    4,TP4VEC      ;SAVE THE EXISTING 004 TRAP VECTOR.
3322 012052 012767 011530 165724      MOV    #TP4RTN,4      ;SET 004 TRAP VECTOR TO OUR SERVICE RTN ADR.
3323 012060 005067 170166      CLR     TP4FLG      ;CLEAR THE 004 TRAP FLAG.
3324 012064 005067 170164      CLR     WORD1      ;PREPARE TO CLEAR THE MEM MGT SRO REGISTER.
3325 012070 012700 002254      MOV    #WORD1,R0      ;SELECT CLEARED WORD AS CKTRAP RTN SOURCE.
3326 012074 016701 170202      MOV    MMSRO,R1      ;SELECT MEM MGT SRO REGISTER AS DESTINATION.
3327 012100 005067 170200      CLR     MMPRES      ;INDICATE NO MEM MGT PRESENT IN CASE IT ISN'T.
3328 012104 005067 170176      CLR     MMENAB      ;INDICATE MEM MGT IS NOT ENABLED.
3329 012110 004767 175662      JSR     PC,CKTRAP      ;CLEAR THE MEM MGT SRO REG AND CHECK FOR TRAP.
3330 012114 016767 170130 165662      MOV    TP4VEC,4      ;RESTORE THE NORMAL 004 TRAP VECTOR.
3331 012122 103003      BCC     10$      ;SKIP INDICATING MEM MGT PRESENT IF IT ISN'T.
3332 012124 012767 000001 170152      MOV    #1,MMPRES      ;INDICATE THAT MEM MGT IS PRESENT.
3333 012132 005067 170100      10$:  CLR     PASCNT      ;CLR COUNTER USED IN REPORTING ROM VERSION #.
3334 012136 000167 000006      JMP     NEWPAS      ;SKIP AROUND THE BUS RESET, IT'S BEEN DONE.

```

```

3335
3336 012142 NEWRES: BRESET ;RESET THE BUS TO PREVENT ILLEGAL INTERRUPTS.
      012142 104433 ;TRAP C$RESET
3337 012144 005067 170066 CLR PASCNT ;CLR COUNTER USED IN REPORTING ROM VERSION #.
3338 012150 NEWPAS:
3339 012150 012767 177777 170020 MOV #-1,UNITN ;RESET LOGICAL DEVICE TO -1
3340 ;*
3341 ; INCREMENT THE PASS COUNTER, CORRECT FOR ANY OVERFLOW.
3342 ; THIS COUNTER IS USED IN THE ROM VERSION TEST.
3343 ;*
3344 012156 005267 170054 INC PASCNT ;INCREMENT THE PASS COUNTER.
3345 012162 001002 BNE GETPRM ;BRANCH IF WE HAVE NOT YET! OVERFLOWED.
3346 012164 005367 170046 DEC PASCNT ;SET PASS COUNT TO 177777 OCTAL.
3347
3348 ; GET THE HARDWARE PARAMETERS FOR THIS UNIT.
3349 012170 GETPRM:
3350 012170 005267 170002 INC UNITN ;INCREMENT LOGICAL DEVICE NUMBER
3351 012174 026767 167776 167610 CMP UNITN,L$UNIT ;SEE IF MAXIMUM UNIT NO. EXCEEDED
3352 012202 002362 BGE NEWPAS ;BR IF YES
3353
3354 012204 GPHARD UNITN,R1 ;GET P-TABLE POINTER INTO R1
      012204 016700 167766 MOV UNITN,R0
      012210 104442 TRAP C$GPHRD
      012212 010001 MOV R0,R1
3355 012214 BCOMPLETE 30$ ;BR IF DEVICE AVAILABLE
      012214 103401 BCS 30$
3356 012216 000764 BR GETPRM ;SKIP THIS DEVICE
3357
3358
3359 ;***** HARDWARE PARAMETER MOVING CODE *****
3360 012220 012167 167754 30$: MOV (R1)+,CSRA ;STORE DHU-11 CSR ADDRESS IN DEV.REG.ADDRESS TABLE
3361 012224 012167 167742 MOV (R1)+,ACTLNS ;STORE DHU-11 ACTIVE LINE BIT MAP
3362 012230 111167 167740 MOVB (R1),LOPBC ;STORE DHU-11 LOOPBACK MODE
3363 ;*
3364 ; CALCULATE DEVICE REGISTER ADDRESSES,AND PUT THEM IN THE
3365 ; DEVICE REGISTER ADDRESS TABLE.
3366 ;*
3367 012234 016701 167740 MOV CSRA,R1 ;COPY CSR ADDRESS
3368 012240 005201 INC R1 ;INCREMENT CSR ADDRESS
3369 012242 005201 INC R1 ; COPY BY 2.
3370 012244 012703 000007 MOV #7,R3 ;SET UP REGISTER COUNT
3371 012250 012702 002202 MOV #RBUFA,R2 ;GET LOCATION WHERE RBUF ADDRESS GOES IN TABLE
3372 012254 010122 12$: MOV R1,(R2)+ ;STORE REGISTER ADDRESS IN TABLE
3373 012256 005201 INC R1 ;INCREMENT REGISTER ADDRESS
3374 012260 005201 INC R1 ; BY 2, FOR THE NEXT DEVICE REGISTER.
3375 012262 005303 DEC R3 ;DECREMENT REGISTER COUNT
3376 012264 001373 BNE 12$ ;LOOP IF NOT DONE
3377
3378 ;*
3379 ; INITIALISE THE BMP CODE QUEUE.
3380 ;*
3381 012266 012700 002356 MOV #BMPCQB,R0 ;GET THE START ADDRESS OF THE QUEUE.
3382 012272 012701 002552 MOV #BMPCQE,R1 ;GET THE END ADDRESS OF THE QUEUE.
3383 012276 010067 170046 MOV R0,BMPCQP ;SET THE POINTER TO THE START OF THE QUEUE.
3384 012302 005020 14$: CLR (R0) ;CLEAR OUT THE CONTENTS OF THE QUEUE.
3385 012304 020001 CMP R0,R1 ;CHECK IF END OF QUEUE HAS BEEN REACHED.
3386 012306 103775 BLO 14$ ;LOOP IF NOT ALL DONE.

```



```

3387
3388 ;+
3389 ; REPORT THE UNIT NUMBER IF THE SOFTWARE P-TABLE QUESTION WAS ANSWERED YES,
3390 ; AND THE MAXIMUM UNIT NUMBER IS GREATER THAN 1.
3391 012310 032767 000020 167644 ;-
3392 012316 001416 ; BIT 0BIT4,OPTION ;CHECK IF THE QUESTION WAS ANSWERED YES.
3393 012320 026727 167466 000001 BEQ 16$ ;SKIP REPORTING UNIT NUMBER IF IT IS DISABLED.
3394 012326 003412 CMP L$UNIT,01 ;CHECK MAXIMUM NUMBER OF UNITS SELECTED.
3395 012330 BLE 16$ ;DO NOT REPORT UNIT NUMBER IF MAX NUMBER < 1.
012330 PRINTF 0MFUNIT,UNITN ;REPORT UNIT NUMBER.
012330 016746 167642 MOV UNITN,-(SP)
012334 012746 004601 MOV 0MFUNIT,-(SP)
012340 012746 000002 MOV 02,-(SP)
012344 010600 MOV SP,R0
012346 104417 TRAP C$PNTF
012350 062706 000006 ADD 06,SP
3396 012354 16$:
3397
3398 012354 005067 167642 ENDIT: CLR CTRLCF ;CLR THE CTRL-C TEST ABORT FLAG.
3399 ;+
3400 ; SET THE PROCESSOR PRIORITY TO DISABLE ALL INTERRUPTS.
3401 ;-
3402 012360 SETPRI 0PRI07 ;SET PROCESSOR PRIORITY TO 7.
012360 012700 000340 MOV 0PRI07,R0
012364 104441 TRAP C$SPRI
3403 012366 ENDINIT
012366 L10012:
012366 104411 TRAP C$INIT
3404
3405 000000 TNUM == 0 ;INITIALIZE THE ASSEMBLER TEST NUMBER VARIABLE.

```

3414

3415

3416

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3419

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3422

3423

3424

3425

3426 012370

012370

3427

3434

3435 012370

012370

012370 104461

.SBTTL AUTODROP SECTION

; **

; THIS CODE IS EXECUTED IMMEDIATELY AFTER THE INITIALIZE CODE IF
; THE "ADR" FLAG WAS SET. THE UNIT(S) UNDER TEST ARE CHECKED TO
; SEE IF THEY WILL RESPOND. THOSE THAT DON'T ARE IMMEDIATELY
; DROPPED FROM TESTING.

; --

BGNAUTO

L\$AUTO::

ENDAUTO

L10013:

TRAP

C\$AUTO

3444

3445

3446

3447

3448

3449

3450

3451

3452

3453 012372

012372

3454

3455 012372 005767 167624

3456 012376 001401

3457 012400

012400 104433

3458 012402

3459

3468

3469 012402

012402 104432

012404 000002

3470

3482

3483

3484

3485 012406

012406

012406 104412

.SBTTL CLEANUP CODING SECTION

; **

; THE CLEANUP CODING SECTION CONTAINS THE CODING THAT IS PERFORMED
; AFTER THE HARDWARE TESTS HAVE BEEN PERFORMED.

; **

BGNCLN

L\$CLEAN::

TST CTRLCF

BEQ 2\$

BRESET

; DID WE GET HERE BY CTRL-C FROM TEST?
; CTRL-C FROM TEST? NO, SKIP BUS RESET.
; YES, CLR ANY DMAS OR OUTSTANDING INTERRUPTS.
TRAP C\$RESET

2\$:

EXIT CLN

TRAP C\$EXIT
.WORD L10014-

.EVEN

ENDCLN

L10014:
TRAP C\$CLEAN

3494

3495

3496

3497

3498

3499

3500

3501

3502

3503 012410

012410

3504

3505 012410

012410 010046

012412 012746 012434

012416 012746 000002

012422 010600

012424 104417

012426 062706 000006

3506 012432

000427

3507

3508 012434

045 101

012437 125 116

012442 124 045

012445 066 045

012450 040 104

012453 117 120

012456 105 104

012461 106 122

012464 115 040

012467 125 122

012472 110 105

012475 040 124

012500 123 124

012503 116 107

012506 045 116

3509

3510 012512

3511

3512 012512

012512 000167

012514 000000

3513

3514

3515 012516

012516 104453

.SBTTL DROP UNIT SECTION

;++

; THE DROP-UNIT SECTION CONTAINS THE CODING THAT CAUSES A DEVICE
; TO NO LONGER BE TESTED.

!--

BGNDU

L\$DU::

PRINTF #DROP,RO

;REPORT UNIT THAT HAS BEEN DROPPED.

MOV RO,-(SP)
MOV #DROP,-(SP)
MOV #2,-(SP)
MOV SP,RO
TRAP C\$PRINTF
ADD #6,SP

BR EDROP

;BRANCH AROUND THE MESSAGE.

DROP: .ASCIZ/*A UNIT#D6#A DROPPED FROM FURTHER TESTING.*N/

.EVEN

EDROP:

EXIT DU

.WORD J\$JMP
.WORD L10015-2-.

ENDDU

L10015:

TRAP C\$DU

3524

3525

3526

3527

3528

3529

3530

3531

3532

3533

3534 012520

012520

3535

3536 012520

012520 000167

012522 000000

3537

3538

3539

3540

3541 012524

012524

012524 104452

3542

.SBTTL ADD UNIT SECTION

; **

; THE ADD-UNIT SECTION CONTAINS ANY CODE THE PROGRAMMER WISHES
; TO BE EXECUTED IN CONJUNCTION WITH THE ADDING OF A UNIT BACK
; TO THE TEST CYCLE.

; --

BGNAU

L\$AU::

EXIT AU

.WORD J\$JMP
.WORD L10016-2-

.EVEN

ENDAU

L10016: TRAP C\$AU

```

3544 .SBTTL  HARDWARE TEST          - ADRA -
3545 ***
3546 *****
3547 |*                                     - REGISTER ADDRESS TEST -
3548 |*
3549 |*   THIS TEST VERIFIES THAT THE DEVICE REGISTERS WILL RESPOND TO THE PROPER
3550 |*   UNIBUS HANDSHAKING SIGNALS WHEN ACCESSED. IF THE DHU11 DOES NOT RESPOND
3551 |*   TO THE ACCESS ATTEMPTS (IF THE DHU11 IS AT THE WRONG ADDRESS, FOR EXAMPLE)
3552 |*   THE 004 BUS TIME-OUT TRAP IS DETECTED BY THIS ROUTINE AND AN ERROR
3553 |*   IS REPORTED. THIS TEST IS PERFORMED ON LINE 0 ONLY.
3554 |*
3555 |*****
3556 |**
3557
3558 012526      BGNTEST
3559 012526      TNUM == TNUM + 1      ; INCREMENT THE ASSEMBLY TIME TEST COUNTER.
3560 012526 000001      MOV 0TNUM,TSTNUM ; SET UP THE TEST NUMBER. (1)
3561 012534 012767 000001 167472      MOV 01,CTRLCF ; INDICATE THAT WE ARE IN A TEST.
3562 012542 012767 000145 171242      MOV 0101,ERRNBR ; SET THE TEST ERROR NUMBER IN THE TABLE.
3563 012550 012767 004632 171236      MOV 0EM0103,ERRMSG ; SET UP THE TEST FAILURE MESSAGE IN THE TABLE.
3564 012556 012767 006200 171232      MOV 0ER0101,ERRBLK ; SET-UP THE ERROR ROUTINE IN THE ERROR TABLE.
3565
3566 |* SET UP TO CATCH ANY 004 TRAPS WHICH OCCUR:
3567 |*
3568 012564 016767 165214 167456      MOV 4,IP4VEC ; SAVE THE EXISTING 004 TRAP VECTOR.
3569 012572 012767 011530 165204      MOV 0TP4RTN,4 ; SET 004 TRAP VECTOR TO OUR SERVICE RTN ADR.
3570 012600 005005      CLR R5 ; CLEAR THE ERROR FLAGS.
3571
3572 |*
3573 |* HERE BEGINS THE LOOP TO TEST THE REGISTERS FOR A LINE.
3574 |* FIRST TEST THE CSR AND SET THE IND.ADR.REG (I.A.R) FIELD.
3575 |*
3576 012602 016700 167372      MOV CSRA,R0 ; SET UP CSR AS THE CKTRAP MOVE SOURCE.
3577 012606 012701 013000      MOV 0521,R1 ; SET UP DESTINATION LOCATION FOR CKTRAP MOVE.
3578 012612 004767 175160      JSR PC,CKTRAP ; MOVE AND CHECK FOR TRAP.
3579 012616 103402      BCS 41 ; IF NO TRAP, BYPASS ERROR.
3580 012620 052705 100001      BIS 0100001,R5 ; SET FATAL READ ERROR FLAGS.
3581 012624 042767 000017 000146 41: BIC 017,521 ; CLEAR THE I.A.R FIELD OF THE CSR DATA.
3582 012632 010100      MOV R1,R0 ; USE OLD DESTINATION FOR SOURCE OF CKTRAP MOVE.
3583 012634 016701 167340      MOV CSRA,R1 ; SET UP CSR AS THE CKTRAP MOVE DESTINATION.
3584 012640 004767 175132      JSR PC,CKTRAP ; MOVE AND CHECK FOR TRAP.
3585 012644 103403      BCS 61 ; IF NO TRAP, BYPASS ERROR.
3586 012646 052705 100002      BIS 0100002,R5 ; SET FATAL WRITE ERROR FLAGS.
3587 012652 000434      BR 401 ; EXIT AND REPORT FATAL ERROR.
3588
3589 |*
3590 |* NOW, WE TEST EACH REGISTER FOR THIS LINE.
3591 012654 012702 000010 000110 61: MOV 08,R2 ; INIT REGISTER COUNTER TO 8.
3592 012660 016767 167314      MOV CSRA,501 ; INITIALIZE THE REGISTER POINTER.
3593 012666 016700 000104 81: MOV 501,R0 ; SET UP REGISTER AS THE SOURCE FOR CKTRAP MOVE.
3594 012672 012701 013000      MOV 0521,R1 ; SET UP LOCAL STORAGE AS THE DES FOR CKTRAP.
3595 012676 004767 175074      JSR PC,CKTRAP ; PERFORM THE MOVE, CHECK FOR TRAP.
3596 012702 103402      BCS 101 ; IF NO TRAP, BYPASS THE SETTING OF ERROR FLAGS.
3597 012704 052705 100001      BIS 0100001,R5 ; SET FATAL READ ERROR FLAGS.
3598 012710 010100      MOV R1,R0 ; USE OLD DEST AS SRC FOR CKTRAP MOVE.
3599 012712 016701 000060      MOV 501,R1 ; SET UP REGISTER AS THE DEST FOR CKTRAP MOVE.

```

```

3600 012716 004767 175054      JSR      PC,CKTRAP      ;PERFORM THE MOVE, CHECK FOR TRAP.
3601 012722 103402              BCS      12$          ;IF NO TRAP, BYPASS THE SETTING OF ERROR FLAGS.
3602 012724 052705 100002      BIS      #100002,R5      ;SET FATAL WRITE ERROR FLAGS.
3603 012730 005267 000042      12$: INC      50$          ;INCREMENT THE REGISTER
3604 012734 005267 000036      INC      50$          ; POINTER BY 2.
3605 012740 005302              DEC      R2            ;COUNT THE REGISTER.
3606 012742 001351              BNE      8$            ;LOOP TO TEST THE NEXT REGISTER ADDRESS.
3607
3608
3609      ;*
3610      ; DONE CHECKING DEVICE REGISTER ADDRESSES.
3611      ; REPORT ANY ERRORS AND EXIT.
3612      ;*
3613 012744 016767 167300 165032 40$: MOV      TP4VEC,4      ;RESTORE THE NORMAL 004 TRAP VECTOR.
3614 012752 005705              TST      R5            ;CHECK THE ERROR FLAGS.
3615 012754 100012              RPL      60$          ;EXIT ROUTINE IF NO ERRORS.
3616
3617      ;*
3618      ; REPORT "DEVICE REGISTER ACCESS TEST FAILED"
3619      ;*
3619 012756              ERROR
3619 012756 104460
3620
3621
3622 012760              DODU      UNITN              ;DROP THIS UNIT FROM FUTHER TESTING.
3622 012760 016700 167212              MOV      UNITN,R0      ;
3622 012764 104451              TRAP      C$DODU
3623 012766 005067 167230              CLR      CTRLCF      ;INDICATE NO CTRL-C ABORT FROM TEST.
3624 012772              DOCLN              ;ABORT THIS SUB PASS.
3624 012772 104444              TRAP      C$DCLN
3625 012774 000402              BR      60$
3626
3627      ;***** LOCAL STORAGE. *****
3628 012776 000000      50$: .WORD      0      ;STORAGE FOR THE SOURCE OR DEST OF THE CKTRAP MOVE.
3629 013000 000000      52$: .WORD      0      ;STORAGE FOR THE SOURCE OR DEST OF THE CKTRAP MOVE.
3630
3631      ;***** END *****
3632 013002 005067 167214      60$: CLR      CTRLCF      ;INDICATE THAT WE ARE NOT WITHIN A TEST.
3633 013006              ENDTST
3633 013006
3633 013006 104401              L10017:
3633 013006              TRAP      C$ETST

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3635 .SBTTL  HARDWARE TEST - DTRMCS -
3636 ;*****
3637 ;*
3638 ;* - DATA TERMINAL READY MODEM CONTROL SIGNAL TEST -
3639 ;*
3640 ;* THIS TEST VERIFIES THAT THE DTR MODEM CONTROL SIGNAL IS WORKING
3641 ;* CORRECTLY. IT WILL ONLY BE PERFORMED IF EITHER 25 PIN OR STAGGERED
3642 ;* LOOPBACK IS SPECIFIED. THIS TEST USES THE LOOPED BACK SIGNALS RI
3643 ;* AND DSR TO TEST THE DTR SIGNAL. THIS TEST IS PERFORMED ON ALL
3644 ;* ACTIVE LINES.
3645 ;*****
3646
3647 013010      BGNTSY
3648 013010
3649
3650 ;*****
3651 013010 032767 000002 167156 ; ONLY PERFORM THIS TEST IF THE DUT IS IN EXTERNAL OR STAGGERED LOOPBACK MODE.
3652 013016 001002
3653 013020 000167 000504
3654 013024 012700 000240
3655 013030 104441
3656 013032 000002
3657 013040 012767 000002 167166
3658 013046 012767 177777 167154
3659 013054 012767 000001 170734
3660 013062 012767 017171 170730
3661 012767 004753 170724
3662
3663 ;*****
3664 ; RESET THE DUT TO A KNOWN STATE, REMOVE STATUS CODES FROM THE FIFO.
3665 ; CLEAR TX AND RX INTERRUPT ENABLE BITS.
3666 ; THIS SUBROUTINE REPORTS ERROR >>>> 7801 <<<<.
3667
3668 013070 004767 174732
3669 013074 103402
3670 013076 000167 000426
3671
3672 013102 004767 174334
3673
3674 ;*****
3675 ; SET UP THE TX/RX ASSOCIATED LINE NUMBER TABLE.
3676
3677 4$: JSR PC,ASLNTL ;SET UP THE ASSOCIATED LINE TABLES.
3678
3679 ;*****
3680 ; SET UP A LOOP WHICH HANDLES ONE LINE PER ITERATION.
3681 ; THIS LOOP CLEARS ALL THE DTRS AND THEN SETS THEM INDIVIDUALLY AND WAITS FOR
3682 ; A RESPONSE ON THE ASSOCIATED RI AND DSR SIGNALS.
3683 ; THIS LOOP WILL CLEAR THE TX,IE AND RX,IE BITS IF THEY ARE SET.
3684
3685 6$: CLR R3 ;CLEAR THE LINE COUNTER.
3686 MOV R3,R0
3687 ASL R0
3688 BIT BITTBL(R0),ACTLNS
3689 REQ 12$ ;DON'T TEST IF NOT ACTIVE LINE.
3690
3691 ;*****
3692 ; CLEAR ALL THE DUT LNCTRL REGISTERS DTR BITS.
3693
3694 6$: CLR R0 ;SPECIFY THAT ALL LNCTRL BITS TO BE CLEARED.
3695 MOV @MAPLNS,R5 ;SPECIFY THAT ALL LNCTRLS ARE TO BE CHANGED.

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3689 013132 004767 176272      JSR    PC,WTWLNCR      ;CLEAR ALL THE DUT DTR BITS.
3690 013136 012704 000074      MOV    #60.,R4
3691 013142 004767 174774      JSR    PC,DELAY        ;DELAY FOR 60 MS TO ALLOW SIGNALS TO SETTLE.
3692
3693      ;+
3694      ; CHECK THAT AT LEAST ONE OF ASSOCIATED DSR OR RI IS CLEAR AND RECORD STATES.
3695      ; -
3695 013146 116304 003750      MOV    TXRLN8(R3),R4    ;GET THE ASSOCIATED LINE NUMBER.
3696 013152 010477 167022      MOV    R4,@CSRA        ;SELECT ASSOCIATED LINE IND.ADR.REG FIELD.
3697 013156 017705 167024      MOV    @FSLSA,R5      ;GET THE STATE OF THE ASSOCIATED DSR, RI BITS.
3698 013162 012700 120000      MOV    @BIT15:BIT13,R0
3699 013166 040500              BIC    R5,R0
3700 013170 001431              BEQ    10$      ;CHECK FOR BOTH DSR AND RI SET.
3701      ;+
3702      ; SET THE DTR FOR THE SELECTED LINE AND WAIT FOR EITHER DSR OR RI TO SET.
3703      ; -
3704 013172 010377 167002      MOV    R3,@CSRA        ;SELECT THE SELECTED LINE IND.ADR.REG FIELD.
3705 013176 052777 001000 167004  BIS    @BIT9,@LNCTRA    ;SET THE SELECTED LINE DTR.
3706 013204 012701 150074      MOV    @150074,R1      ;SPECIFY TO WAIT UP TO 60 MS FOR RI TO SET.
3707 013210 032705 100000      BIT    @BIT15,R5      ;CHECK PREVIOUS STATE OF DSR BIT.
3708 013214 001002              BNE    8$      ;GO USE RI IF DSR BIT WAS NOT CLEAR.
3709 013216 012701 170074      MOV    @170074,R1      ;SPECIFY TO WAIT UP TO 60 MS FOR DSR SET.
3710 013222 016702 166760 8$:  MOV    FSLSA,R2        ;SPECIFY TO LOOK IN STAT REG FOR BIT TO SET.
3711 013226 010477 166746      MOV    R4,@CSRA        ;SELECT ASSOCIATED LINE IND.ADR.REG FIELD.
3712 013232 004767 176116      JSR    PC,WAIT8IS      ;WAIT UP TO 60 MS FOR SIGNAL TO GO SET.
3713 013236 103423              BCS    12$      ;SELECT NEXT LINE AND LOOP IF SIGNAL IS SET.
3714 013240 017700 166742      MOV    @FSLSA,R0      ;GET THE STATUS REGISTER CONTENTS.
3715 013244 042700 057777      BIC    @57777,R0      ;REMOVE ALL BUT THE DSR AND RI BITS.
3716 013250 040500              BIC    R5,R0
3717 013252 001015              BNE    12$      ;TEST FOR SIGNAL ONCE CLEAR, BUT NOW SET.
3718 013254              10$:  ;REPORT DTR MODEM CONTROL SIGNAL DEFECTIVE ON LINE NN.
3719 013254 012767 017172 170530  MOV    @7802.,ERRNBR    ;SELECT THE ERROR NUMBER.
3720 013262 012767 006662 170526  MOV    @ER7801,ERRBLK  ;SELECT THE ERROR PRINT ROUTINE.
3721 013270 012701 005015      MOV    @EM7802,R1      ;SELECT THE ERROR MESSAGE.
3722 013274              ERROR
3723              TRAP    C$ERROR
3724
3725      ;+
3726      ; EXIT THE TEST IF EXTENDED ERROR REPORTING HAS NOT BEEN ENABLED
3727      ; -
3726 013276 032767 000100 166656  BIT    @BIT06,OPTION    ;EXIT WITH TEST FAILURE MESSAGE IF
3727 013304 001511              BEQ    60$      ;NO EXTENDED ERROR REPORTING HAS BEEN REQUESTED
3728
3729 013306 005203              12$:  INC    R3      ;SELECT THE NEXT LINE NUMBER.
3730 013310 020327 000020      CMP    R3,@NUMLNS    ;TEST FOR ALL LINES DONE.
3731 013314 002675              BLT    6$      ;LOOP IF NOT ALL LINES DONE.
3732
3733      ;+
3734      ; SET UP A LOOP WHICH HANDLES ONE LINE PER ITERATION.
3735      ; THIS LOOP SETS ALL THE DTRS AND THEN CLEARS THEM INDIVIDUALLY AND WAITS FOR
3736      ; A RESPONSE ON THE ASSOCIATED RI AND DSR SIGNALS.
3737      ; THIS LOOP WILL CLEAR THE TX,IE AND RX,IE BITS IF THEY ARE SET.
3738      ; -
3738 013316 005003              CLR    R3      ;CLEAR THE LINE COUNTER.
3739 013320 010300 14$:  MOV    R3,R0
3740 013322 006300      ASL    R0
3741 013324 036067 002310 166640  BIT    BITTBL(R0),ACTLNS
3742 013332 001472              BEQ    20$      ;DON'T TEST IF NOT ACTIVE LINE.
3743
3744      ;+
3744      ; SET ALL THE DUT LNCTRL REGISTERS DTR BITS.

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3745
3746 013334 012700 001000      ; MOV    #BIT9,R0      ;SPECIFY THAT DTR BITS ARE TO BE SET.
3747 013340 012705 177777      ; MOV    #MAPLNS,R5    ;SPECIFY THAT ALL LNCTRLS ARE TO BE CHANGED.
3748 013344 004767 176060      ; JSR    PC,WTWLCNC    ;SET ALL THE DUT DTR BITS.
3749 013350 012704 000074      ; MOV    #60.,R4
3750 013354 004767 174562      ; JSR    PC,DELAY      ;DELAY FOR 60 MS TO ALLOW SIGNALS TO SETTLE.
3751
3752      ; CHECK THAT AT LEAST ONE OF ASSOCIATED DSR OR RI IS SET AND RECORD STATES.
3753
3754 013360 116304 003750      ; MOVB   TXRLNB(R3),R4 ;GET THE ASSOCIATED LINE NUMBER.
3755 013364 010477 166610      ; MOV    R4,#CSRA      ;SELECT ASSOCIATED LINE IND.ADR.REG FIELD.
3756 013370 017705 166612      ; MOV    #FSLSA,R5     ;GET THE STATE OF THE ASSOCIATED DSR, RI BITS.
3757 013374 010500
3758 013376 042700 057777      ; MOV    R5,R0
3759 013402 001431            ; BIC    #57777,R0     ;CHECK FOR BOTH DSR AND RI CLEAR.
3760            ; BEQ    18$      ;GO REPORT DTR IS BAD IF BOTH ARE CLEAR.
3761      ; CLEAR THE DTR FOR THE SELECTED LINE AND WAIT FOR EITHER DSR OR RI TO CLEAR.
3762
3763 013404 010377 166570      ; MOV    R3,#CSRA      ;SELECT THE SELECTED LINE IND.ADR.REG FIELD.
3764 013410 042777 001000 166572 ; BIC    #BIT9,#LNCTRA ;CLEAR THE SELECTED LINE DTR.
3765 013416 012701 150074      ; MOV    #150074,R1    ;SPECIFY TO WAIT UP TO 60 MS FOR RI TO CLEAR.
3766 013422 032705 100000      ; BIT    #BIT15,R5     ;CHECK PREVIOUS STATE OF DSR BIT.
3767 013426 001402            ; BEQ    16$      ;GO USE RI IF DSR BIT WAS NOT SET.
3768 013430 012701 170074      ; MOV    #170074,R1    ;SPECIFY TO WAIT UP TO 60 MS FOR DSR CLEAR.
3769 013434 016702 166546      ; MOV    FSLSA,R2      ;SPECIFY TO LOOK IN STAT REG FOR BIT TO CLR.
3770 013440 010477 166534      ; MOV    R4,#CSRA      ;SELECT ASSOCIATED LINE IND.ADR.REG FIELD.
3771 013444 004767 175630      ; JSR    PC,WAITBIC    ;WAIT UP TO 60 MS FOR SIGNAL TO GO CLEAR.
3772 013450 103423            ; BCS    20$      ;SELECT NEXT LINE AND LOOP IF SIGNAL IS CLEAR.
3773 013452 017700 166530      ; MOV    #FSLSA,R0     ;GET THE STATUS REGISTER CONTENTS.
3774 013456 042705 057777      ; BIC    #57777,R5
3775 013462 040005            ; BIC    R0,R5        ;TEST FOR SIGNAL ONCE SET, BUT NOW CLEAR.
3776 013464 001015            ; BNE    20$      ;GO LOOP IF SIGNAL HAS GONE FROM SET TO CLR.
3777 013466
3778 013466 012767 017173 170316 ; 18$: ;REPORT DTR MODEM CONTROL SIGNAL DEFECTIVE ON LINE NN.
3779 013474 012767 006662 170314 ; MOV    #7803.,ERRNBR ;SELECT THE ERROR NUMBER.
3780 013502 012701 005015      ; MOV    #ER7801,ERRBLK ;SELECT THE ERROR PRINT ROUTINE.
3781 013506            ; MOV    #EM7802,R1    ;SELECT THE ERROR MESSAGE.
3782            ; TRAP    C$ERROR
3783      ; EXIT THE TEST IF EXTENDED ERROR REPORTING HAS NOT BEEN ENABLED
3784
3785 013510 032767 000100 166444      ; BIT    #BIT06,OPTION ;EXIT WITH TEST FAILURE MESSAGE IF
3786 013516 001404            ; BEQ    60$      ;NO EXTENDED ERROR REPORTING HAS BEEN REQUESTED
3787
3788 013520 005203            ; 20$: INC    R3      ;DURING THE SOFTWARE QUESTIONS.
3789 013522 020327 000020      ; CMP    R3,#NUMLNS    ;SELECT THE NEXT LINE NUMBER.
3790 013526 002674            ; BLT    14$      ;TEST FOR ALL LINES DONE.
3791 013530 005067 166466      ; 60$: CLR    CTRLCF   ;LOOP IF NOT ALL LINES DONE.
3792 013534            ; SETPRI  #PRI07     ;INDICATE THAT WE ARE NOT WITHIN A TEST.
3793 013542            ; ENDTST      ;DISABLE ALL INTERRUPTS.
3794 013542            ; MOV    #PRI07,R0
3795 013542            ; TRAP    C$SPRI
3796 013542 104401            ; L10020: TRAP    C$ETST

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3795 .SBTTL  HARDWARE TEST - RTSMCS -
3796 ;*****
3797 ;* - REQUEST TO SEND MODEM CONTROL SIGNAL TEST -
3798 ;*
3799 ;* THIS TEST VERIFIES THAT THE RTS MODEM CONTROL SIGNAL IS WORKING
3800 ;* CORRECTLY. IT WILL ONLY BE PERFORMED IF EITHER 25 PIN OR STAGGERED
3801 ;* LOOPBACK IS SPECIFIED. THIS TEST USES THE LOOPED BACK SIGNALS CTS
3802 ;* AND DCD TO TEST THE RTS SIGNAL. THIS TEST IS PERFORMED ON ALL
3803 ;* ACTIVE LINES.
3804 ;*
3805 ;*****
3806 013544 BGNTST
      013544
3807
3808 ;*
3809 ;* ONLY PERFORM THIS TEST IF THE DUT IS IN EXTERNAL OR STAGGERED LOOPBACK MODE.
3810 013544 032767 000002 166422 ;*
3811 013552 001002 ;* BIT 0BIT1,LOPBACK ;CHECK TYPE OF LOOPBACK MODE SELECTED.
3812 013554 000167 000504 ;* BNE 1$
3813 013560 012700 000240 ;* JMP 60$ ;EXIT THIS TEST IF IN INTERNAL LOOPBACK.
      013564 104441 ;* SETPRI 0PRI05 ;ALLOW LTC INTERRUPTS.
3814 000003 ;*
      013566 012767 000003 166432 ;* TNUM = TNUM + 1 ;INCREMENT THE ASSEMBLY TIME TEST COUNTER.
3815 013574 012767 177777 166420 ;* MOV 0TNUM,TSTNUM ;SET UP THE TEST NUMBER. (79)
3816 013602 012767 000001 170200 ;* MOV 0-1,CTRLCF ;INDICATE THAT WE ARE IN A TEST.
3817 013610 012767 017335 170174 ;* MOV 01,ERRTYP ;SET ERROR TYPE IN ERROR TABLE.
3818 013616 012767 005035 170170 ;* MOV 07901,ERRNBR ;SET THE FIRST ERROR NUMBER IN ERROR TABLE.
3819 ;* MOV 0EM7901,ERRMSG ;SET ERROR MESSAGE ADDRESS IN ERROR TABLE.
3820 ;*
3821 ;* RESET THE DUT TO A KNOWN STATE, REMOVE STATUS CODES FROM THE FIFO.
3822 ;* CLEAR TX AND RX INTERRUPT ENABLE BITS.
3823 ;* THIS SUBROUTINE REPORTS ERROR >>>> 7901 <<<<.
3824 ;*
3825 013624 004767 174176 ;* JSR PC,CLNRST ;RESET THE DUT.
3826 013630 103402 ;* BCS 3$
3827 013632 000167 000426 ;* JMP 60$ ;ABORT THE TEST IF FATAL ERROR FOUND IN RESET.
3828 ;*
3829 ;* SET UP THE TX/RX ASSOCIATED LINE NUMBER TABLE.
3830 ;*
3831 013636 004767 173600 ;* JSR PC,ASLNTL ;SET UP THE ASSOCIATED LINE TABLES.
3832 ;*
3833 ;* SET UP A LOOP WHICH HANDLES ONE LINE PER ITERATION.
3834 ;* THIS LOOP CLEARS ALL THE RTSS AND THEN SETS THEM INDIVIDUALLY AND WAITS FOR
3835 ;* A RESPONSE ON THE ASSOCIATED CTS AND DCD SIGNALS.
3836 ;* THIS LOOP WILL CLEAR THE TX.IE AND RX.IE BITS IF THEY ARE SET.
3837 ;*
3838 013642 005003 ;* CLR R3 ;CLEAR THE LINE COUNTER.
3839 013644 010300 ;* MOV R3,R0
3840 013646 006300 ;* ASL R0
3841 013650 036067 002310 166314 ;* BIT BITTBL(R0),ACTLNS
3842 013656 001471 ;* BEQ 8$ ;DON'T TEST IF NOT ACTIVE LINE.
3843 ;*
3844 ;* CLEAR ALL THE DUT LNCTRL REGISTERS RTS BITS.
3845 ;*
3846 013660 005000 ;* CLR R0 ;SPECIFY THAT ALL LNCTRL BITS TO BE CLEARED.
3847 013662 012705 177777 ;* MOV 0MAPLNS,R5 ;SPECIFY THAT ALL LNCTRLS ARE TO BE CHANGED.
3848 013666 004767 175536 ;* JSR PC,WTWLNC ;CLEAR ALL THE DUT RTS BITS.

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3849 013672 012704 000074      MOV    #60.,R4
3850 013676 004767 174240      JSR    PC,DELAY      ;DELAY FOR 60 MS TO ALLOW SIGNALS TO SETTLE.
3851                               ;+
3852                               ; CHECK THAT AT LEAST ONE OF ASSOCIATED DCD OR CTS IS CLEAR AND RECORD STATES.
3853                               ; -
3854 013702 116304 003750      MOV    TXRLNB(R3),R4      ;GET THE ASSOCIATED LINE NUMBER.
3855 013706 010477 166266      MOV    R4,@CSRA      ;SELECT ASSOCIATED LINE IND.ADR.REG FIELD.
3856 013712 017705 166270      MOV    @FSLSA,R5      ;GET THE STATE OF THE ASSOCIATED DCD, CTS BITS.
3857 013716 012700 014000      MOV    @BIT12!BIT11,R0
3858 013722 040500              BIC    R5,R0      ;CHECK FOR BOTH DCD AND CTS SET.
3859 013724 001431              BEQ    6$      ;GO REPORT RTS IS BAD IF BOTH ARE SET.
3860                               ;+
3861                               ; SET THE RTS FOR THE SELECTED LINE AND WAIT FOR EITHER DCD OR CTS TO SET.
3862                               ; -
3863 013726 010377 166246      MOV    R3,@CSRA      ;SELECT THE SELECTED LINE IND.ADR.REG FIELD.
3864 013732 052777 010000 166250  BIS    @BIT12,@LNCTRA      ;SET THE SELECTED LINE RTS.
3865 013740 012701 130074      MOV    @130074,R1      ;SPECIFY TO WAIT UP TO 60 MS FOR CTS TO SET.
3866 013744 032705 010000      BIT    @BIT12,R5      ;CHECK PREVIOUS STATE OF DCD BIT.
3867 013750 001002              BNE    4$      ;GO USE CTS IF DCD BIT WAS NOT CLEAR.
3868 013752 012701 140074      MOV    @140074,R1      ;SPECIFY TO WAIT UP TO 60 MS FOR DCD SET.
3869 013756 016702 166224 4$:  MOV    FSLSA,R2      ;SPECIFY TO LOOK IN STAT REG FOR BIT TO SET.
3870 013762 010477 166212      MOV    R4,@CSRA      ;SELECT ASSOCIATED LINE IND.ADR.REG FIELD.
3871 013766 004767 175362      JSR    PC,WAIBIS      ;WAIT UP TO 60 MS FOR SIGNAL TO GO SET.
3872 013772 103423              BCS    8$      ;SELECT NEXT LINE AND LOOP IF SIGNAL IS SET.
3873 013774 017700 166206      MOV    @FSLSA,R0      ;GET THE STATUS REGISTER CONTENTS.
3874 014000 042700 163777      BIC    @163777,R0      ;REMOVE ALL BUT THE DCD AND CTS BITS.
3875 014004 040500              BIC    R5,R0      ;TEST FOR SIGNAL ONCE CLEAR, BUT NOW SET.
3876 014006 001015              BNE    8$      ;GO LOOP IF SIGNAL HAS GONE FROM CLR TO SET.
3877 014010              6$:  ;REPORT RTS MODEM CONTROL SIGNAL DEFECTIVE ON LINE NN.
3878 014010 012767 017336 167774  MOV    @7902.,ERRNBR      ;SELECT THE ERROR NUMBER.
3879 014016 012767 006662 167772  MOV    @ER7801,ERRBLK      ;SELECT THE ERROR PRINT ROUTINE.
3880 014024 012701 005077      MOV    @EM7902,R1      ;SELECT THE ERROR MESSAGE.
3881 014030              ERROR      ;
3882              >>>>> ERROR <<<<<.
3883              TRAP    C$ERROR
3884                               ;+
3885                               ; EXIT THE TEST IF EXTENDED ERROR REPORTING HAS NOT BEEN ENABLED
3886                               ; -
3885 014032 032767 000100 166122  BIT    @BIT06,OPTION      ;EXIT WITH TEST FAILURE MESSAGE IF
3886 014040 001511              BEQ    60$      ;NO EXTENDED ERROR REPORTING HAS BEEN REQUESTED
3887                               ; DURING THE SOFTWARE QUESTIONS.
3888 014042 005203              8$:  INC    R3      ;SELECT THE NEXT LINE NUMBER.
3889 014044 020327 000020      CMP    R3,@NUMLNS      ;TEST FOR ALL LINES DONE.
3890 014050 002675              BLT    2$      ;LOOP IF NOT ALL LINES DONE.
3891                               ;+
3892                               ; SET UP A LOOP WHICH HANDLES ONE LINE PER ITERATION.
3893                               ; THIS LOOP SETS ALL THE RTSS AND THEN CLEARS THEM INDIVIDUALLY AND WAITS FOR
3894                               ; A RESPONSE ON THE ASSOCIATED CTS AND DCD SIGNALS.
3895                               ; THIS LOOP WILL CLEAR THE TX.IE AND RX.IE BITS IF THEY ARE SET.
3896                               ; -
3897 014052 005003              CLR    R3      ;CLEAR THE LINE COUNTER.
3898 014054 010300 10$:  MOV    R3,R0
3899 014056 006300              ASL    R0
3900 014060 036067 002310 166104  BIT    BITTBL(R0),ACTLNS
3901 014066 001472              BEQ    16$      ;DON'T TEST IF NOT ACTIVE LINE.
3902                               ;+
3903                               ; SET ALL THE DUT LNCTRL REGISTERS RTS BITS.
3904                               ; -

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3905 014070 012700 010000      MOV    #BIT12,R0      ;SPECIFY THAT RTS BITS ARE TO BE SET.
3906 014074 012705 177777      MOV    #MAPLNS,R5     ;SPECIFY THAT ALL LNCTRLS ARE TO BE CHANGED.
3907 014100 004767 175324      JSR     PC,WTWLNLC    ;SET ALL THE OUT RTS BITS.
3908 014104 012704 000074      MOV    #60.,R4
3909 014110 004767 174026      JSR     PC,DELAY      ;DELAY FOR 60 MS TO ALLOW SIGNALS TO SETTLE.
3910
3911      ; CHECK THAT AT LEAST ONE OF ASSOCIATED DCD OR CTS IS SET AND RECORD STATES.
3912      ;
3913 014114 116304 003750      MOV     TXRLNB(R3),R4    ;GET THE ASSOCIATED LINE NUMBER.
3914 014120 010477 166054      MOV     R4,@CSRA      ;SELECT ASSOCIATED LINE IND.ADR.REG FIELD.
3915 014124 017705 166056      MOV     @FSLSA,R5     ;GET THE STATE OF THE ASSOCIATED DCD, CTS BITS.
3916 014130 010500
3917 014132 042700 163777      BIC     #163777,R0     ;CHECK FOR BOTH DCD AND CTS CLEAR.
3918 014136 001431
3919      BEQ     14$          ;GO REPORT RTS IS BAD IF BOTH ARE CLEAR.
3920      ; CLEAR THE RTS FOR THE SELECTED LINE AND WAIT FOR EITHER DCD OR CTS TO CLEAR.
3921      ;
3922 014140 010377 166034      MOV     R3,@CSRA      ;SELECT THE SELECTED LINE IND.ADR.REG FIELD.
3923 014144 042777 010000 166036      BIC     #BIT12,@LNCTRA ;CLEAR THE SELECTED LINE RTS.
3924 014152 012701 130074      MOV     #130074,R1     ;SPECIFY TO WAIT UP TO 60 MS FOR CTS TO CLEAR.
3925 014156 032705 010000      BIT     #BIT12,R5     ;CHECK PREVIOUS STATE OF DCD BIT.
3926 014162 001402
3927 014164 012701 140074      BEQ     12$          ;GO USE CTS IF DCD BIT WAS NOT SET.
3928 014170 016702 166012      MOV     #140074,R1     ;SPECIFY TO WAIT UP TO 60 MS FOR DCD CLEAR.
3929 014174 010477 166000 12$:      MOV     FSLSA,R2      ;SPECIFY TO LOOK IN STAT REG FOR BIT TO CLR.
3930 014200 004767 175074      MOV     R4,@CSRA      ;SELECT ASSOCIATED LINE IND.ADR.REG FIELD.
3931 014204 103423
3932 014206 017700 165774      JSR     PC,WAIBIC     ;WAIT UP TO 60 MS FOR SIGNAL TO GO CLEAR.
3933 014212 042705 163777      BCS     16$          ;SELECT NEXT LINE AND LOOP IF SIGNAL IS CLEAR.
3934 014214 040005
3935 014220 001015
3936 014222
3937 014222 012767 017337 167562      MOV     @FSLSA,R0     ;GET THE STATUS REGISTER CONTENTS.
3938 014230 012767 006662 167560      BIC     #163777,R5
3939 014236 012701 005077      BIC     R0,R5
3940 014242
3941      BNE     16$          ;TEST FOR SIGNAL ONCE SET, BUT NOW CLEAR.
3942      ;REPORT RTS MODEM CONTROL SIGNAL DEFECTIVE ON LINE NN.
3943      MOV     #7903.,ERRNBR ;SELECT THE ERROR NUMBER.
3944 014244 032767 000100 165710      MOV     #ERR7801,ERRBLK ;SELECT THE ERROR PRINT ROUTINE.
3945 014252 001404
3946      MOV     #EM7902,R1    ;SELECT THE ERROR MESSAGE.
3947 014254 005203
3948 014256 020327 000020      ERROR
3949 014262 002674
3950 014264 005067 165732      ;
3951 014270
3952 014270 012700 000340      ;>>>> ERROR <<<<<.
3953 014274 104441      TRAP     C$ERROR
3954 014276
3955 014276 104401      ; EXIT THE TEST IF EXTENDED ERROR REPORTING HAS NOT BEEN ENABLED
3956 014276
3957 014276
3958 014276
3959 014276
3960 014276
3961 014276
3962 014276
3963 014276
3964 014276
3965 014276
3966 014276
3967 014276
3968 014276
3969 014276
3970 014276
3971 014276
3972 014276
3973 014276
3974 014276
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3999 014276
4000 014276

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3954 .SBTTL  HARDWARE TEST - DSRMS -
3955 ;*****
3956 ; - DATA SET READY MODEM SIGNAL TEST -
3957 ;
3958 ; THIS TEST VERIFIES THAT THE DSR MODEM STATUS SIGNAL IS WORKING
3959 ; CORRECTLY. IT WILL ONLY BE PERFORMED IF EITHER 25 PIN OR STAGGERED
3960 ; LOOPBACK IS SPECIFIED. THIS TEST USES THE LOOPED BACK DTR SIGNALS
3961 ; TO TEST THE DSR SIGNAL. THIS TEST IS PERFORMED ON ALL THE ACTIVE
3962 ; LINES.
3963 ;
3964 ; -*****
3965
3966 014300      BGN1ST
      014300
3967
3968 ;
3969 ; ONLY PERFORM THIS TEST IF THE DUT IS IN EXTERNAL OR STAGGERED LOOPBACK MODE.
3970 014300 032767 000002 165666      BIT  #BIT1,LOPBCK  ;CHECK TYPE OF LOOPBACK MODE SELECTED.
3971 014306 001002                BNE  2$
3972 014310 000167 000420                JMP  60$      ;EXIT THIS TEST IF IN INTERNAL LOOPBACK.
3973 014314 012700 000240      2$:  SETPRI  #PRI05      ;ALLOW LTC INTERRUPTS.
      014314 012700 000240
      014320 104441
3974 000004
3975 014322 012767 000004 165676      TNUM == TNUM + 1      ;INCREMENT THE ASSEMBLY TIME TEST COUNTER.
3976 014330 012767 177777 165664      MOV  #TNUM,TSTNUM      ;SET UP THE TEST NUMBER. (80)
3977 014336 012767 000001 167444      MOV  #-1,CTRLCF      ;INDICATE THAT WE ARE IN A TEST.
3978 014344 012767 017501 167440      MOV  #1,ERRTYP      ;SET ERROR TYPE IN ERROR TABLE.
3979 014352 012767 005117 167434      MOV  #8001,ERRNBR      ;SET THE FIRST ERROR NUMBER IN ERROR TABLE.
3980
3981      MOV  #EM8001,ERRMSG      ;SET ERROR MESSAGE ADDRESS IN ERROR TABLE.
3982
3983 ;
3984 ; RESET THE DUT TO A KNOWN STATE, REMOVE STATUS CODES FROM THE FIFO.
3985 014360 004767 173442      ; CLEAR TX AND RX INTERRUPT ENABLE BITS.
3986 014364 103402
3987 014366 000167 000342      ; THIS SUBROUTINE REPORTS ERROR >>>> 8001 <<<<.
3988
3989 ;
3990 ;
3991 014372 004767 173044      JSR  PC,CLNRS1      ;RESET THE DUT.
3992
3993      BCS  4$
3994      JMP  60$      ;ABORT THE TEST IF FATAL ERROR FOUND IN RESET.
3995
3996 ;
3997 ; SET UP THE TX/RX ASSOCIATED LINE NUMBER TABLE.
3998
3999 4$:  JSR  PC,ASLNTL      ;SET UP THE ASSOCIATED LINE TABLES.
4000
4001 ;
4002 ; SET UP A LOOP WHICH HANDLES ONE LINE PER ITERATION.
4003 ; THIS LOOP CLEARS ALL THE DTRs AND THEN SETS THEM INDIVIDUALLY AND WAITS FOR
4004 ; A RESPONSE ON THE ASSOCIATED DSR SIGNAL.
4005 ; THIS LOOP WILL CLEAR THE TX,IE AND RX,IE BITS IF THEY ARE SET.
4006
4007 014376 005003      CLR  R3      ;CLEAR THE LINE COUNTER.
4008 014400 010300      6$:  MOV  R3,R0
4009 014402 006300      ASL  R0
4001 014404 036067 002310 165560      BIT  BITBL(R0),ACTLNS
4002 014412 001454      BFC  10$      ;DON'T TEST IF NOT ACTIVE LINE.
4003
4004 ;
4005 ; CLEAR ALL THE DUT LNCTRL REGISTERS DTR BITS.
4006
4007 014414 005000      CLR  R0
4008 014416 012705 177777      MOV  #MAPLNS,R5      ;SPECIFY THAT ALL LNCTRL BITS TO BE CLEARED.
      ;SPECIFY THAT ALL LNCTRLS ARE TO BE CHANGED.

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4008 014422 004767 175002      JSR    PC,WTWLNCR      ;CLEAR ALL THE DUT DTR BITS.
4009 014426 012704 000050      MOV    #40.,R4
4010 014432 004767 173504      JSR    PC,DELAY        ;DELAY FOR 40 MS TO ALLOW SIGNALS TO SETTLE.
4011
4012      ; CHECK THAT THE SPECIFIED DSR IS CLEAR.
4013      ; -
4014 014436 010377 165536      MOV    R3,@CSRA        ;SET IND.ADR.REG FIELD TO SELECTED LINE.
4015 014442 032777 100000 165536 BIT    #BIT15,@FSLSA
4016 014450 001020              BNE     8$                ;GO REPORT DSR IS BAD IF BIT IS NOT CLEAR.
4017
4018      ; SET THE DTR FOR THE ASSOCIATED LINE.
4019      ; NOTE: IF THE ASSOCIATED LINE IS NOT SELECTED, DTR WILL NOT HAVE BEEN TESTED
4020      ; IN THE DTR TEST (ONLY AN ISSUE IN STAGGERED LOOPBACK).
4021      ; -
4022 014452 116304 003750      MOV    TXRLN8(R3),R4    ;GET THE ASSOCIATED LINE NUMBER.
4023 014456 010477 165516      MOV    R4,@CSRA        ;SET IND.ADR.REG FIELD TO ASSOCIATED LINE.
4024 014462 052777 001000 165520 BIS    #BIT9,@LNCTRA    ;SET THE ASSOCIATED LINE DTR.
4025
4026      ; CHECK THAT THE SELECTED LINE DSR IS ACTIVE.
4027      ; -
4028 014470 010377 165504      MOV    R3,@CSRA        ;SET IND.ADR.REG FIELD TO SELECTED LINE.
4029 014474 012701 170050      MOV    #170050,R1      ;PASS TIMEOUT OF 40 MILLI-SEC. AND BIT TO TEST.
4030 014500 016702 165502      MOV    FSLSA,R2        ;PASS THE ADDRESS OF THE REGISTER TO TEST.
4031 014504 004767 174644      JSR    PC,WAIBIS      ;WAIT FOR DSR TO BECOME SET OR TIMEOUT.
4032 014510 103415              BCS     10$              ;SKIP ERROR REPORT IF SELECTED DSR IS SET.
4033
4034
4035 014512              8$:      ;REPORT DSR MODEM CONTROL SIGNAL DEFECTIVE ON LINE NN.
4036 014512 012767 017502 167272 MOV    #8002.,ERRNBR    ;SELECT THE ERROR NUMBER.
4037 014520 012767 006662 167270 MOV    #ER7801,ERRBLK   ;SELECT THE ERROR PRINT ROUTINE.
4038 014526 012701 005163      MOV    #EM8002,R1      ;SELECT THE ERROR MESSAGE.
4039 014532              ERROR
4040              TRAP     C$ERROR
4041
4042      ; -
4043      ; EXIT THE TEST IF EXTENDED ERROR REPORTING HAS NOT BEEN ENABLED
4044 014534 032767 000100 165420 BIT    #BIT06,OPTION
4045 014542 001474              BEQ     60$              ;EXIT WITH TEST FAILURE MESSAGE IF
4046              ; NO EXTENDED ERROR REPORTING HAS BEEN REQUESTED
4047              ; DURING THE SOFTWARE QUESTIONS.
4048 014544 005203              10$:   INC    R3                ;SELECT THE NEXT LINE NUMBER.
4049 014546 020327 000020      CMP    R3,#NUMLNS      ;TEST FOR ALL LINES DONE.
4050 014552 002712              BLT     6$                ;LOOP IF NOT ALL LINES DONE.
4051
4052      ; SET UP A LOOP WHICH HANDLES ONE LINE PER ITERATION.
4053      ; THIS LOOP SETS ALL THE DTRS AND THEN CLEARS THEM INDIVIDUALLY AND WAITS FOR
4054      ; A RESPONSE ON THE SELECTED DSR SIGNAL.
4055      ; THIS LOOP WILL CLEAR THE TX,IE AND RX,IE BITS IF THEY ARE SET.
4056      ; -
4057 014554 005003              CLR    R3                ;CLEAR THE LINE COUNTER.
4058 014556 010300              12$:   MOV    R3,R0
4059 014560 006300              ASL    R0
4060 014562 036067 002310 165402 BIT    BITBL(R0),ACTLNS
4061 014570 001455              BEQ     16$              ;DON'T TEST IF NOT ACTIVE LINE.
4062
4063      ; SET ALL THE DUT LNCTRL REGISTERS DTR BITS.

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4064
4065 014572 012700 001000      ;-      MOV      #BIT9,R0      ;SPECIFY THAT DTR BITS ARE TO BE SET.
4066 014576 012705 177777      ;-      MOV      #MAPLNS,R5      ;SPECIFY THAT ALL LNCTRLS ARE TO BE CHANGED.
4067 014602 004767 174622      ;-      JSR      PC,WTWLNK      ;SET ALL THE DUT DTR BITS.
4068 014606 012704 000050      ;-      MOV      #40.,R4
4069 014612 004767 173324      ;-      JSR      PC,DELAY      ;DELAY FOR 40 MS TO ALLOW SIGNALS TO SETTLE.
4070
4071      ;+      ; CHECK THAT THE SPECIFIED DSR IS SET.
4072      ;-
4073 014616 010377 165356      ;-      MOV      R3,#CSRA      ;SET IND.ADR.REG FIELD TO SELECTED LINE.
4074 014622 032777 100000 165356      ;-      BIT      #BIT15,#FSLSA
4075 014630 001420      ;-      BEQ      14$      ;GO REPORT DSR IS BAD IF BIT IS NOT SET.
4076
4077      ;+      ; CLEAR THE DTR FOR THE ASSOCIATED LINE.
4078      ; NOTE: IF THE ASSOCIATED LINE IS NOT SELECTED, DTR WILL NOT HAVE BEEN TESTED
4079      ; IN THE DTR TEST (ONLY AN ISSUE IN STAGGERED LOOPBACK).
4080      ;-
4081 014632 116304 003750      ;-      MOVB     TXRLNB(R3),R4      ;GET THE ASSOCIATED LINE NUMBER.
4082 014636 010477 165336      ;-      MOV      R4,#CSRA      ;SET IND.ADR.REG FIELD TO ASSOCIATED LINE.
4083 014642 042777 001000 165340      ;-      BIC      #BIT9,#LNCTRA      ;CLEAR THE ASSOCIATED LINE DTR.
4084
4085      ;+      ; CHECK THAT THE SELECTED LINE DSR IS CLEAR.
4086      ;-
4087 014650 010377 165324      ;-      MOV      R3,#CSRA      ;SET IND.ADR.REG FIELD TO SELECTED LINE.
4088 014654 012701 170050      ;-      MOV      #170050,R1      ;PASS TIMEOUT OF 40 MILLI-SEC. AND BIT TO TEST.
4089 014660 016702 165322      ;-      MOV      FSLSA,R2      ;PASS THE ADDRESS OF THE REGISTER TO TEST.
4090 014664 004767 174410      ;-      JSR      PC,WAIBIC      ;WAIT FOR DSR TO BECOME CLEAR OR TIMEOUT.
4091 014670 103415      ;-      BCS      16$      ;SKIP ERROR REPORT IF SELECTED DSR IS CLEAR.
4092
4093 014672      14$:      ;REPORT DSR MODEM CONTROL SIGNAL DEFECTIVE ON LINE NN.
4094 014672 012767 017503 167112      ;-      MOV      #8003.,ERRNBR      ;SELECT THE ERROR NUMBER.
4095 014700 012767 006662 167110      ;-      MOV      #ER7801,ERRBLK      ;SELECT THE ERROR PRINT ROUTINE.
4096 014706 012701 005163      ;-      MOV      #EM8002,R1      ;SELECT THE ERROR MESSAGE.
4097 014712      ;-      ERROR
4098      ;-      TRAP      C$ERROR
4099
4100      ;+      ; EXIT THE TEST IF EXTENDED ERROR REPORTING HAS NOT BEEN ENABLED
4101      ;-
4102 014714 032767 000100 165240      ;-      BIT      #BIT06,OPTION
4103 014722 001404      ;-      BEQ      60$      ;EXIT WITH TEST FAILURE MESSAGE IF
4104      ;-      ; NO EXTENDED ERROR REPORTING HAS BEEN REQUESTED
4105      ;-      ; DURING THE SOFTWARE QUESTIONS.
4106 014724 005203      16$:      INC      R3      ;SELECT THE NEXT LINE NUMBER.
4107 014726 020327 000020      ;-      CMP      R3,#NUMLNS      ;TEST FOR ALL LINES DONE.
4108 014732 002711      ;-      BLT      12$      ;LOOP IF NOT ALL LINES DONE.
4109
4110 014734 005067 165252      60$:      CLR      CTRLCF      ;INDICATE THAT WE ARE NOT WITHIN A TEST.
4111 014740      ;-      SETPRI     #PRI07      ;DISABLE ALL INTERRUPTS.
4112      ;-      MOV      #PRI07,R0
4113 014746      ;-      TRAP      C$SPRI
4114 014746      ;-
4115 014746 104401      ;-      ENDTST
4116      ;-      L10022:      TRAP      C$ETST

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4115 .SBTTL  HARDWARE TEST          - RINGI -
4116 ;*****
4117 ;*          - RING INDICATOR MODEM SIGNAL TEST -
4118 ;*
4119 ;*          THIS TEST VERIFIES THAT THE RI MODEM STATUS SIGNAL IS WORKING
4120 ;*          CORRECTLY.  IT WILL ONLY BE PERFORMED IF EITHER 25 PIN OR STAGGERED
4121 ;*          LOOPBACK IS SPECIFIED.  THIS TEST USES THE LOOPED BACK DTR SIGNALS
4122 ;*          TO TEST THE RI SIGNAL.  THIS TEST IS PERFORMED ON ALL THE ACTIVE
4123 ;*          LINES.
4124 ;*
4125 ;*****
4126 ;
4127 014750      BGNTST
4128 014750      T5::
4129 ;
4130 ; ONLY PERFORM THIS TEST IF THE DUT IS IN EXTERNAL OR STAGGERED LOOPBACK MODE.
4131 014750 032767 000002 165216      BIT    #BIT1,LOPBCK    ;CHECK TYPE OF LOOPBACK MODE SELECTED.
4132 014756 001002                BNE     2$              ;
4133 014760 000167 000420                JMP     60$              ;EXIT THIS TEST IF IN INTERNAL LOOPBACK.
4134 014764      2$:      SETPRI    #PRI05                ;ALLOW LTC INTERRUPTS.
4135      014764 012700 000240                MOV     #PRI05,R0
4136      014770 104441                TRAP    C$SPRI
4137      000005                TNUM == TNUM + 1          ;INCREMENT THE ASSEMBLY TIME TEST COUNTER.
4138 014772 012767 000005 165226      MOV     #TNUM,ISTNUM    ;SET UP THE TEST NUMBER. (81)
4139 015000 012767 177777 165214      MOV     #-1,CTRLCF      ;INDICATE THAT WE ARE IN A TEST.
4140 015006 012767 000001 166774      MOV     #1,ERRTYP      ;SET ERROR TYPE IN ERROR TABLE.
4141 015014 012767 017645 166770      MOV     #8101,,ERRNBR    ;SET THE FIRST ERROR NUMBER IN ERROR TABLE.
4142 015022 012767 005227 166764      MOV     #EM8101,ERRMSG    ;SET ERROR MESSAGE ADDRESS IN ERROR TABLE.
4143 ;
4144 ; RESET THE DUT TO A KNOWN STATE, REMOVE STATUS CODES FROM THE FIFO,
4145 ; CLEAR TX AND RX INTERRUPT ENABLE BITS.
4146 ; THIS SUBROUTINE REPORTS ERROR >>>> 8101 <<<<.
4147 ;
4148 015030 004767 172772      JSR     PC,CLNRS1    ;RESET THE DUT.
4149 015034 103402                BCS     4$
4150 015036 000167 000342      JMP     60$          ;ABORT THE TEST IF FATAL ERROR FOUND IN RESET.
4151 ;
4152 ; SET UP THE TX/RX ASSOCIATED LINE NUMBER TABLE.
4153 ;
4154 015042 004767 172374      4$:      JSR     PC,ASLNTL    ;SET UP THE ASSOCIATED LINE TABLES.
4155 ;
4156 ; SET UP A LOOP WHICH HANDLES ONE LINE PER ITERATION.
4157 ; THIS LOOP CLEARS ALL THE DTRs AND THEN SETS THEM INDIVIDUALLY AND WAITS FOR
4158 ; A RESPONSE ON THE ASSOCIATED RI SIGNAL.
4159 ; THIS LOOP WILL CLEAR THE TX.IE AND RX.IE BITS IF THEY ARE SET.
4160 ;
4161 015046 005003                CLR     R3              ;CLEAR THE LINE COUNTER.
4162 015050 010300      6$:      MOV     R3,R0
4163 015052 006300                ASL     R0
4164 015054 036067 002310 165110      BIT     BITBL(R0),ACTLNS
4165 015062 001454                BEQ     10$              ;DON'T TEST IF NOT ACTIVE LINE.
4166 ;
4167 ; CLEAR ALL THE DUT LNCTRL REGISTERS DTR BITS.
4168 ;
4169 015064 005000                CLR     R0
4170 015066 012705 177777      MOV     #MAPLNS,R5    ;SPECIFY THAT ALL LNCTRL BITS TO BE CLEARED.
4171 ;
4172 ; SPECIFY THAT ALL LNCTRLS ARE TO BE CHANGED.

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4169 015072 004767 174332      JSR      PC,WTWLCN      ;CLEAR ALL THE DUT DTR BITS.
4170 015076 012704 000050      MOV      #40,,R4
4171 015102 004767 173034      JSR      PC,DELAY      ;DELAY FOR 40 MS TO ALLOW SIGNALS TO SETTLE.
4172
4173      ;+
4174      ; CHECK THAT THE SPECIFIED RI IS CLEAR.
4175 015106 010377 165066      MOV      R3,0CSRA      ;SET IND.ADR.REG FIELD TO SELECTED LINE.
4176 015112 032777 020000 165066  BIT      #BIT13,0FSLSA
4177 015120 001020      BNE      8$      ;GO REPORT RI IS BAD IF BIT IS NOT CLEAR.
4178
4179      ;+
4180      ; SET THE DTR FOR THE ASSOCIATED LINE.
4181      ; NOTE: IF THE ASSOCIATED LINE IS NOT SELECTED, DTR WILL NOT HAVE BEEN TESTED
4182      ; IN THE DTR TEST (ONLY AN ISSUE IN STAGGERED LOOPBACK).
4183 015122 116304 003750      MOV      TXRLNB(R3),R4      ;GET THE ASSOCIATED LINE NUMBER.
4184 015126 010477 165046      MOV      R4,0CSRA      ;SET IND.ADR.REG FIELD TO ASSOCIATED LINE.
4185 015132 052777 001000 165050  BIS      #BIT9,0LNCTRA      ;SET THE ASSOCIATED LINE DTR.
4186
4187      ;+
4188      ; CHECK THAT THE SELECTED LINE RI IS ACTIVE.
4189 015140 010377 165034      MOV      R3,0CSRA      ;SET IND.ADR.REG FIELD TO SELECTED LINE.
4190 015144 012701 150050      MOV      #150050,R1      ;PASS TIMEOUT OF 40 MILLI-SEC, AND BIT TO TEST.
4191 015150 016702 165032      MOV      FSLSA,R2      ;PASS THE ADDRESS OF THE REGISTER TO TEST.
4192 015154 004767 174174      JSR      PC,WAIBIS      ;WAIT FOR RI TO BECOME SET OR TIMEOUT.
4193 015160 103415      BCS      10$      ;SKIP ERROR REPORT IF SELECTED RI IS SET.
4194
4195
4196 015162      8$:      ;REPORT RI MODEM CONTROL SIGNAL DEFECTIVE ON LINE NN.
4197 015162 012767 017646 166622  MOV      #8102,,ERRNBR      ;SELECT THE ERROR NUMBER.
4198 015170 012767 006662 166620  MOV      #ER7801,ERRBLK      ;SELECT THE ERROR PRINT ROUTINE.
4199 015176 012701 005272      MOV      #EM8102,R1      ;SELECT THE ERROR MESSAGE.
4200 015202      ERROR
4201      TRAP      C$ERROR
4202
4203      ;+
4204      ; EXIT THE TEST IF EXTENDED ERROR REPORTING HAS NOT BEEN ENABLED
4205 015204 032767 000100 164750  BIT      #BIT06,OPTION
4206 015212 001474      BEQ      60$      ;EXIT WITH TEST FAILURE MESSAGE IF
4207      ; NO EXTENDED ERROR REPORTING HAS BEEN REQUESTED
4208      ; DURING THE SOFTWARE QUESTIONS.
4209 015214 005203      10$:      INC      R3      ;SELECT THE NEXT LINE NUMBER.
4210 015216 020327 000020      CMP      R3,#NUMLNS      ;TEST FOR ALL LINES DONE.
4211 015222 002712      BLT      6$      ;LOOP IF NOT ALL LINES DONE.
4212
4213      ;+
4214      ; SET UP A LOOP WHICH HANDLES ONE LINE PER ITERATION.
4215      ; THIS LOOP SETS ALL THE DTRS AND THEN CLEARS THEM INDIVIDUALLY AND WAITS FOR
4216      ; A RESPONSE ON THE SELECTED RI SIGNAL.
4217      ; THIS LOOP WILL CLEAR THE TX,IE AND RX,IE BITS IF THEY ARE SET.
4218 015224 005003      12$:      CLR      R3      ;CLEAR THE LINE COUNTER.
4219 015226 010300      MOV      R3,R0
4220 015230 006300      ASL      R0
4221 015232 036067 002310 164732  BIT      BITBL(R0),ACTLNS
4222 015240 001455      BEQ      16$      ;DON'T TEST IF NOT ACTIVE LINE.
4223
4224      ;+
4224      ; SET ALL THE DUT LNCTRL REGISTERS DTR BITS.

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4225
4226 015242 012700 001000      MOV    #BIT9,R0      ;SPECIFY THAT DTR BITS ARE TO BE SET.
4227 015246 012705 177777      MOV    #MAPLNS,R5     ;SPECIFY THAT ALL LNCTRLS ARE TO BE CHANGED.
4228 015252 004767 174152      JSR     PC,WTW,NC     ;SET ALL THE OUT DTR BITS.
4229 015256 012704 000050      MOV    #40.,R4
4230 015262 004767 172654      JSR     PC,DELAY      ;DELAY FOR 40 MS TO ALLOW SIGNALS TO SETTLE.
4231
4232      ; CHECK THAT THE SPECIFIED RI IS SET.
4233
4234 015266 010377 164706      MOV    R3,#CSRA      ;SET IND.ADR.REG FIELD TO SELECTED LINE.
4235 015272 032777 020000 164706 BIT    #BIT13,#FSLSA
4236 015300 001420            BEQ     141      ;GO REPORT RI IS BAD IF BIT IS NOT SET.
4237
4238      ; CLEAR THE DTR FOR THE ASSOCIATED LINE.
4239      ; NOTE: IF THE ASSOCIATED LINE IS NOT SELECTED, DTR WILL NOT HAVE BEEN TESTED
4240      ; IN THE DTR TEST (ONLY AN ISSUE IN STAGGERED LOOPBACK).
4241
4242 015302 116304 003750      MOV     TXRLNB(R3),R4 ;GET THE ASSOCIATED LINE NUMBER.
4243 015306 010477 164666      MOV    R4,#CSRA      ;SET IND.ADR.REG FIELD TO ASSOCIATED LINE.
4244 015312 042777 001000 164670 BIC    #BIT9,#LNCTRA  ;CLEAR THE ASSOCIATED LINE DTR.
4245
4246      ; CHECK THAT THE SELECTED LINE RI IS CLEAR.
4247
4248 015320 010377 164654      MOV    R3,#CSRA      ;SET IND.ADR.REG FIELD TO SELECTED LINE.
4249 015324 012701 150050      MOV    #150050,R1    ;PASS TIMEOUT OF 40 MILLI-SEC, AND BIT TO TEST.
4250 015330 016702 164652      MOV    FLSA,R2      ;PASS THE ADDRESS OF THE REGISTER TO TEST.
4251 015334 004767 173740      JSR     PC,WAIBIC    ;WAIT FOR RI TO BECOME CLEAR OR TIMEOUT.
4252 015340 103415            BCS     161      ;SKIP ERROR REPORT IF SELECTED RI IS CLEAR.
4253
4254 015342      141: ;REPORT RI MODEM CONTROL SIGNAL DEFECTIVE ON LINE NN.
4255 015342 012767 017647 166442 MOV    #B103.,ERRNBR  ;SELECT THE ERROR NUMBER.
4256 015350 012767 006662 166440 MOV    #ER7801,ERRBLK ;SELECT THE ERROR PRINT ROUTINE.
4257 015356 012701 005272      MOV    #EM8102,R1    ;SELECT THE ERROR MESSAGE.
4258 015362      ERROR
4259                                TRAP    C$ERROR
4260
4261      ; EXIT THE TEST IF EXTENDED ERROR REPORTING HAS NOT BEEN ENABLED
4262
4263 015364 032767 000100 164570 BIT    #BIT06,OPTION
4264 015372 001404            BEQ     601      ;EXIT WITH TEST FAILURE MESSAGE IF
4265                                ;NO EXTENDED ERROR REPORTING HAS BEEN REQUESTED
4266                                ;DURING THE SOFTWARE QUESTIONS.
4267
4267 015374 005203      161: INC     R3      ;SELECT THE NEXT LINE NUMBER.
4268 015376 020327 000020      CMP     R3,#NUMLNS  ;TEST FOR ALL LINES DONE.
4269 015402 002711      BLT     121      ;LOOP IF NOT ALL LINES DONE.
4270
4271 015404 005067 164612      601: CLR     CTRLCF      ;INDICATE THAT WE ARE NOT WITHIN A TEST.
4272 015410      SETPRI  #PRI07      ;DISABLE ALL INTERRUPTS.
4273                                MOV    #PRI07,R0
4274 015416                                TRAP    C$SPRI
4275                                ;
4276 015416                                ;
4277 015416                                ;
4278 015416                                ;
4279 015416                                ;
4280 015416                                ;
4281 015416                                ;
4282 015416                                ;
4283 015416                                ;
4284 015416                                ;
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4288 015416                                ;
4289 015416                                ;
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4294 015416                                ;
4295 015416                                ;
4296 015416                                ;
4297 015416                                ;
4298 015416                                ;
4299 015416                                ;
4300 015416                                ;
4301 015416                                ;
4302 015416                                ;
4303 015416                                ;
4304 015416                                ;
4305 015416                                ;
4306 015416                                ;
4307 015416                                ;
4308 015416                                ;
4309 015416                                ;
4310 015416                                ;
4311 015416                                ;
4312 015416                                ;
4313 015416                                ;
4314 015416                                ;
4315 015416                                ;
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4317 015416                                ;
4318 015416                                ;
4319 015416                                ;
4320 015416                                ;
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4331 015416                                ;
4332 015416                                ;
4333 015416                                ;
4334 015416                                ;
4335 015416                                ;
4336 015416                                ;
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4276 .SBTTL  HARDWARE TEST - CTSMS -
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4278 - CLEAR TO SEND MODEM SIGNAL TEST -
4279 *****
4280 THIS TEST VERIFIES THAT THE CTS MODEM STATUS SIGNAL IS WORKING
4281 CORRECTLY. IT WILL ONLY BE PERFORMED IF EITHER 25 PIN OR STAGGERED
4282 LOOPBACK IS SPECIFIED. THIS TEST USES THE LOOPED BACK RTS SIGNALS
4283 TO TEST THE CTS SIGNAL. THIS TEST IS PERFORMED ON ALL THE ACTIVE
4284 LINES.
4285 *****
4286
4287
4288 015420      BGNTST
4289 015420      T6::
4290
4291 ONLY PERFORM THIS TEST IF THE DUT IS IN EXTERNAL OR STAGGERED LOOPBACK MODE.
4292 015420 032767 000002 164546      BIT  #BIT1,LOPBCK  ;CHECK TYPE OF LOOPBACK MODE SELECTED.
4293 015426 001002      BNE  2$      ;
4294 015430 000167 000420      JMP  60$      ;EXIT THIS TEST IF IN INTERNAL LOOPBACK.
4295 015434      2$: SETPRI  #PRI05      ;ALLOW LTC INTERRUPTS.
4296 015434 012700 000240      MOV  #PRI05,R0
4297 015440 104441      TRAP  C$SPRI
4298 015442 000006      INUM  = INUM + 1      ;INCREMENT THE ASSEMBLY TIME TEST COUNTER.
4299 015442 012767 000006 164556      MOV  #INUM,ISTNUM      ;SET UP THE TEST NUMBER. (82)
4300 015450 012767 177777 164544      MOV  #-1,CTRLCF      ;INDICATE THAT WE ARE IN A TEST.
4301 015456 012767 000001 166324      MOV  #1,ERRTYP      ;SET ERROR TYPE IN ERROR TABLE.
4302 015464 012767 020011 166320      MOV  #8201,ERRNBR      ;SET THE FIRST ERROR NUMBER IN ERROR TABLE.
4303 015472 012767 005335 166314      MOV  #EM8201,ERRMSG      ;SET ERROR MESSAGE ADDRESS IN ERROR TABLE.
4304
4305 RESET THE DUT TO A KNOWN STATE, REMOVE STATUS CODES FROM THE FIFO.
4306 CLEAR TX AND RX INTERRUPT ENABLE BITS.
4307 THIS SUBROUTINE REPORTS ERROR >>>> 8201 <<<<.
4308
4309 015500 004767 172322      JSR  PC,CLNRST      ;RESET THE DUT.
4310 015504 103402      BCS  4$
4311 015506 000167 000342      JMP  60$      ;ABORT THE TEST IF FATAL ERROR FOUND IN RESET.
4312
4313 SET UP THE TX/RX ASSOCIATED LINE NUMBER TABLE.
4314
4315 4$: JSR  PC,ASLNTL      ;SET UP THE ASSOCIATED LINE TABLES.
4316
4317 SET UP A LOOP WHICH HANDLES ONE LINE PER ITERATION.
4318 THIS LOOP CLEARS ALL THE RTS'S AND THEN SETS THEM INDIVIDUALLY AND WAITS FOR
4319 A RESPONSE ON THE ASSOCIATED CTS SIGNAL.
4320 THIS LOOP WILL CLEAR THE TX.IE AND RX.IE BITS IF THEY ARE SET.
4321
4322 015516 005003      CLR  R3      ;CLEAR THE LINE COUNTER.
4323 015520 010300      6$: MOV  R3,R0
4324 015522 006300      ASL  R0
4325 015524 036067 002310 164440      BIT  BITBL(R0),ACTLNS
4326 015532 001454      BFEQ 10$      ;DON'T TEST IF NOT ACTIVE LINE.
4327
4328 CLEAR ALL THE DUT LNCTRL REGISTERS RTS BITS.
4329
4330 015534 005000      CLR  R0
4331 015536 012705 177777      MOV  #MAPLNS,R5      ;SPECIFY THAT ALL LNCTRL BITS TO BE CLEARED.
4332                                ;SPECIFY THAT ALL LNCTRLS ARE TO BE CHANGED.

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4330 015542 004767 173662      JSR    PC,WTWLN      ;CLEAR ALL THE DUT RTS BITS.
4331 015546 012704 000050      MOV    #40,,R4
4332 015552 004767 172364      JSR    PC,DELAY      ;DELAY FOR 40 MS TO ALLOW SIGNALS TO SETTLE.
4333
4334      ; CHECK THAT THE SPECIFIED CTS IS CLEAR.
4335
4336 015556 010377 164416      MOV    R3,BCSRA      ;SET IND.ADR.REG FIELD TO SELECTED LINE.
4337 015562 032777 004000 164416  BIT    #BIT11,BSLSA
4338 015570 001020          BNE    8$      ;GO REPORT CTS IS BAD IF BIT IS NOT CLEAR.
4339
4340      ; SET THE RTS FOR THE ASSOCIATED LINE.
4341      ; NOTE: IF THE ASSOCIATED LINE IS NOT SELECTED, RTS WILL NOT HAVE BEEN TESTED
4342      ; IN THE RTS TEST (ONLY AN ISSUE IN STAGGERED LOOPBACK).
4343
4344 015572 116304 003750      MOV    TXRLN(R3),R4      ;GET THE ASSOCIATED LINE NUMBER.
4345 015576 010477 164376      MOV    R4,BCSRA      ;SET IND.ADR.REG FIELD TO ASSOCIATED LINE.
4346 015602 052777 010000 164400  BIS    #BIT12,ALNCTRA      ;SET THE ASSOCIATED LINE RTS.
4347
4348      ; CHECK THAT THE SELECTED LINE CTS IS ACTIVE.
4349
4350 015610 010377 164364      MOV    R3,BCSRA      ;SET IND.ADR.REG FIELD TO SELECTED LINE.
4351 015614 012701 130050      MOV    #130050,R1      ;PASS TIMEOUT OF 40 MILLI-SEC. AND BIT TO TEST.
4352 015620 016702 164362      MOV    FLSA,R2      ;PASS THE ADDRESS OF THE REGISTER TO TEST.
4353 015624 004767 173524      JSR    PC,WAIBIS      ;WAIT FOR CTS TO BECOME SET OR TIMEOUT.
4354 015630 103415          BCS    10$      ;SKIP ERROR REPORT IF SELECTED CTS IS SET.
4355
4356
4357 015632          8$:      ;REPORT CTS MODEM CONTROL SIGNAL DEFECTIVE ON LINE NN.
4358 015632 012767 020012 166152  MOV    #8202,,ERRNBR      ;SELECT THE ERROR NUMBER.
4359 015640 012767 006662 166150  MOV    #ER7801,ERRBLK      ;SELECT THE ERROR PRINT ROUTINE.
4360 015646 012701 005401          MOV    #EM8202,R1      ;SELECT THE ERROR MESSAGE.
4361 015652          ERROR
4362          TRAP    C$ERROR
4363
4364      ; EXIT THE TEST IF EXTENDED ERROR REPORTING HAS NOT BEEN ENABLED
4365
4366 015654 032767 000100 164300  BIT    #BIT06,OPTION
4367 015662 001474          BEQ    60$      ;EXIT WITH TEST FAILURE MESSAGE IF
4368          ; NO EXTENDED ERROR REPORTING HAS BEEN REQUESTED
4369          ; DURING THE SOFTWARE QUESTIONS.
4370
4371 015664 005203 000020 10$:      INC    R3      ;SELECT THE NEXT LINE NUMBER.
4372 015672 020327          CMP    R3,#NUMLNS      ;TEST FOR ALL LINES DONE.
4373          BLT    6$      ;LOOP IF NOT ALL LINES DONE.
4374
4375      ; SET UP A LOOP WHICH HANDLES ONE LINE PER ITERATION.
4376      ; THIS LOOP SETS ALL THE RTSS AND THEN CLEARS THEM INDIVIDUALLY AND WAITS FOR
4377      ; A RESPONSE ON THE SELECTED CTS SIGNAL.
4378      ; THIS LOOP WILL CLEAR THE TX,IE AND RX,IE BITS IF THEY ARE SET.
4379
4379 015674 005003          CLR    R3      ;CLEAR THE LINE COUNTER.
4380 015676 010300 12$:      MOV    R3,R0
4381 015700 006300          ASL    R0
4382 015702 036067 002310 164262  BIT    BITBL(R0),ACTLNS
4383 015710 001455          BEQ    16$      ;DON'T TEST IF NOT ACTIVE LINE.
4384
4385      ; SET ALL THE DUT LNCTRL REGISTERS RTS BITS.

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4386
4387 015712 012700 010000      1-      MOV      #BIT12,R0      ;SPECIFY THAT RTS BITS ARE TO BE SET.
4388 015716 012705 177777      MOV      #MAPLNS,R5      ;SPECIFY THAT ALL LNCTRLS ARE TO BE CHANGED.
4389 015722 004767 173502      JSR      PC,WTW.LNC      ;SET ALL THE DUT RTS BITS.
4390 015726 012704 000050      MOV      #40.,R4
4391 015732 004767 172204      JSR      PC,DELAY      ;DELAY FOR 40 MS TO ALLOW SIGNALS TO SETTLE.
4392
4393      ;+
4394      ; CHECK THAT THE SPECIFIED CTS IS SET.
4395 015736 010377 164236      1-      MOV      R3,#CSRA      ;SET IND.ADR.REG FIELD TO SELECTED LINE.
4396 015742 032777 004000 164236      BIT      #BIT11,#FSLSA
4397 015750 001420      BEQ      14$      ;GO REPORT CTS IS BAD IF BIT IS NOT SET.
4398
4399      ;+
4400      ; CLEAR THE RTS FOR THE ASSOCIATED LINE.
4401      ; NOTE: IF THE ASSOCIATED LINE IS NOT SELECTED, RTS WILL NOT HAVE BEEN TESTED
4402      ; IN THE RTS TEST (ONLY AN ISSUE IN STAGGERED LOOPBACK).
4403 015752 116304 003750      1-      MOV      IXRLN8(R3),R4      ;GET THE ASSOCIATED LINE NUMBER.
4404 015756 010477 164216      MOV      R4,#CSRA      ;SET IND.ADR.REG FIELD TO ASSOCIATED LINE.
4405 015762 042777 010000 164220      BIC      #BIT12,#LNCTRA      ;CLEAR THE ASSOCIATED LINE RTS.
4406
4407      ;+
4408      ; CHECK THAT THE SELECTED LINE CTS IS CLEAR.
4409 015770 010377 164204      1-      MOV      R3,#CSRA      ;SET IND.ADR.REG FIELD TO SELECTED LINE.
4410 015774 012701 130050      MOV      #130050,R1      ;PASS TIMEOUT OF 40 MILLI-SEC, AND BIT TO TEST.
4411 016000 016702 164202      MOV      FSLSA,R2      ;PASS THE ADDRESS OF THE REGISTER TO TEST.
4412 016004 004767 173270      JSR      PC,WAIBIC      ;WAIT FOR CTS TO BECOME CLEAR OR TIMEOUT.
4413 016010 103415      BCS      16$      ;SKIP ERROR REPORT IF SELECTED CTS IS CLEAR.
4414
4415 016012      14$:      ;REPORT CTS MODEM CONTROL SIGNAL DEFECTIVE ON LINE NN.
4416 016012 012767 020013 165772      MOV      #8203.,ERRNBR      ;SELECT THE ERROR NUMBER.
4417 016020 012767 006662 165770      MOV      #ER7801,ERRBLK      ;SELECT THE ERROR PRINT ROUTINE.
4418 016026 012701 005401      MOV      #EM8202,R1      ;SELECT THE ERROR MESSAGE.
4419 016032      ERROR
4420      TRAP      C$ERROR
4421
4422      ;+
4423      ; EXIT THE TEST IF EXTENDED ERROR REPORTING HAS NOT BEEN ENABLED
4424 016034 032767 000100 164120      1-      BIT      #BIT06,OPTION
4425 016042 001404      BEQ      60$      ;EXIT WITH TEST FAILURE MESSAGE IF
4426      ; NO EXTENDED ERROR REPORTING HAS BEEN REQUESTED
4427      ; DURING THE SOFTWARE QUESTIONS.
4428 016044 005203      16$:      INC      R3      ;SELECT THE NEXT LINE NUMBER.
4429 016046 020327 000020      CMP      R3,#NUMLNS      ;TEST FOR ALL LINES DONE.
4430 016052 002711      BLT      12$      ;LOOP IF NOT ALL LINES DONE.
4431
4432 016054 005067 164142      60$:      CLR      CTRLCF      ;INDICATE THAT WE ARE NOT WITHIN A TEST.
4433 016060      SETPRI      #PRI07      ;DISABLE ALL INTERRUPTS.
4434      MOV      #PRI07,R0
4435 016066      TRAP      C$SPRI
4436 016066      ENDIST
4437 016066      L10024:
4438      TRAP      C$ETST

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4437 .SBTTL  HARDWARE TEST          - DCDMS -
4438 ;*****
4439 ;*
4440 ;*
4441 ;*   THIS TEST VERIFIES THAT THE DCD MODEM STATUS SIGNAL IS WORKING
4442 ;*   CORRECTLY.  IT WILL ONLY BE PERFORMED IF EITHER 25 PIN OR STAGGERED
4443 ;*   LOOPBACK IS SPECIFIED.  THIS TEST USES THE LOOPEO BACK RTS SIGNALS
4444 ;*   TO TEST THE DCD SIGNAL.  THIS TEST IS PERFORMED ON ALL THE ACTIVE
4445 ;*   LINES.
4446 ;*
4447 ;*****
4448 ;
4449 016070      BGNTST
016070
4450
4451 ;
4452 ; ONLY PERFORM THIS TEST IF THE DUT IS IN EXTERNAL OR STAGGERED LOOPBACK MODE.
4453 016070 032767 000002 164076      BIT    @BIT1,LOPBCK    ;CHECK TYPE OF LOOPBACK MODE SELECTED.
4454 016076 001002                      BNE     2$
4455 016100 000167 000420      JMP     60$    ;EXIT THIS TEST IF IN INTERNAL LOOPBACK.
4456 016104                      2$:    SETPRI  @PRI05    ;ALLOW LTC INTERRUPTS.
016104 012700 000240                      MOV     @PRI05,R0
016110 104441                      TRAP    C$SPRI
4457 000007                      TNUM = TNUM + 1    ;INCREMENT THE ASSEMBLY TIME TEST COUNTER.
4458 016112 012767 000007 164106      MOV     @TNUM,TSTNUM    ;SET UP THE TEST NUMBER. (83)
4459 016120 012767 177777 164074      MOV     @-1,CTRLCF    ;INDICATE THAT WE ARE IN A TEST.
4460 016126 012767 000001 165654      MOV     @1,ERRTYP    ;SET ERROR TYPE IN ERROR TABLE.
4461 016134 012767 020155 165650      MOV     @8301,ERRNBR    ;SET THE FIRST ERROR NUMBER IN ERROR TABLE.
4462 016142 012767 005445 165644      MOV     @EM8301,ERRMSG    ;SET ERROR MESSAGE ADDRESS IN ERROR TABLE.
4463 ;
4464 ; RESET THE DUT TO A KNOWN STATE, REMOVE STATUS CODES FROM THE FIFO.
4465 ; CLEAR TX AND RX INTERRUPT ENABLE BITS.
4466 ; THIS SUBROUTINE REPORTS ERROR >>>> 8301 <<<<.
4467 ;
4468 016150 004767 171652      JSR     PC,CLNRST    ;RESET THE DUT.
4469 016154 103402                      BCS     4$
4470 016156 000167 000342      JMP     60$    ;ABORT THE TEST IF FATAL ERROR FOUND IN RESET.
4471 ;
4472 ; SET UP THE TX/RX ASSOCIATED LINE NUMBER TABLE.
4473 ;
4474 016162 004767 171254      4$:    JSR     PC,ASLNTL    ;SET UP THE ASSOCIATED LINE TABLES.
4475 ;
4476 ; SET UP A LOOP WHICH HANDLES ONE LINE PER ITERATION.
4477 ; THIS LOOP CLEARS ALL THE RTSS AND THEN SETS THEM INDIVIDUALLY AND WAITS FOR
4478 ; A RESPONSE ON THE ASSOCIATED DCD SIGNAL.
4479 ; THIS LOOP WILL CLEAR THE TX.IE AND RX.IE BITS IF THEY ARE SET.
4480 ;
4481 016166 005003                      CLR     R3    ;CLEAR THE LINE COUNTER.
4482 016170 010300      6$:    MOV     R3,R0
4483 016172 006300                      ASL     R0
4484 016174 036067 002310 163770      BIT     BITTBL(R0),ACTLNS
4485 016202 001454                      BEQ     10$    ;DON'T TEST IF NOT ACTIVE LINE.
4486 ;
4487 ; CLEAR ALL THE DUT LNCTRL REGISTERS RTS BITS.
4488 ;
4489 016204 005000                      CLR     R0
4490 016206 012705 177777      MOV     @MAPLNS,R5    ;SPECIFY THAT ALL LNCTRL BITS TO BE CLEARED.
;                                ;SPECIFY THAT ALL LNCTRLS ARE TO BE CHANGED.

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4491 016212 004767 173212      JSR    PC,WTWNC      ;CLEAR ALL THE DUT RTS BITS.
4492 016216 012704 000050      MOV    #40.,R4
4493 016222 004767 171714      JSR    PC,DELAY      ;DELAY FOR 40 MS TO ALLOW SIGNALS TO SETTLE.
4494
4495      ;+
4496      ; CHECK THAT THE SPECIFIED DCD IS CLEAR.
4497 016226 010377 163746      MOV    R3,DCSRA      ;SET IND.ADR.REG FIELD TO SELECTED LINE.
4498 016232 032777 010000 163746 BIT    #BIT12,DFSLSA
4499 016240 001020              BNE    8$      ;GO REPORT DCD IS BAD IF BIT IS NOT CLEAR.
4500
4501      ;+
4502      ; SET THE RTS FOR THE ASSOCIATED LINE.
4503      ; NOTE: IF THE ASSOCIATED LINE IS NOT SELECTED, RTS WILL NOT HAVE BEEN TESTED
4504      ; IN THE RTS TEST (ONLY AN ISSUE IN STAGGERED LOOPBACK).
4505 016242 116304 003750      MOV    TXRLNB(R3),R4 ;GET THE ASSOCIATED LINE NUMBER.
4506 016246 010477 163726      MOV    R4,DCSRA      ;SET IND.ADR.REG FIELD TO ASSOCIATED LINE.
4507 016252 052777 010000 163730 BIS    #BIT12,DLNCTRA ;SET THE ASSOCIATED LINE RTS.
4508
4509      ;+
4510      ; CHECK THAT THE SELECTED LINE DCD IS ACTIVE.
4511 016260 010377 163714      MOV    R3,DCSRA      ;SET IND.ADR.REG FIELD TO SELECTED LINE.
4512 016264 012701 140050      MOV    #10050,R1     ;PASS TIMEOUT OF 40 MILLI-SEC, AND BIT TO TEST.
4513 016270 016702 163712      MOV    FLSA,R2      ;PASS THE ADDRESS OF THE REGISTER TO TEST.
4514 016274 004767 173054      JSR    PC,WAIBIS     ;WAIT FOR DCD TO BECOME SET OR TIMEOUT.
4515 016300 103415              BCS    10$      ;SKIP ERROR REPORT IF SELECTED DCD IS SET.
4516
4517
4518 016302              8$: ;REPORT DCD MODEM CONTROL SIGNAL DEFECTIVE ON LINE NN.
4519 016302 012767 020156 165502 MOV    #8302.,ERRNBR ;SELECT THE ERROR NUMBER.
4520 016310 012767 006662 165500 MOV    #ER7801,ERRBLK ;SELECT THE ERROR PRINT ROUTINE.
4521 016316 012701 005511      MOV    #EM8302,R1     ;SELECT THE ERROR MESSAGE.
4522 016322              ERROR
4523              104460
4524
4525
4526      ;+
4527 016324 032767 000100 163630 BIT    #BIT06,OPTION ;EXIT THE TEST IF EXTENDED ERROR REPORTING HAS NOT BEEN ENABLED
4528 016332 001474              BEQ    60$      ;EXIT WITH TEST FAILURE MESSAGE IF
4529
4530              ; NO EXTENDED ERROR REPORTING HAS BEEN REQUESTED
4531              ; DURING THE SOFTWARE QUESTIONS.
4532 016334 005203 10$: INC    R3      ;SELECT THE NEXT LINE NUMBER.
4533 016336 020327 000020      CMP    R3,#NUMLNS ;TEST FOR ALL LINES DONE.
4534 016342 002712              BLT    6$      ;LOOP IF NOT ALL LINES DONE.
4535
4536      ;+
4537      ; SET UP A LOOP WHICH HANDLES ONE LINE PER ITERATION.
4538      ; THIS LOOP SETS ALL THE RTSS AND THEN CLEARS THEM INDIVIDUALLY AND WAITS FOR
4539      ; A RESPONSE ON THE SELECTED DCD SIGNAL.
4540      ; THIS LOOP WILL CLEAR THE TX.IE AND RX.IE BITS IF THEY ARE SET.
4541 016344 005003 12$: CLR    R3      ;CLEAR THE LINE COUNTER.
4542 016346 010300      MOV    R3,R0
4543 016350 006300      ASL    R0
4544 016352 036067 002310 163612 BIT    BITTBL(R0),AULTNS
4545 016360 001455      BEQ    16$      ;DON'T TEST IF NOT ACTIVE LINE.
4546
4547      ;+
4548      ; SET ALL THE DUT LNCTRL REGISTERS RTS BITS.

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TRAP C\$ERROR


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4547
4548 016362 012700 010000      ; MOV    #BIT12,R0      ;SPECIFY THAT RTS BITS ARE TO BE SET.
4549 016366 012705 177777      ; MOV    #MAPLNS,R5     ;SPECIFY THAT ALL LNCTRLS ARE TO BE CHANGED.
4550 016372 004767 173032      ; JSR    PC,WTW,NC      ;SET ALL THE DUT RTS BITS.
4551 016376 012704 000050      ; MOV    #40,,R4
4552 016402 004767 171534      ; JSR    PC,DELAY       ;DELAY FOR 40 MS TO ALLOW SIGNALS TO SETTLE.
4553
4554      ; CHECK THAT THE SPECIFIED DCD IS SET.
4555
4556 016406 010377 163566      ; MOV    R3,#CSRA       ;SET IND.ADR.REG FIELD TO SELECTED LINE.
4557 016412 032777 010000 163566 ; BIT    #BIT12,#FSLSA
4558 016420 001420             ; BEQ     14$            ;GO REPORT DCD IS BAD IF BIT IS NOT SET.
4559
4560      ; CLEAR THE RTS FOR THE ASSOCIATED LINE.
4561      ; NOTE: IF THE ASSOCIATED LINE IS NOT SELECTED, RTS WILL NOT HAVE BEEN TESTED
4562      ; IN THE RTS TEST (ONLY AN ISSUE IN STAGGERED LOOPBACK).
4563
4564 016422 116304 003750      ; MOV8   TXRLNB(R3),R4   ;GET THE ASSOCIATED LINE NUMBER.
4565 016426 010477 163546      ; MOV    R4,#CSRA       ;SET IND.ADR.REG FIELD TO ASSOCIATED LINE.
4566 016432 042777 010000 163550 ; BIC    #BIT12,#LNCTRA ;CLEAR THE ASSOCIATED LINE RTS.
4567
4568      ; CHECK THAT THE SELECTED LINE DCD IS CLEAR.
4569
4570 016440 010377 163534      ; MOV    R3,#CSRA       ;SET IND.ADR.REG FIELD TO SELECTED LINE.
4571 016444 012701 140050      ; MOV    #140050,R1     ;PASS TIMEOUT OF 40 MILLI-SEC. AND BIT TO TEST.
4572 016450 016702 163532      ; MOV    FSLSA,R2       ;PASS THE ADDRESS OF THE REGISTER TO TEST.
4573 016454 004767 172620      ; JSR    PC,WAIBIC      ;WAIT FOR DCD TO BECOME CLEAR OR TIMEOUT.
4574 016460 103415             ; BCS     16$            ;SKIP ERROR REPORT IF SELECTED DCD IS CLEAR.
4575
4576 016462             14$: ;REPORT DCD MODEM CONTROL SIGNAL DEFECTIVE ON LINE NN.
4577 016462 012767 020157 165322 ; MOV    #8303,,ERRNBR  ;SELECT THE ERROR NUMBER.
4578 016470 012767 006662 165320 ; MOV    #ER7801,ERRBLK ;SELECT THE ERROR PRINT ROUTINE.
4579 016476 012701 005511      ; MOV    #EM8302,R1     ;SELECT THE ERROR MESSAGE.
4580 016502             ; ERROR
4581             016502 104460             TRAP    C$ERROR
4582
4583      ; EXIT THE TEST IF EXTENDED ERROR REPORTING HAS NOT BEEN ENABLED
4584
4585 016504 032767 000100 163450 ; BIT    #BIT06,OPTION  ;EXIT WITH TEST FAILURE MESSAGE IF
4586 016512 001404             ; BEQ     60$            ;NO EXTENDED ERROR REPORTING HAS BEEN REQUESTED
4587             ; DURING THE SOFTWARE QUESTIONS.
4588
4589 016514 005203             16$: ; INC     R3            ;SELECT THE NEXT LINE NUMBER.
4590 016516 020327 000020      ; CMP    R3,#NUMLNS     ;TEST FOR ALL LINES DONE.
4591 016522 002711             ; BLT     12$            ;LOOP IF NOT ALL LINES DONE.
4592
4593 016524 005067 163472      60$: ; CLR     CTRLCF        ;INDICATE THAT WE ARE NOT WITHIN A TEST.
4594 016530             ; SETPRI  #PRI07      ;DISABLE ALL INTERRUPTS.
4595             016530 012700 000340             MOV    #PRI07,R0
4596             016534 104441             TRAP    C$SPRI
4597
4598             ; ENDTST
4599             016536             L10025:
4600             016536 104401             TRAP    C$ETST

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4598 .SRTT1 HARDWARE TEST - DTRINT -
4599 *****
4600 ; - DATA TERMINAL READY SIGNAL INTERACTIONS TEST -
4601 ;
4602 ; THIS TEST VERIFIES THAT THE DTR SIGNAL (AND THE LOOPED BACK DSR AND
4603 ; RI STATUS SIGNALS) DO NOT INTERACT WITH ANY OTHER MODEM STATUS SIGNALS.
4604 ; IT WILL ONLY BE PERFORMED IF EITHER 25 PIN OR STAGGERED LOOPBACK IS
4605 ; SPECIFIED. THIS TEST IS PERFORMED ON ALL ACTIVE LINES.
4606 ;
4607 ; - *****
4608
4609 016540      BGNTST
      016540
4610
4611
4612
4613 016540 032767 000002 163426      BIT 0BIT1,LOPBCK ;CHECK TYPE OF LOOPBACK MODE SELECTED.
4614 016546 001002
4615 016550 000167 000400      BNE 2$
4616 016554      JMP 60$ ;EXIT THIS TEST IF IN INTERNAL LOOPBACK.
      016554 012700 000240      SETPRI 0PRI05 ;ALLOW LTC INTERRUPTS.
      016560 104441
      000010
4617      TNUM ** TNUM + 1 ;INCREMENT THE ASSEMBLY TIME TEST COUNTER.
4618 016562 012767 000010 163436      MOV 0TNUM,TSTNUM ;SET UP THE TEST NUMBER. (84)
4619 016570 012767 177777 163424      MOV 0-1,CTRLCF ;INDICATE THAT WE ARE IN A TEST.
4620 016576 012767 000001 165204      MOV 01,ERRTYP ;SET ERROR TYPE IN ERROR TABLE.
4621 016604 012767 020321 165200      MOV 08401,ERRNBR ;SET THE FIRST ERROR NUMBER IN ERROR TABLE.
4622 016612 012767 005555 165174      MOV 0EM8401,ERRMSG ;SET ERROR MESSAGE ADDRESS IN ERROR TABLE.
4623
4624 ; RESET THE DUT TO A KNOWN STATE, REMOVE STATUS CODES FROM THE FIFO.
4625 ; CLEAR TX AND RX INTERRUPT ENABLE BITS.
4626 ; THIS SUBROUTINE REPORTS ERROR >>>> 8401 <<<<.
4627 ;
4628 016620 004767 171202      JSR PC,CLNRST ;RESET THE DUT.
4629 016624 103402
4630 016626 000167 000322      BCS 4$
      JMP 60$ ;ABORT THE TEST IF FATAL ERROR FOUND IN RESET.
4631
4632 ; SET UP THE TX/RX ASSOCIATED LINE NUMBER TABLE.
4633 ;
4634 016632 004767 170604      JSR PC,ASLNTL ;SET UP THE ASSOCIATED LINE TABLES.
4635
4636 ; SET UP A LOOP WHICH HANDLES ONE LINE PER ITERATION.
4637 ; THIS LOOP CLEARS ALL THE DTRS AND THEN SETS THEM INDIVIDUALLY AND CHECKS
4638 ; FOR ANY RESPONSES ON SIGNALS OTHER THAN THE ASSOCIATED RI AND DSR SIGNALS.
4639 ; THIS LOOP WILL CLEAR THE TX,IE AND RX,IE BITS IF THEY ARE SET.
4640 ;
4641 016636 005003
4642 016640 010300
4643 016642 006300
4644 016644 036067 002310 163320      CLR R3 ;CLEAR THE LINE COUNTER.
4645 016652 001450      MOV R3,R0
      ASL R0
      BIT BITTBL(R0),ACTLNS
      BEQ 8$ ;DON'T TEST IF NOT ACTIVE LINE.
4646
4647 ; CLEAR ALL THE DUT LNCTRL REGISTERS DTR BITS.
4648 ;
4649 016654 005000
4650 016656 012705 177777
4651 016662 004767 172542      CLR R0 ;SPECIFY THAT ALL LNCTRL BITS TO BE CLEARED.
      MOV 0MAPLNS,R5 ;SPECIFY THAT ALL LNCTRLS ARE TO BE CHANGED.
      JSR PC,WTWLC ;CLEAR ALL THE DUT DTR BITS.

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4652 016666 012704 000050      MOV    #40.,R4
4653 016672 004767 171244      JSR    PC,DELAY      ;DELAY FOR 40 MS TO ALLOW SIGNALS TO SETTLE.
4654
4655      ; RECORD THE STATES OF THE MODEM STATUS SIGNALS.
4656      ;
4657 016676 004767 172120      JSR    PC,SAVMST      ;SAVE THE PRESENT MODEM STATUS STATES.
4658
4659      ; SET THE DTR FOR THE SELECTED LINE.
4660      ;
4661 016702 010377 163272      MOV    R3,#CSRA      ;SELECT THE SELECTED LINE IND.ADR.REG FIELD.
4662 016706 052777 001000 163274  BIS    #BIT9,#LNCTRA  ;SET THE SELECTED LINE DTR.
4663 016714 012704 000050      MOV    #40.,R4
4664 016720 004767 171216      JSR    PC,DELAY      ;ALLOW 40 MS FOR STATUS SIGNALS TO STABILIZE.
4665
4666      ; CHECK THE PRESENT OUT STAT REGISTER CONTENTS AGAINST PREVIOUS.
4667      ; IF ANY UNDESIRED CHANGES HAVE TAKEN PLACE, REPORT THE ERRORS.
4668      ;
4669 016724 116301 003750      MOVB   TXRLN8(R3),R1  ;SELECT SPECIAL TREATMENT FOR ASSOCIATED LINE.
4670 016730 012702 120000      MOV    #BIT15!BIT13,R2 ;IGNORE DSR AND RI ON ASSOCIATED LINE.
4671 016734 004767 171110      JSR    PC,CMPMST      ;COMPARE OLD AND NEW STAT CONTENTS.
4672 016740 103415      BCS    8$            ;SKIP ERROR REPORT IF NO DISCREPANCIES FOUND.
4673      ;REPORT INTERACTIONS FOUND BETWEEN DTR FOR LINE NN AND THE FOLLOWING SIGNALS:
4674 016742 012767 020322 165042  MOV    #8402.,ERRNBR  ;SELECT THE ERROR NUMBER.
4675 016750 012767 006720 165040  MOV    #ER8401,ERRBLK ;SELECT THE ERROR PRINT ROUTINE.
4676 016756 012701 005637      MOV    #EM8402,R1    ;SELECT THE DTR ERROR MESSAGES.
4677 016762      ERROR      ;ER8401 USES R1, R2, AND R3 VALUES.
4678      TRAP    C$ERROR
4679
4680      ; EXIT THE TEST IF EXTENDED ERROR REPORTING HAS NOT BEEN ENABLED
4681      ;
4682 016764 032767 000100 163170  BIT    #BIT06,OPTION  ;EXIT WITH TEST FAILURE MESSAGE IF
4683 016772 001470      BEQ    60$            ;NO EXTENDED ERROR REPORTING HAS BEEN REQUESTED
4684      ;DURING THE SOFTWARE QUESTIONS.
4685
4686      ; SELECT THE NEXT LINE AND LOOP IF NOT ALL POSSIBLE LINES HAVE BEEN HANDLED.
4687      ;
4688 016774 005203 8$: INC    R3            ;SELECT THE NEXT LINE NUMBER.
4689 016776 020327 000020      CMP    R3,#NUMLNS    ;TEST FOR ALL LINES DONE.
4690 017002 002716      BLT    6$            ;LOOP IF NOT ALL LINES DONE.
4691
4692      ; SET UP A LOOP WHICH HANDLES ONE LINE PER ITERATION.
4693      ; THIS LOOP SETS ALL THE DTRS AND THEN CLEARS THEM INDIVIDUALLY AND CHECKS
4694      ; FOR ANY RESPONSES ON SIGNALS OTHER THAN THE ASSOCIATED RI AND DSR SIGNALS.
4695      ; THIS LOOP WILL CLEAR THE TX,IE AND RX,IE BITS IF THEY ARE SET.
4696      ;
4697 017004 005003      CLR    R3            ;CLEAR THE LINE COUNTER.
4698 017006 010300 10$: MOV    R3,R0
4699 017010 006300      ASL    R0
4700 017012 036067 002310 163152  BIT    BITTBL(R0),ACTLNS
4701 017020 001451      BEQ    12$            ;DON'T TEST IF NOT ACTIVE LINE.
4702
4703      ; SET ALL THE OUT LNCTRL REGISTERS DTR BITS.
4704      ;
4705 017022 012700 001000      MOV    #BIT9,R0      ;SPECIFY THAT DTR BITS ARE TO BE SET.
4706 017026 012705 177777      MOV    #MAPLNS,R5    ;SPECIFY THAT ALL LNCTRLS ARE TO BE CHANGED.
4707 017032 004767 172372      JSR    PC,WTWLNC      ;SET ALL THE OUT DTR BITS.

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4708 017036 012704 000050      MOV    #40.,R4
4709 017042 004767 171074      JSR     PC,DELAY      ;DELAY FOR 40 MS TO ALLOW SIGNALS TO SETTLE.
4710                                ;+
4711                                ; RECORD THE STATES OF THE MODEM STATUS SIGNALS.
4712                                ; -
4713 017046 004767 171750      JSR     PC,SAVMST      ;SAVE THE PRESENT MODEM STATUS STATES.
4714                                ;+
4715                                ; CLEAR THE DTR FOR THE SELECTED LINE.
4716                                ; -
4717 017052 010377 163122      MOV     R3,0CSRA      ;SELECT THE SELECTED LINE IND.ADR.REG FIELD.
4718 017056 042777 001000 163124 BIC     #BIT9,0LNCTRA ;CLEAR THE SELECTED LINE DTR.
4719 017064 012704 000050      MOV     #40.,R4
4720 017070 004767 171046      JSR     PC,DELAY      ;ALLOW 40 MS FOR STATUS SIGNALS TO STABILIZE.
4721                                ;+
4722                                ; CHECK THE PRESENT DUT STAT REGISTER CONTENTS AGAINST PREVIOUS.
4723                                ; IF ANY UNDESIRED CHANGES HAVE TAKEN PLACE, REPORT THE ERRORS.
4724                                ; -
4725 017074 116301 003750      MOV     TXRLNB(R3),R1 ;SELECT SPECIAL TREATMENT FOR ASSOCIATED LINE.
4726 017100 012702 120000      MOV     #BIT15!BIT13,R2 ;IGNORE DSR AND RI ON ASSOCIATED LINE.
4727 017104 004767 170740      JSR     PC,CMPMST      ;COMPARE OLD AND NEW STAT CONTENTS.
4728 017110 103415              BCS     12$          ;SKIP ERROR REPORT IF NO DISCREPANCIES FOUND.
4729                                ;REPORT INTERACTIONS FOUND BETWEEN DTR FOR LINE NN AND THE FOLLOWING SIGNALS:
4730 017112 012767 020323 164672 MOV     #8403.,ERRNBR ;SELECT THE ERROR NUMBER.
4731 017120 012767 006720 164670 MOV     #ER8401,ERRBLK ;SELECT THE ERROR PRINT ROUTINE.
4732 017126 012701 005637      MOV     #EM8402,R1 ;SELECT THE DTR ERROR MESSAGES.
4733 017132              ERROR      ;ER8401 USES R1, R2, AND R3 VALUES.
4734 017132 104460              TRAP     C$ERROR
4735
4736                                ;+
4737                                ; EXIT THE TEST IF EXTENDED ERROR REPORTING HAS NOT BEEN ENABLED
4738                                ; -
4738 017134 032767 000100 163020 BIT     #BIT06,OPTION ;EXIT WITH TEST FAILURE MESSAGE IF
4739 017142 001404              BEQ     60$          ;NO EXTENDED ERROR REPORTING HAS BEEN REQUESTED
4740                                ; DURING THE SOFTWARE QUESTIONS.
4741
4742                                ;+
4743                                ; SELECT THE NEXT LINE AND LOOP IF NOT ALL POSSIBLE LINES HAVE BEEN HANDLED.
4744                                ; -
4745 017144 005203              12$: INC     R3          ;SELECT THE NEXT LINE NUMBER.
4746 017146 020327 000020      CMP     R3,#NUMLNS ;TEST FOR ALL LINES DONE.
4747 017152 002715              BLT     10$          ;LOOP IF NOT ALL LINES DONE.
4748
4749 017154 005067 163042      60$: CLR     CTRLCF      ;INDICATE THAT WE ARE NOT WITHIN A TEST.
4750 017160              SETPRI  #PRI07 ;DISABLE ALL INTERRUPTS.
4751 017160              MOV     #PRI07,R0
4752 017166              TRAP     C$SPRI
4752 017166              ENDTST
4752 017166 104401              L10026: TRAP     C$ETST

```

```

4754 .SBTTL HARDWARE TEST - RTSINT -
4755 ;*****
4756 ;* - REQUEST TO SEND SIGNAL INTERACTIONS TEST -
4757 ;*
4758 ;* THIS TEST VERIFIES THAT THE RTS SIGNAL (AND THE LOOPED BACK DCD AND CTS
4759 ;* STATUS SIGNALS) DO NOT INTERACT WITH ANY OTHER MODEM STATUS SIGNALS.
4760 ;* IT WILL ONLY BE PERFORMED IF EITHER 25 PIN OR STAGGERED LOOPBACK IS
4761 ;* SPECIFIED. THIS TEST IS PERFORMED ON ALL ACTIVE LINES.
4762 ;*
4763 ;*****
4764
4765 017170 BGNTST
4766 017170 T9::
4767
4768 ;*
4769 ; ONLY PERFORM THIS TEST IF THE DUT IS IN EXTERNAL OR STAGGERED LOOPBACK MODE.
4770 ;*
4771 ;*
4772 ;*
4773 ;*
4774 ;*
4775 ;*
4776 ;*
4777 ;*
4778 ;*
4779 ;*
4780 ;*
4781 ;*
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4793 ;*
4794 ;*
4795 ;*
4796 ;*
4797 ;*
4798 ;*
4799 ;*
4800 ;*
4801 ;*
4802 ;*
4803 ;*
4804 ;*
4805 ;*
4806 ;*
4807 ;*

```

```

4808 017316 012704 000050      MOV    #40.,R4
4809 017322 004767 170614      JSR    PC,DELAY      ;DELAY FOR 40 MS TO ALLOW SIGNALS TO SETTLE.
4810                                     ;+
4811                                     ; RECORD THE STATES OF THE MODEM STATUS SIGNALS.
4812                                     ; -
4813 017326 004767 171470      JSR    PC,SAVMST      ;SAVE THE PRESENT MODEM STATUS STATES.
4814                                     ;+
4815                                     ; SET THE RTS FOR THE SELECTED LINE.
4816                                     ; -
4817 017332 010377 162642      MOV    R3,@CSRA      ;SELECT THE SELECTED LINE IND.ADR.REG FIELD.
4818 017336 052777 010000 162644  BIS    @BIT12,@LNCTRA ;SET THE SELECTED LINE RTS.
4819 017344 012704 000050      MOV    #40.,R4
4820 017350 004767 170566      JSR    PC,DELAY      ;ALLOW 40 MS FOR STATUS SIGNALS TO STABILIZE.
4821                                     ;+
4822                                     ; CHECK THE PRESENT DUT STAT REGISTER CONTENTS AGAINST PREVIOUS.
4823                                     ; IF ANY UNDESIRED CHANGES HAVE TAKEN PLACE, REPORT THE ERRORS.
4824                                     ; -
4825 017354 116301 003750      MOV    TXRLN8(R3),R1 ;SELECT SPECIAL TREATMENT FOR ASSOCIATED LINE.
4826 017360 012702 014000      MOV    @BIT12!BIT11,R2 ;IGNORE DCD AND CTS ON ASSOCIATED LINE.
4827 017364 004767 170460      JSR    PC,CMPMST      ;COMPARE OLD AND NEW STAT CONTENTS.
4828 017370 103415              BCS    8$              ;SKIP ERROR REPORT IF NO DISCREPANCIES FOUND.
4829                                     ;REPORT INTERACTIONS FOUND BETWEEN RTS FOR LINE NN AND THE FOLLOWING SIGNALS:
4830 017372 012767 020466 164412  MOV    @8502.,ERRNBR ;SELECT THE ERROR NUMBER.
4831 017400 012767 006720 164410  MOV    @ER8401,ERRBLK ;SELECT THE ERROR PRINT ROUTINE.
4832 017406 012701 005744      MOV    @EM8502,R1 ;SELECT THE RTS ERROR MESSAGES.
4833 017412              ERROR      ;ER1901 USES R1, R2, AND R3 VALUES.
4834              017412 104460              TRAP    C$ERROR
4835
4836                                     ;+
4837                                     ; EXIT THE TEST IF EXTENDED ERROR REPORTING HAS NOT BEEN ENABLED
4838                                     ; -
4838 017414 032767 000100 162540  BIT    @BIT06,OPTION ;EXIT WITH TEST FAILURE MESSAGE IF
4839 017422 001470              BEQ    60$              ;NO EXTENDED ERROR REPORTING HAS BEEN REQUESTED
4840                                     ; DURING THE SOFTWARE QUESTIONS.
4841                                     ;+
4842                                     ; SELECT THE NEXT LINE AND LOOP IF NOT ALL POSSIBLE LINES HAVE BEEN HANDLED.
4843                                     ; -
4844 017424 005203              INC    R3              ;SELECT THE NEXT LINE NUMBER.
4845 017426 020327 000020      CMP    R3,@NUMLNS ;TEST FOR ALL LINES DONE.
4846 017432 002716              BLT    6$              ;LOOP IF NOT ALL LINES DONE.
4847                                     ;+
4848                                     ; SET UP A LOOP WHICH HANDLES ONE LINE PER ITERATION.
4849                                     ; THIS LOOP SETS ALL THE RTSS AND THEN CLEARS THEM INDIVIDUALLY AND CHECKS
4850                                     ; FOR ANY RESPONSES ON SIGNALS OTHER THAN THE ASSOCIATED DCD AND CTS SIGNALS.
4851                                     ; THIS LOOP WILL CLEAR THE TX,IE AND RX,IE BITS IF THEY ARE SET.
4852                                     ; -
4853 017434 005003              CLR    R3              ;CLEAR THE LINE COUNTER.
4854 017436 010300      10$:      MOV    R3,R0
4855 017440 006300              ASL    R0
4856 017442 036067 002310 162522  BIT    BITTR1(R0),ACTLNS
4857 017450 001451              BEQ    12$              ;DON'T TEST IF NOT ACTIVE LINE.
4858                                     ;+
4859                                     ; SET ALL THE DUT LNCTRL REGISTERS RTS BITS.
4860                                     ; -
4861 017452 012700 010000      MOV    @BIT12,R0 ;SPECIFY THAT RTS BITS ARE TO BE SET.
4862 017456 012705 177777      MOV    @MAPLNS,R5 ;SPECIFY THAT ALL LNCTRLS ARE TO BE CHANGED.
4863 017462 004767 171742      JSR    PC,WTWLNK ;SET ALL THE DUT RTS BITS.

```

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4864 017466 012704 000050      MOV    #40.,R4
4865 017472 004767 170444      JSR    PC,DELAY      ;DELAY FOR 40 MS TO ALLOW SIGNALS TO SETTLE.
4866                               ;+
4867                               ; RECORD THE STATES OF THE MODEM STATUS SIGNALS.
4868                               ; -
4869 017476 004767 171320      JSR    PC,SAVMST      ;SAVE THE PRESENT MODEM STATUS STATES.
4870                               ;+
4871                               ; CLEAR THE RTS FOR THE SELECTED LINE.
4872                               ; -
4873 017502 010377 162472      MOV    R3,0CSRA      ;SELECT THE SELECTED LINE IND.ADR.REG FIELD.
4874 017506 042777 010000 162474 BIC    #BIT12,0LNCTRA ;CLEAR THE SELECTED LINE RTS.
4875 017514 012704 000050      MOV    #40.,R4
4876 017520 004767 170416      JSR    PC,DELAY      ;ALLOW 40 MS FOR STATUS SIGNALS TO STABILIZE.
4877                               ;+
4878                               ; CHECK THE PRESENT DUT STAT REGISTER CONTENTS AGAINST PREVIOUS.
4879                               ; IF ANY UNDESIRED CHANGES HAVE TAKEN PLACE, REPORT THE ERRORS.
4880                               ; -
4881 017524 116301 003750      MOV    TXRLNB(R3),R1 ;SELECT SPECIAL TREATMENT FOR ASSOCIATED LINE.
4882 017530 012702 014000      MOV    #BIT12!BIT11,R2 ;IGNORE DCD AND CTS ON ASSOCIATED LINE.
4883 017534 004767 170310      JSR    PC,CMPMST      ;COMPARE OLD AND NEW STAT CONTENTS.
4884 017540 103415              BCS    12$          ;SKIP ERROR REPORT IF NO DISCREPANCIES FOUND.
4885                               ;REPORT INTERACTIONS FOUND BETWEEN RTS FOR LINE NN AND THE FOLLOWING SIGNALS:
4886 017542 012767 020467 164242 MOV    #8503.,ERRNBR ;SELECT THE ERROR NUMBER.
4887 017550 012767 006720 164240 MOV    #ER8401,ERRBLK ;SELECT THE ERROR PRINT ROUTINE.
4888 017556 012701 005744      MOV    #EM8502,R1 ;SELECT THE RTS ERROR MESSAGES.
4889 017562              ERROR      ;ER1901 USES R1, R2 AND R3 VALUES.
4890              017562 104460              TRAP    C$ERROR
4891
4892                               ;+
4893                               ; EXIT THE TEST IF EXTENDED ERROR REPORTING HAS NOT BEEN ENABLED
4894                               ; -
4894 017564 032767 000100 16237$ BIT    #BIT06,OPTION ;EXIT WITH TEST FAILURE MESSAGE IF
4895 017572 001404              BEQ    60$          ;NO EXTENDED ERROR REPORTING HAS BEEN REQUESTED
4896                               ; DURING THE SOFTWARE QUESTIONS.
4897                               ;+
4898                               ; SELECT THE NEXT LINE AND LOOP IF NOT ALL POSSIBLE LINES HAVE BEEN HANDLED.
4899                               ; -
4900 017574 005203              12$: INC    R3          ;SELECT THE NEXT LINE NUMBER.
4901 017576 020327 000020      CMP    R3,#NUMLNS ;TEST FOR ALL LINES DONE.
4902 017602 002715              BLT    10$          ;LOOP IF NOT ALL LINES DONE.
4903
4904 017604 005067 162412      60$: CLR    CTRLCF      ;INDICATE THAT WE ARE NOT WITHIN A TEST.
4905 017610              SETPRI #PRI07 ;DISABLE ALL INTERRUPTS.
4906              017610 012700 000340              MOV    #PRI07,R0
4907              017614 104441              TRAP    C$SPRI
4906
4907 017616              ENDTST
4907 017616
4907 017616 104401              L10027: TRAP    C$ETST

```

```

4909 .SBTTL HARDWARE TEST - REPBMP -
4910 ;* *****
4911 ;* - REPORT ANY BMP CODES IN THE QUEUE -
4912 ;* THIS IS A PSEUDO-TEST USED TO REPORT ANY BMP CODES THAT WERE FOUND
4913 ;* IN THE OUT'S FIFO DURING PREVIOUS TEST, AND LOGGED IN THE BMP CODE
4914 ;* QUEUE.
4915 ;* IT IS UNLIKELY THAT RUNNING THIS PSEUDO-TEST ALONE WILL PRODUCE ANY
4916 ;* ERROR REPORTS.
4917 ;* *****
4918 ;* *****
4919 017620 BGNTST
017620
4920 TNUM == TNUM + 1 ;INCREMENT THE ASSEMBLY TIME TEST COUNTER.
4921 017620 012767 000012 162400 MOV #TNUM,ISTNUM ;SET UP THE TEST NUMBER. (93)
4922 017626 012767 177777 162366 MOV #1,CTRLCF ;INDICATE THAT WE ARE IN A TEST.
4923 017634 016702 162510 MOV #BMPQCB,R2 ;GET THE CONTENTS OF THE POINTER.
4924 017640 012703 002352 MOV #BMPQCB,R3 ;GET THE START ADDRESS OF THE QUEUE.
4925 017644 020203 CMP R2,R3 ;SEE IF THE POINTER HAS MOVED FROM THE BASE.
4926 017646 001411 BEQ 60$ ;EXIT NO CODES IN THE QUEUE.
4927
4928 ;* THERE IS AT LEAST ONE BMP CODE IN THE QUEUE. REPORT THE ERROR.
4929 ;*
4930 ;REPORT ERROR BMP CODE FOUND IN TEST NN, BMP CODE:NNNNNN"
4931
4932 017650 012701 006124 MOV #EM9304,R1 ;PASS THE FIRST MESSAGE TO BE REORTED.
4933 017654 012701 006124 ERDF 9301,EM9301,ER9301 ;***** ERROR #9301 *****
017654 104455 TRAP C1ERDF
017656 022125 .WORD 9301
017660 005750 .WORD EM9301
017662 007176 .WORD ER9301
4934
4935 017664 012767 002352 162456 MOV #BMPQCB,BMPQCB ;SET POINTER BACK TO THE BEGINING OF THE QUE.
4936
4937 017672 005067 162324 60$: CLR CTRLCF ;INDICATE THAT WE ARE NOT WITHIN A TEST.
4938 017676 017676 ENDTST
017676 104401 L10030: TRAP C1ETST

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4951

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4954

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4958

4959

4960

4961

4962 017700

017700 000016

017702

4963

4973

4974 017702

017702 000031

017704 017736

017706 160000

017710 177776

4975

4976 017712

017712 001032

017714 017754

017716 177777

017720 000000

017722 177777

4977

4978 017724

017724 002032

017726 020002

017730 000377

017732 000001

017734 000003

4979

4980

4981 017736

017736

4982

4989

4990 017736

017741 040

017744 104

017747 123

017752 040

4991 017754

017757 111

017762 040

017765 116

017770 102

017773 040

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D10

	017776	120	072	040
	020001	000		
4992	020002	124	131	120
	020005	105	040	117
	020010	106	040	114
	020013	117	117	120
	020016	102	101	103
	020021	113	040	050
	020024	061	075	111
	020027	116	124	105
	020032	122	116	101
	020035	114	054	040
	020040	062	075	110
	020043	063	060	062
	020046	071	040	117
	020051	122	040	110
	020054	063	062	067
	020057	067	054	040
	020062	063	075	110
	020065	063	062	065
	020070	051	072	000

HWPTQ3: .ASCIZ /TYPE OF LOOPBACK (1=INTERNAL, 2=H3029 OR H3277, 3=H325):/

4993
4994

.EVEN


```

5003
5004
5005          .SBTTL  SOFTWARE PARAMETER CODING SECTION
5006
5007          ;**
5008          ; THE SOFTWARE PARAMETER CODING SECTION CONTAINS MACROS
5009          ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
5010          ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
5011          ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
5012          ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
5013          ; WITH THE OPERATOR.
5014          ;--
5015
5016          BGNSFT
5017
5026          ;UNIT NUMBER PRINTOUT QUESTION:
5027          GPRML  SWPTQ1,0,20,YES
5028
5029          ;EXTENDED ERROR REPORTING QUESTION:
5030          GPRML  SWPTQ2,0,100,YES
5031
5032          ;*
5033          ; IF EXTENDED ERROR REPORTING IS NOT REQUIRED THEN SKIP THE NEXT QUESTION.
5034          ;*
5035          XFERF  ENDD
5036
5037          ;NUMBER OF INDIVIDUAL DATA ERRORS TO REPORT ON A LINE QUESTION:
5038          GPRMD  SWPTQ3,2,D,177777,0,177777,YES
5039
5040          .EVEN
5041
5042          ENDD:  ENDSFT
5043
5044          L10032:
5045
5046          SWPTQ1:  .ASCIZ  /REPORT UNIT NUMBER AS EACH UNIT IS TESTED: /
5047
5048          122      105      120
5049          117      122      124
5050          040      125      116
5051          111      124      040
5052          116      125      115
5053          102      105      122
5054          040      101      123
5055          040      105      101
5056          103      110      040

```

	020161	125	116	111
	020164	124	040	111
	020167	123	040	124
	020172	105	123	124
	020175	105	104	072
	020200	040	000	
5050	020202	105	130	124
	020205	105	116	104
	020210	105	104	040
	020213	105	122	122
	020216	117	122	040
	020221	122	105	120
	020224	117	122	124
	020227	111	116	107
	020232	072	040	000
5051	020235	116	125	115
	020240	102	105	122
	020243	040	117	106
	020246	040	111	116
	020251	104	111	126
	020254	111	104	125
	020257	101	114	040
	020262	104	101	124
	020265	101	040	105
	020270	122	122	117
	020273	122	123	040
	020276	124	117	040
	020301	122	105	120
	020304	117	122	124
	020307	040	117	116
	020312	040	101	040
	020315	114	111	116
	020320	105	072	040
	020323	000		

5052

SWPTQ2: .ASCIZ /EXTENDED ERROR REPORTING: /

SWPTQ3: .ASCIZ /NUMBER OF INDIVIDUAL DATA ERRORS TO REPORT ON A LINE: /

.EVEN

```
5061
5062
5063 020324          $PATCH::
5064 020324          ,BLKW  24
5065
5072
5073
5074
5075
5076 020374          LASTAD
                                .EVEN
                                .WORD  0
                                .WORD  0
                                020374 000000
                                020376 000000
                                020400
5077 020400          L$LAST::
5078                                ENDMOD
5079
5080
5081
5082
5083
5084
5085          000001          .END
```

ACTLNS 002172 G	C\$AUTO= 000061	EDROP 012512	EVL = 000004 G	IES. T 002230 G
ADR = 000020 G	C\$BRK = 000022	EF.CON= 000036 G	EXOERR 002224 G	ISR = 000100 G
ADRPTR 010010 G	C\$BSEG= 000004	EF.NEW= 000035 G	E\$END = 002100	IXE = 004000 G
ALTFLD 007370 G	C\$BSUB= 000002	EF.PWR= 000034 G	E\$LOAD= 000035	I\$AU = 000041
ASLNTL 007442 G	C\$CEFG= 000045	EF.RES= 000037 G	FDATA 002206 G	I\$AUTO= 000041
ASSEMB= 000010	C\$CLCK= 000062	EF.STA= 000040 G	F\$ATO = 000006 G	I\$CLN = 000041
BCOUNT 002274 G	C\$CLEA= 000012	EF0503 004116 G	F\$LSA = 002206 G	I\$DU = 000041
BITTBL 002310 G	C\$CLOS= 000035	EF1601 004123 G	F\$LSO = 000006 G	I\$HRD = 000041
BIT0 = 000001 G	C\$CLP1= 000006	EF7801 004155 G	F\$AU = 000015	I\$INIT= 000041
BIT00 = 000001 G	C\$CVEC= 000036	EF8401 004213 G	F\$AUTO= 000020	I\$MOD = 000041
BIT01 = 000002 G	C\$DCLN= 000044	EF8402 004305 G	F\$BGN = 000040	I\$MSG = 000041
BIT02 = 000004 G	C\$DODU= 000051	EF9301 004423 G	F\$CLEA= 000007	I\$PROT= 000040
BIT03 = 000010 G	C\$DRPT= 000024	EF9302 004501 G	F\$DU = 000016	I\$PTAB= 000041
BIT04 = 000020 G	C\$DU = 000053	EM0101 010376 G	F\$END = 000041	I\$PWR = 000041
BIT05 = 000040 G	C\$EDIT= 000003	EM0102 010462 G	F\$HARD= 000004	I\$RPT = 000041
BIT06 = 000100 G	C\$ERDF= 000055	EM0103 004632 G	F\$HW = 000013	I\$SEG = 000041
BIT07 = 000200 G	C\$ERHR= 000056	EM1601 004670 G	F\$INIT= 000006	I\$SETU= 000041
BIT08 = 000400 G	C\$ERRO= 000060	EM7801 004753 G	F\$JMP = 000050	I\$SFT = 000041
BIT09 = 001000 G	C\$ERSF= 000054	EM7802 005015 G	F\$MOD = 000000	I\$SRV = 000041
BIT1 = 000002 G	C\$ERSO= 000057	EM7901 005035 G	F\$MSG = 000011	I\$SUB = 000041
BIT10 = 002000 G	C\$ESCA= 000010	EM7902 005077 G	F\$PROT= 000021	I\$TST = 000041
BIT11 = 004000 G	C\$ESEG= 000005	EM8001 005117 G	F\$PWR = 000017	J\$JMP = 000167
BIT12 = 010000 G	C\$ESUB= 000003	EM8002 005163 G	F\$RPT = 000012	LGRP1M 002232 G
BIT13 = 020000 G	C\$ETST= 000001	EM8101 005227 G	F\$SEG = 000003	LGRP2M 002234 G
BIT14 = 040000 G	C\$EXIT= 000032	EM8102 005272 G	F\$SOFT= 000005	LNCTRA 002210 G
BIT15 = 100000 G	C\$GETB= 000026	EM8201 005335 G	F\$SRV = 000010	LNCTRO= 000010 G
BIT2 = 000004 G	C\$GETW= 000027	EM8202 005401 G	F\$SUB = 000002	LOE = 040000 G
BIT3 = 000010 G	C\$GMAN= 000043	EM8301 005445 G	F\$SW = 000014	LOPBCK 002174 G
BIT4 = 000020 G	C\$GPHR= 000042	EM8302 005511 G	F\$TEST= 000001	LOT = 000010 G
BIT5 = 000040 G	C\$GPLO= 000030	EM8401 005555 G	GETPRM 012170	LPCSLT= 000036 G
BIT6 = 000100 G	C\$GPRI= 000040	EM8402 005637 G	G\$CNT0= 000200	LPRA = 002204 G
BIT7 = 000200 G	C\$INIT= 000011	EM8403 005643 G	G\$DELM= 000372	LPRO = 000004 G
BIT8 = 000400 G	C\$INLP= 000020	EM8404 005647 G	G\$DISP= 000003	L\$ACP 002110 G
BIT9 = 001000 G	C\$MANI= 000050	EM8405 005652 G	G\$EXCP= 000400	L\$APT 002036 G
BMPCQB 002352 G	C\$MEM = 000031	EM8406 005656 G	G\$HILI= 000002	L\$AU 012520 G
BMPCQE 002552 G	C\$MSG = 000023	EM8501 005662 G	G\$LOLI= 000001	L\$AUT 002070 G
BMPCQP 002350 G	C\$OPEN= 000034	EM8502 005744 G	G\$NO = 000000	L\$AUTO 012370 G
BOE = 000400 G	C\$PNTB= 000014	EM9301 005750 G	G\$OFFS= 000400	L\$CCP 002106 G
BRLEVL 002175 G	C\$PNTF= 000017	EM9302 006027 G	G\$OFISI= 000376	L\$CLEA 012372 G
BUFBAS 002650 G	C\$PNTS= 000016	EM9303 006057 G	G\$PRMA= 000001	L\$CO 002032 G
BUFEND 003650 G	C\$PNTX= 000015	EM9304 006124 G	G\$PRMD= 000002	L\$DEPO 002011 G
BUFMID 003250 G	C\$QIO = 000377	ENDD 020126	G\$PRML= 000000	L\$DESC 004070 G
BUFPTR 002220 G	C\$RDBU= 000007	ENDETB 003650 G	G\$RADA= 000140	L\$DESP 002076 G
BUF3QT 003450 G	C\$REFG= 000047	ENDIT 012354	G\$RADB= 000000	L\$DEVP 002060 G
CALMSL 007552 G	C\$RESE= 000033	ERCNTB 002554 G	G\$RADD= 000040	L\$DISP 002124 G
CKTRAP 007776 G	C\$REVI= 000003	ERLTBL 002650 G	G\$RADL= 000120	L\$DLY 002116 G
CLKBRL 002260 G	C\$RFLA= 000021	ERRBLK 004016 G	G\$RADO= 000020	L\$DTP 002040 G
CLKCSR 002256 G	C\$RPT = 000025	ERRMSG 004014 G	G\$XFER= 000004	L\$DTYP 002034 G
CLKHRZ 002264 G	C\$SEFG= 000046	ERRNBR 004012 G	G\$YES = 000010	L\$DU 012410 G
CLKINT 011460 G	C\$SPRI= 000041	ERRTYP 004010 G	HELP = 000000	L\$DUT 002072 G
CLKVEC 002262 G	C\$SVEC= 000037	ERSMRF 002552 G	HOE = 100000 G	L\$DVTY 004060 G
CLNRST 010026 G	C\$TPRI= 000013	ER0101 006200 G	HWPTQ1 017736	L\$EF 002052 G
CMPMST 010050 G	DELAY 010142 G	ER0503 006532 G	HWPTQ2 017754	L\$ENVI 002044 G
CSRA = 002200 G	DFPTBL 002152 G	ER1603 006570 G	HWPTQ3 020002	L\$ERRT 004010 G
CSRO = 000000 G	DIAGMC= 000000	ER7801 006662 G	IBE = 010000 G	L\$ETP 002102 G
CTRLCF 002222 G	DRADRT 002200 G	ER8401 006720 G	IDU = 000040 G	L\$EXP1 002046 G
C\$AU = 000052	DROP 012434	ER9301 007176 G	IER = 020000 G	L\$EXP4 002064 G

L\$EXP5	002066	G	L10017	013006	PNT	=	001000	G	SWPTQ1	020126	T\$SUBN	=	000000				
L\$HARD	017702	G	L10020	013542	PREGRT	004042	G	SWPTQ2	020202	T\$TAGL	=	177777					
L\$HIME	002120	G	L10021	014276	PREG05	004020		SWPTQ3	020235	T\$TAGN	=	010033					
L\$HPCP	002016	G	L10022	014746	PRI	=	002000	G	S\$LSYM	010000	T\$TEMP	=	000000				
L\$HPTP	002022	G	L10023	015416	PRI00	=	000000	G	TIMER1	002266	G	T\$TEST	=	000012			
L\$HW	002152	G	L10024	016066	PRI01	=	000040	G	TIMER2	002270	G	T\$TSTM	=	177777			
L\$ICP	002104	G	L10025	016536	PRI02	=	000100	G	TIMER3	002272	G	T\$TSTS	=	000001			
L\$INIT	011566	G	L10026	017166	PRI03	=	000140	G	TNUM	=	000012	G	T\$AU	=	010016		
L\$LADP	002026	G	L10027	017616	PRI04	=	000200	G	TP4FLG	002252	G	T\$AUT	=	010013			
L\$LAST	020400	G	L10030	017676	PRI05	=	000240	G	TP4RTN	011530	G	T\$CLE	=	010014			
L\$LOAD	002100	G	L10031	017736	PRI06	=	000300	G	TP4VEC	002250	G	T\$DU	=	010015			
L\$LUN	002074	G	L10032	020126	PRI07	=	000340	G	TSTNUM	002226	G	T\$HAR	=	010031			
L\$MREV	002050	G	MAPLNS	=	177777	G	PUFIFO	010560	G	TXAD1A	002212	G	T\$HW	=	010000		
L\$NAME	002000	G	MFUNIT	004601	G	RBUFA	002202	G	TXAD10	=	000012	G	T\$INI	=	010012		
L\$PRIO	002042	G	MMENAB	002306	G	RBUFO	=	000002	G	TXAD2A	002214	G	T\$MSG	=	010007		
L\$PROT	011560	G	MMPRES	002304	G	RESETT	010642	G	TXAD20	=	000014	G	T\$PRO	=	010011		
L\$PRT	002112	G	MMSRO	002302	G	RXBDTX	=	000030	G	TXBFCA	002216	G	T\$RPT	=	010010		
L\$REPP	002062	G	MSG1	006316	G	RXBETX	=	000020	G	TXBFCA	000016	G	T\$SOF	=	010032		
L\$REV	002010	G	MSG2	006374	G	RXBFUL	=	000100	G	TXINTC	002244	G	T\$SW	=	010001		
L\$RPT	011552	G	MSG3	006453	G	RXINTC	002240	G	TXINTF	002246	G	T\$TES	=	010030			
L\$SOFT	020076	G	MSLCNT	002300	G	RXINTF	002242	G	TXRLNB	003750	G	T1	=	012526	G		
L\$SPC	002056	G	MSLGET	010202	G	RXTIMO	=	000002	G	TXRLNE	003770	G	T10	=	017620	G	
L\$SPCP	002020	G	MSLOOP	010316	G	RXTMA	002202	G	TXRXLB	003710	G	T2	=	013010	G		
L\$SPTP	002024	G	MSTICK	002276	G	RXVECA	002166	G	TXRXLE	003750	G	T3	=	013544	G		
L\$STA	002030	G	NDERPT	002164	G	R0SLOT	=	000002	G	TXVECA	002170	G	T4	=	014300	G	
L\$SW	002162	G	NEWPAS	012150		R1SLOT	=	000004	G	T\$ARGC	=	000002	T5	=	014750	G	
L\$TEST	002114	G	NEWRES	012142		R2SLOT	=	000006	G	T\$CODE	=	001052	T6	=	015420	G	
L\$TIML	002014	G	NEWSTA	011632		R3SLOT	=	000010	G	T\$ERRN	=	022125	T7	=	016070	G	
L\$UNIT	002012	G	NUMLNS	=	000020	G	R4SLOT	=	000012	G	T\$EXCP	=	000000	T8	=	016540	G
L10000	002160		OOPS	010332	G	R5SLOT	=	000014	G	T\$FLAG	=	000050	T9	=	017170	G	
L10001	002166		OPTION	002162	G	SAVBMP	010754	G	T\$GMAN	=	000000	UAM	=	000200	G		
L10002	006314		O\$APTS	=	000000	SAVMST	011022	G	T\$HILI	=	177777	UNITN	=	002176	G		
L10003	006566		O\$AU	=	000000	SFPTBL	002162	G	T\$LAST	=	000001	UNSDIV	=	011144	G		
L10004	006660		O\$BGMR	=	000001	SKPSTS	011066	G	T\$LOLI	=	000000	WAIBIC	=	011300	G		
L10005	006716		O\$BGNS	=	000001	STGTRB	003770	G	T\$LSYM	=	010000	WAIBIS	=	011354	G		
L10006	007174		O\$DU	=	000001	STSTB	002610	G	T\$LTNO	=	000012	WORD1	=	002254	G		
L10007	007366		O\$ERRT	=	000001	STSTE	002650	G	T\$NEST	=	177777	WTWLNC	=	011430	G		
L10010	011556		O\$GNSW	=	000001	SVCGBL	=	000000	T\$NSO	=	000000	X\$ALWA	=	000000			
L10012	012366		O\$POIN	=	000001	SVCINS	=	000001	T\$NS1	=	000005	X\$FALS	=	000040			
L10013	012370		O\$SETU	=	000000	SVCSUB	=	000001	T\$PTNU	=	000000	X\$OFFS	=	000400			
L10014	012406		PASCNT	002236	G	SVCTAG	=	000001	T\$SAVL	=	177777	X\$TRUE	=	000020			
L10015	012516		PCSL0T	=	000016	G	SVCTST	=	000001	T\$SEGL	=	177777	\$PATCH	=	020324	G	
L10016	012524																

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ERRORS DETECTED: 0

VIRTUAL MEMORY USED: 28661 WORDS (112 PAGES)
DYNAMIC MEMORY: 20060 WORDS (77 PAGES)
ELAPSED TIME: 00:02:41
CZDHWB0.BIN,CZDHWB0.LST/-SP=SVC34R/ML,CZDHWB0.P11

9

PROGRAM DOCUMENTB1
PROGRAM DOCUMENTC1
PROGRAM DOCUMENTD1
PROGRAM DOCUMENTE1
PROGRAM DOCUMENTF1
PROGRAM DOCUMENTG1
PROGRAM DOCUMENTH1
PROGRAM DOCUMENTI1
PROGRAM DOCUMENTJ1
PROGRAM DOCUMENTK1
PROGRAM DOCUMENTL1
PROGRAM DOCUMENTM1
PROGRAM DOCUMENTN1

GLOBAL SUBROUTINES S.....B5
GLOBAL SUBROUTINEC5
GLOBAL SUBROUTINED5
GLOBAL SUBROUTINEE5
GLOBAL SUBROUTINEF5
GLOBAL SUBROUTINEG5
GLOBAL SUBROUTINEH5
GLOBAL SUBROUTINEI5
GLOBAL SUBROUTINEJ5
GLOBAL SUBROUTINEK5
GLOBAL SUBROUTINEL5
GLOBAL SUBROUTINEM5
GLOBAL SUBROUTINEN5

HARDWARE TESTB9
HARDWARE TESTC9
HARDWARE TESTD9
HARDWARE TESTE9
HARDWARE TESTF9
HARDWARE TESTG9
HARDWARE TESTH9
HARDWARE TESTI9
HARDWARE TESTJ9
HARDWARE TESTK9
HARDWARE TESTL9
HARDWARE TESTM9
HARDWARE TESTN9

PROGRAM DOCUMENTB2
PROGRAM DOCUMENTC2
PROGRAM DOCUMENTD2
PROGRAM DOCUMENTE2
PROGRAM DOCUMENTF2
PROGRAM DOCUMENTG2
PROGRAM DOCUMENTH2
PROGRAM DOCUMENTI2
PROGRAM DOCUMENTJ2
PROGRAM DOCUMENTK2
PROGRAM DOCUMENTL2
PROGRAM DOCUMENTM2
PROGRAM DOCUMENTN2

GLOBAL SUBROUTINEB6
GLOBAL SUBROUTINEC6
GLOBAL SUBROUTINED6
GLOBAL SUBROUTINEE6
GLOBAL SUBROUTINEF6
GLOBAL SUBROUTINEG6
GLOBAL SUBROUTINEH6
GLOBAL SUBROUTINEI6
GLOBAL SUBROUTINEJ6
GLOBAL SUBROUTINEK6
GLOBAL SUBROUTINEL6
GLOBAL SUBROUTINEM6
GLOBAL SUBROUTINEN6

HARDWARE TESTB10
HARDWARE TESTC10
HARDWARE PARAMETER C.....D10
HARDWARE PARAMETER C.....E10
SOFTWARE PARAMETER C.....F10
SOFTWARE PARAMETER C.....G10
SYMBOL TABLEH10
SYMBOL TABLEI10

DISPATCH TABLEB3
DEFAULT HARDWARE P-T.....C3
SOFTWARE P-TABLED3
GLOBAL EQUATES SECTI.....E3
GLOBAL EQUATES SECTI.....F3
GLOBAL DATA SECTIONG3
GLOBAL DATA SECTIONH3
GLOBAL DATA SECTIONI3
GPR HANDLING ROUTINE.....J3
GPR FRAME ACCESS EQU.....K3
GLOBAL MACRO DEFINIT.....L3
GLOBAL MACRO DEFINIT.....M3
GLOBAL SUBROUTINEN3

GLOBAL SUBROUTINEB7
INTERRUPT SERVICE RO.....C7
GLOBAL TRAP SERVICED7
GLOBAL TRAP SERVICEE7
PROTECTION TABLEF7
PROTECTION TABLEG7
INITIALIZE SECTIONH7
INITIALIZE SECTIONI7
INITIALIZE SECTIONJ7
INITIALIZE SECTIONK7
AUTODROP SECTIONL7
CLEANUP CODING SECTI.....M7
DROP UNIT SECTIONN7

GLOBAL TEXT SECTIONB4
GLOBAL TEXT SECTIONC4
GLOBAL TEXT SECTIOND4
GLOBAL TEXT SECTIONE4
GLOBAL ERROR REPORTI.....F4
GLOBAL ERROR REPORTI.....G4
GLOBAL ERROR REPORTI.....H4
GLOBAL ERROR REPORTI.....I4
GLOBAL ERROR REPORTI.....J4
GLOBAL ERROR REPORTI.....K4
GLOBAL ERROR REPORTI.....L4
GLOBAL ERROR REPORTI.....M4
GLOBAL ERROR REPORTI.....N4

HARDWARE TESTB8
HARDWARE TESTC8
HARDWARE TESTD8
HARDWARE TESTE8
HARDWARE TESTF8
HARDWARE TESTG8
HARDWARE TESTH8
HARDWARE TESTI8
HARDWARE TESTJ8
HARDWARE TESTK8
HARDWARE TESTL8
HARDWARE TESTM8
HARDWARE TESTN8