

KMS11-BD, KMC11-B  
DMS11-D, DM11-BA

KMS11-BD  
INTERACTION  
CZKMFAO

AH-S889A-MC  
FICHE 1 OF 1

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Microfiche grid containing multiple frames of data, including text and tables.



.NLIST SEQ,BIN,LOC  
.REM %

IDENTIFICATION

PRODUCT CODE: AC-S887A-MC  
PRODUCT NAME: CZKMFAO KMS11-BD INTERACTION  
PROGRAM DATE: SEPTEMBER 1981  
MAINTAINER: CSS/NPG DIAGNOSTICS

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## 1.0 ABSTRACT

THIS PROGRAM IS A TEST FOR INTERACTION BETWEEN THE DM11-BA MODEM CONTROL MULTIPLEXER AND THE KMS11-BD COMMUNICATIONS CONTROLLER

THE PROGRAM IS DIVIDED INTO FUNCTIONAL TEST GROUPS AS FOLLOWS:

- GROUP 0: ALL LINE SCANNER AND LINE MULTIPLEXER FUNCTIONS ARE TESTED USING H3256 TEST CONNECTORS WITH THE H317-M DISTRIBUTION PANEL  
GROUP 1: A SINGLE LINE IS TESTED USING THE H317-M PANEL WITH H3256 TEST CONNECTORS IN PLACE OF THE MODEM CABLES .

## 2.0 REQUIREMENTS

### 2.1 EQUIPMENT

PDP-11 COMPUTER WITH AT LEAST 12K OF MEMORY  
ASR-33 TELETYPE OR EQUIVALENT  
DM11-BA  
KMS11-BD  
2 CABLES CONNECTED TO DISTRIBUTION PANEL  
H3256 TEST CONNECTOR

### 2.2 MEMORY

THE PROGRAM RUNS IN 12K MEMORY

### 2.3 PRELIMINARY PROGRAMS

CZKMBAO KMC11-B STATIC PART1  
CZKMCAO KMC11-B STATIC PART2  
CZKMDAO DMS11-DA STATIC  
CZKMEAO DMS11-DA DYNAMIC  
CZKMGAO DM11-BA MODEM CONTRL

### 2.4 M8640 HARDWARE JUMPERS

HARDWARE JUMPERS W10-17 ON THE M8640 MODULE ENABLE OR DISABLE TRANSITION DETECTION OF THE MODEM SIGNALS .  
THE FOLLOWING RESTRICTIONS EXIST DO TO THESE JUMPERS .

TEST GROUP 0 - ASSUMES THAT ALL TRANSITION DETECTIONS WILL NOT BE DISABLED ( AT LEAST 1 MUST BE ENABLED )

TEST GROUP 1 - IS NOT EFFECTED BY THESE JUMPERS .

3.0 THIS PROGRAM HAS BEEN MODIFIED TO RUN ON A PROCESSOR WITH OR WITHOUT A HARDWARE SWITCH REGISTER. WHEN FIRST EXECUTED THE PROGRAM TESTS THE EXISTENCE OF A HARDWARE SWITCH REGISTER. IF NOT FOUND A SOFTWARE SWITCH REGISTER LOCATION (SWREG=LOC. 176 ) IS DEFAULTED TO. IF THIS IS THE CASE, UPON EXECUTION THE CONTENTS OF THE SWREG ARE DUMPED IN OCTAL ON THE CONSOLE TTY AND ANY CHANGES ARE REQUESTED

(IE) SWR=XXXXXX NEW=

POSSIBLE RESPONSES ARE:

1. <CR> IF NO CHANGES ARE TO BE MADE
2. 6 DIGITS 0-7 TO REPRESENT IN OCTAL THE NEW SWITCH REGISTER VALUE ;LAST DIGIT FOLLOWED BY <CR>.
3. ^U TO ALLOW REENTERING VALUE IF ERROR IS COMMITTED KEYING IN SWREG VALUE.

BUILT INTO THE PROGRAM IS THE ABILITY TO DYNAMICALLY CHANGE THE CONTENTS OF SWREG DURING PROGRAM EXECUTION. BY STRIKING ^G (CNTRL G) ON CONSOLE TTY THE OPERATOR SETS A REQUEST FLAG TO CHANGE THE CONTENTS OF SWREG, WHICH IS PROCESSED IN KEY AREAS OF THE PROGRAM CODE (IE) ERROR ROUTINES, AFTER HALTS END OF PASS, AND OTHER APPLICABLE AREAS.

#### 4.0 LOADING AND STARTING PROCEDURE

THE STANDARD PROCEDURE FOR LOADING BINARY TAPES IS TO BE USED.  
IF THE DIAGNOSTIC IS ON MAGNETIC MEDIA, FOLLOW THE INSTRUCTIONS  
FOR THE MONITOR BEING USED. THE PROGRAM AUTOSTARTS ON LOADING.

#### 4.1 STARTING ADDRESS

THE STARTING ADDRESS FOR ALL TESTS IS 000200.  
RESTART ADDRESS FOR ALL TESTS IS 000200

#### 4.2 OPERATOR AND/OR PROGRAM ACTION

##### 4.2.1 INITIAL PROGRAM START

##### 4.2.1A WITH HARDWARE SWITCH REGISTER

LOAD ADDRESS 000200  
IF DEFAULT ADDRESSES ARE NOT PRESENT SET SW00 = 0  
(DEFAULT CSR = 764200 , VECTOR = 540 FOR DM11)  
( CSR = 774100 , VECTOR = 300 FOR KMS11)  
PRESS START

##### 4.2.1B WITHOUT HARDWARE SWITCH REGISTER

LOAD ADDRESS 200  
PRESS START

##### 4.2.1.2 PROGRAM WILL TYPE

'CZKMFAO KMS11-BD INTERACTION TEST' (ONCE ONLY)

##### 4.2.1.3 PROGRAM WILL TYPE (WITH SW00 = 1)

DM11 VECTOR ADDRESS-' AND WILL WAIT FOR AN INPUT  
FROM THE TELETYPE KEYBOARD.

##### 4.2.1.4 TYPE A THREE DIGIT NUMBER (OCTAL) WHICH IS THE

ADDRESS THAT THE DM11-BA WILL INTERRUPT TO, FOLLOWED BY  
<RETURN>. IF AN INCORRECT ADDRESS IS TYPED, THE PROGRAM WILL  
TYPE '?' AND THEN REPEAT 4.2.1.3.

NOTE: IF THE ADDRESS ENTERED IS ACCEPTIBLE TO THE PROGRAM,  
BUT IS NOT THE INTERRUPT VECTOR ADDRESS OF THE DM11-BA  
UNDER TEST, A HALT WILL OCCUR AT THAT ADDRESS+2, WHEN  
THE DM11-BA INTERRUPTS.  
TO RECOVER, PERFORM 4.2.2.1.

##### 4.2.1.5 THE PROGRAM WILL TYPE 'DM11 CSR ADDRESS-' AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD.

##### 4.2.1.6 TYPE A 6 DIGIT (OCTAL NUMBER) WHICH IS THE ADDRESS OF THE

DM11-BA CONTROL REGISTER FOLLOWED BY <RETURN>.  
IF AN INCORRECT ADDRESS IS TYPED, THE PROGRAM WILL  
TYPE '?' AND THEN REPEAT 4.2.1.6.

NOTE: IF THE ADDRESS ENTERED IS ACCEPTIBLE TO THE PROGRAM  
BUT IS A NON-EXISTANT REGISTER, A BUS ERROR TRAP WILL  
OCCUR WHEN THE PROGRAM ADDRESSES THE REGISTER, AND THE  
PROGRAM WILL HALT AT LOCATION 6.  
TO RECOVER, PERFORM 4.2.2.1.

4.2.1.7 THE PROGRAM WILL TYPE  
KMS11 VECTOR ADDRESS-' AND WILL WAIT FOR AN INPUT  
FROM THE TELETYPE KEYBOARD.

4.2.1.8 TYPE A THREE DIGIT NUMBER (OCTAL) WHICH IS THE  
ADDRESS THAT THE KMS11-BD WILL INTERRUPT TO, FOLLOWED BY  
<RETURN>. IF AN INCORRECT ADDRESS IS TYPED, THE PROGRAM WILL  
TYPE '?' AND THEN REPEAT 4.2.1.7.

NOTE: IF THE ADDRESS ENTERED IS ACCEPTIBLE TO THE PROGRAM,  
BUT IS NOT THE INTERRUPT VECTOR ADDRESS OF THE KMS11-BD  
UNDER TEST, A HALT WILL OCCUR AT THAT ADDRESS+2, WHEN  
THE KMS11-BD INTERRUPTS.  
TO RECOVER, PERFORM 4.2.2.1.

4.2.1.9 THE PROGRAM WILL TYPE 'KMS11 CSR ADDRESS-' AND WAIT FOR  
AN INPUT FROM THE TELETYPE KEYBOARD.

4.2.1.10 TYPE A 6 DIGIT (OCTAL NUMBER) WHICH IS THE ADDRESS OF THE  
KMS11-BD CONTROL REGISTER FOLLOWED BY <RETURN>.  
IF AN INCORRECT ADDRESS IS TYPED, THE PROGRAM WILL  
TYPE '?' AND THEN REPEAT 4.2.1.10.

NOTE: IF THE ADDRESS ENTERED IS ACCEPTIBLE TO THE PROGRAM  
BUT IS A NON-EXISTANT REGISTER, A BUS ERROR TRAP WILL  
OCCUR WHEN THE PROGRAM ADDRESSES THE REGISTER, AND THE  
PROGRAM WILL HALT AT LOCATION 6.  
TO RECOVER, PERFORM 4.2.2.1.

4.2.1.11 THE PROGRAM WILL TYPE  
'TEST-' AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD.

4.2.1.12 TYPE AN OCTAL NUMBER CORRESPONDING TO THE  
NUMBER OF THE TEST TO BE RUN FOLLOWED BY <RETURN>.  
IF AN INCORRECT TEST NUMBER IS TYPED THE PROGRAM WILL  
TYPE '?' AND THEN REPEAT 4.2.1.11  
THE AVAILABLE TESTS TOGETHER WITH THE NUMBER TO BE TYPED  
ARE GIVEN BELOW.

TEST GROUP 0:  
OFF LINE TESTS USING H3256 TEST CONNECTOR AND H317-M DISTRIBUTION PANEL.  
FIRST TEST=0  
TEST GROUP 1:  
OFF LINE TESTS USING H3256 TEST CONNECTOR AND H317-M DISTRIBUTION PANEL.  
TEST=100

4.2.1.13 THE PROGRAM WILL ENTER THE SELECTED TEST GROUP.

4.2.2 PROGRAM RESTART WITH HARDWARE SWITCH REGISTER

4.2.2.1 WITH SW00=0

LOAD ADDRESS 200  
SET SW00=0 BEFORE PRESSING START.  
PRESS START  
PROGRAM WILL PERFORM AS DESCRIBED IN 4.2.1.3 TO 4.2.1.13.

4.2.2.2 WITH SW00=1

LOAD ADDRESS 200  
SET SW00=1 BEFORE PRESSING START  
PRESS START  
PROGRAM WILL PERFORM AS DESCRIBED IN 4.2.1.7 TO 4.2.1.13

4.2.3 PROGRAM RESTART WITHOUT HARDWARE SWITCH REGISTER

LOAD ADDRESS 200  
PRESS START

5.0 OPERATING PROCEDURE

5.1 TEST GROUP 0 8 LINE SCANNER TEST

5.1.1 TEST INITIALIZATION

NONE REQUIRED, PROGRAM TYPES '8 LINE SCANNER TEST'  
AND BEGINS TEST EXECUTION.

5.1.2 OPERATIONAL SWITCH SETTINGS

SW15=1, HALT ON ERROR  
SW14=1, LOOP ON CURRENT TEST  
SW13=1, SUPPRESS ERROR TYPEOUT  
SW11=1, SUPPRESS ITERATIONS  
SW10=1, ESCAPE TO NEXT TEST ON ERROR  
SW09=1, FREEZE DATA

5.1.3 PROGRAM AND/OR OPERATOR ACTION

5.1.3.1 WITH ALL SWITCHES DOWN, THE PROGRAM WILL RUN  
ALL TESTS IN THE SELECTED GROUP, SEQUENTIALLY. EACH TEST IS REPEATED  
A FIXED NUMBER OF TIMES (SEE LISTING FOR DETAILS),  
EXCEPT FOR TO WHICH IS EXECUTED ONCE ONLY AFTER START OF TEST. WHEN ALL  
TESTS HAVE BEEN COMPLETED, THE PROGRAM WILL TYPE  
'END PASS' AND RESTART AT THE FIRST TEST OF THE SELECTED GROUP.

IF AN ERROR OCCURS, THE PROGRAM WILL TYPE AN APPROPRIATE  
ERROR MESSAGE AND CONTINUE TESTING.

5.1.3.2 WITH SW15=1, PROGRAM ACTION WILL BE AS IN 5.1.3.1 EXCEPT THAT  
A HALT WILL OCCUR AFTER ERROR TYPEOUT.

5.1.3.3 WITH SW13=1, PROGRAM ACTION WILL BE AS IN 5.1.3.1 EXCEPT THAT  
NO ERROR TYPEOUT WILL OCCUR. THE PC OF THE TEST THAT FAILED  
WILL BE DISPLAYED IN THE COMPUTER DATA LIGHTS.

5.1.3.4 WITH SW10=1, PROGRAM ACTION WILL BE AS IN 5.1.3.1 EXCEPT THAT  
AFTER AN ERROR HAS OCCURED, THE PROGRAM WILL IMMEDIATELY  
START THE NEXT TEST IN SEQUENCE.



5.2 TEST GROUP 1 SINGLE LINE DM11-BA CABLE AND H317-M PANEL TEST

5.2.1 TEST INITIALIZATION

THE PROGRAM WILL TYPE "SINGLE LINE CABLE TEST  
LINE NUMBER-" AND WILL WAIT FOR AN INPUT FROM  
THE TELETYPE KEYBOARD.

TYPE A 1 DIGIT OCTAL NUMBER BETWEEN 0 AND 7, CORRESPONDING  
TO THE NUMBER OF THE DM11 LINE TO BE TESTED, FOLLOWED BY  
<RETURN>. THE PROGRAM WILL THEN BEGIN TEST EXECUTION.  
IF THE TELETYPE INPUT IS INCORRECT, THE PROGRAM  
WILL TYPE "?" AND REPEAT THE MESSAGE.

5.2.2 OPERATIONAL SWITCH SETTINGS

SAME AS 5.1.2

5.2.3 PROGRAM AND/OR OPERATOR ACTION

SAME AS 5.1.3

5.3 TEST RESELECTION

TO ESCAPE FROM THE TEST IN PROGRESS, AND SELECT  
A NEW TEST, TYPE <CONTROL C>.

THE PROGRAM WILL STOP EXECUTION OF THE TEST IN PROGRESS  
AND THEN TYPE "TEST-" AND WAIT FOR AN INPUT FROM  
THE TELETYPE KEYBOARD.

PROCEED AS DESCRIBED IN 4.2.1.12

5.4 ADDRESS CHANGE

TO CHANGE THE VECTOR AND REGISTER ADDRESS OF THE DM11-BA UNDER TEST, TYPE <CONTROL V>. THE PROGRAM WILL STOP EXECUTION OF THE TEST IN PROGRESS AND PROCEED AS DESCRIBED IN SECTION 4.2.1, EXCEPT THAT THE TITLE WILL NOT BE TYPED.

5.5 LINE NUMBER CHANGE

5.5.1 DM11-BA

TO CHANGE THE DM11 LINE NUMBER(S) UNDER TEST, TYPE <CONTROL L>. THE PROGRAM WILL SUSPEND THE TEST IN PROGRESS AND RETURN TO THE INITIALIZATION STAGE OF THE SELECTED TEST.

WHEN THE LINE NUMBER(S) HAS BEEN CHANGED, THE PROGRAM WILL RESTART THE SELECTED TEST USING THE NEW LINE NUMBER(S).

5.5.2 KMC11-B/DMS11-D

TO CHANGE THE KMC11/DMS11 LINE NUMBER(S) UNDER TEST, DO THE FOLLOWING:

- A- STOP THE PROGRAM
- B- EXAMINE ADDRESS 'LINEB' (13426)
- C- DEPOSIT THE DESIRED VALUE INTO THE ADDRESS, WHERE:

200 =	LINE 0
100 =	1
40 =	2
20 =	3
10 =	4
4 =	5
2 =	6
1 =	7

- D- RESTART THE PROGRAM

5.6 ERROR IN ENTERING DATA

TO ALLOW RE-ENTERING DATA TYPE ^U <CNTRL U> BEFORE DEPRESSING <CR> WHEN ENTERING DATA. THIS WILL RESULT IN THE QUESTION BEING RE-ASKED.

5.7 POWER FAILURE

IF A POWER FAIL TRAP OCCURS DURING TEST EXECUTION THE PROGRAM WILL SAVE THE GENERAL REGISTERS OF THE PROCESSOR AND HALT.

WHEN POWER UP OCCURS, THE PROGRAM WILL TYPE 'POWER FAILURE-CURRENT TEST WILL BE RESTARTED'.

THE PROGRAM WILL THEN RESUME TEST EXECUTION.

CZKMFAO KMS11-BD INTERACTION TEST  
CZKMFA.P11 20-OCT-81 17:07

MACY11 30A(1052) 21-OCT-81<sup>K 1</sup> 05:47 PAGE 10

SEQ 0010

NOTE: IF A TEST IS NOT IN PROGRESS, I.E., IF THE PROGRAM  
IS WAITING FOR AN INPUT FROM THE TELETYPE KEYBOARD,  
THE ERROR MESSAGE WILL BE "POWER FAILURE".  
THE PROGRAM WILL THEN REQUEST THE OPERATOR TO SELECT A TEST.

6.0 ERRORS

6.1 NORMAL OPERATION

IF AN ERROR OCCURS WITH ALL SWITCHES DOWN, THE PROGRAM WILL TYPE AN APPROPRIATE ERROR MESSAGE AND THEN RESUME TESTING.

THERE ARE SEVERAL ERROR MESSAGE FORMATS, AND THE PARTICULAR MESSAGE TYPED DEPENDS UPON THE TEST IN PROGRESS.

6.1.1 ERROR MESSAGES

6.1.1.1 UNIQUE ERROR

ONLY PC OF FAILING TEST IS OUTPUT TO TELEPRINTER

AN EXAMPLE OF THIS TYPE OF ERROR IS:

1. AN INTERRUPT OCCURED AT THE WRONG PRIORITY
2. A REGISTER BIT WAS NOT CLEARED BY RESET

6.1.1.2 KMS11 DATA ERROR

THIS ERROR WILL OCCUR IF A DATA COMPARISON FAILS FOR ONE OF THE KMS11-BD LINE BUFFERS.

FORMAT FOR ERROR TYPEOUT IS

```
XXXXXX KMS11 DATA ERROR
EXP  REC  KMS11 LINE
AA   BB   CC
```

WHERE XXXXXX=PC+2 OF CALL TO ERROR ROUTINE  
AA=EXPECTED DATA BYTE  
BB=RECEIVED DATA BYTE  
CC=KMS11-BD LINE ON WHICH ERROR OCCURED

### 6.1.1.3 KMS11 STATUS ERROR

THIS ERROR WILL OCCUR WHEN EITHER A KMS11 INPUT FUNCTION FAILS TO EXECUTE, OR A KMS11 CONTROL OUT MESSAGE IS RECEIVED.

FORMAT FOR KMS11 STATUS ERROR IS  
XXXX KMS11 STATUS ERROR  
SELO SEL2 KMS11 LINE  
AAA BBB CC

WHERE XXXXXX=PC+2 OF CALL TO ERROR ROUTINE  
AAA=STATUS OF KMS11 SELO AT ERROR  
BBB=STATUS OF KMS11 SEL2 AT ERROR  
CC=KMS11 LINE ON WHICH ERROR OCCURED

### 6.1.1.4 CONTROL STATUS ERROR

THIS ERROR WILL OCCUR IN A TEST THAT PRIMARILY INVOLVES THE LINE SCANNER

FORMAT FOR CONTROL STATUS ERROR IS

XXXXXX STATUS ERROR  
EXP REC  
AAAAAA BBBB88

WHERE XXXXXX=PC+2 OF CALL TO ERROR ROUTINE  
AAAAAA=EXPECTED CONTROL STATUS AT TIME OF ERROR  
BBBB88=RECEIVED(ACTUAL) CONTROL STATUS AT TIME OF ERROR

### 6.1.1.5 LINE STATUS ERROR

THIS ERROR WILL OCCUR IN THOSE TESTS THAT  
SET ONE LINE TO A PARTICULAR STATE, AND THEN CHECK  
ALL OTHER LINES

FORMAT FOR LINE STATUS ERROR IS

```
XXXX LINE ERROR
EXP REC LINE SEL
AAA DDD CC DD
```

WHERE XXXXXX=PC+2 OF CALL TO ERROR ROUTINE  
AAA=EXPECTED LINE STATUS AT TIME OF ERROR  
BBB=RECEIVED LINE STATUS AT TIME OF ERROR  
CC=LINE ON WHICH ERROR OCCURED  
DD=THE LINE ON WHICH THE PROGRAM WAS OPERATING

### 6.1.2 REPEATED ERRORS

IF THE SAME ERROR OCCURS REPEATEDLY IN A GIVEN TEST  
ONLY THE DATA RELATING TO THAT ERROR WILL BE TYPED  
IF THE ERROR OCCURS IN THE SAME TEST ON THE SAME PASS

## 6.2 SCOPE LOOPS

### 6.2.1 AFTER ERROR HALT

TO LOOP ON A GIVEN TEST AFTER AN ERROR HALT,  
SET SW15=0 TO RUN WITHOUT STOPPING  
SET SW14=1 TO LOOP ON CURRENT TEST  
SET SW13=1 TO SUPPRESS ERROR TYPEOUT  
SET SW10=0 (IF IT IS 1)  
SET SW09=1 TO LOOP ON SAME DATA (IF REQUIRED)

PRESS CONTINUE  
THE PROGRAM WILL LOOP ON THE SAME TEST.

### 6.2.2 FROM PROGRAM START

6.2.2.1 PROCEED AS DESCRIBED IN 4.2.1.1 TO 4.2.1.4

6.2.2.2 WHEN THE PROGRAM TYPES "TEST-", SET SW14=1 TO LOOP  
ON THE TEST THAT WILL BE SELECTED.

6.2.2.3 TYPE IN THE NUMBER OF THE TEST THAT IS TO BE LOOPE  
ON (SEE LISTING FOR TEST NUMBER REFERENCE DESIGNATIONS)

6.2.2.4 THE PROGRAM WILL LOOP ON THE SELECTED TEST UNTIL  
SW14=0.

6.2.3 AFTER <CONTROL-C>  
SAME AS 6.2.2.2 TO 6.2.2.4

7.0 RESTRICTIONS

7.1 STARTING

FOR 8 LINE SCANNER TEST OR SINGLE LINE TEST

WHEN CONNECTED TO THE H317-M DISTRIBUTION  
PANEL H3256 TEST CONNECTORS SHOULD BE INSTALLED  
IN PLACE OF THE MODEM CABLES.

7.2 OPERATING

NONE.

7.3 WHEN ON ACT-11 OR 'XOR'

PROGRAM WILL DEFAULT TO 8 LINE SCANNER TEST  
H317-M WITH H3256 TEST CONNECTORS MUST BE INSTALLED.

7.4 DEFAULT PARAMETERS (INCLUDING ACT-11 & 'XOR')

VECTORS

-----  
DMBVEC: 540 (AUTOMATICALLY GENERATED  
DMBLVL: 542 BY PROGRAM WHEN UNDER ACT-11 OR 'XOR')  
KMCVEC: 300  
KMCLVL: 302

ADDRESSES

-----  
KMCCSR: 174100  
DMBCSR: 164200  
DMBLSR: 164202

NOTE: SW00(RESELECT ADDRESSES AND VECTORS BECOMES  
INOPERATIVE UNDER ACT-11 OR 'XOR').

8.0 EXECUTION TIME

8.1 8 LINE SCANNER TEST

THE TIME FOR 2 PASSES OF THE 8 LINE SCANNER TEST IS APPROXIMATELY 1.0 MINUTES.

8.2 SINGLE LINE CABLE TEST

THE TIME FOR 12 PASSES OF THE SINGLE LINE CABLE TEST IS APPROXIMATELY 1 MINUTE.

9.0 PROGRAM DESCRIPTION

THIS PROGRAM CONSISTS OF A SERIES OF TEST GROUPS LINKED BY A SET OF COMMON SERVICE ROUTINES AND A KEYBOARD MONITOR.

WHEN INITIALLY LOADED AND STARTED ...SW00 MUST BE SET =0, THE PROGRAM WILL BEGIN A DIALOG WITH THE OPERATOR TO INPUT THE PARAMETERS REQUIRED BY THE PROGRAM.

WHEN ALL INFORMATION HAS BEEN INPUTTED, THE PROGRAM WILL REQUEST THE OPERATOR TO SELECT A TEST BY TYPING THE NUMBER OF THE TEST TO BE RUN. WHEN A CORRECT TEST NUMBER IS RECEIVED, THE PROGRAM WILL BEGIN EXECUTION OF THE SELECTED TEST.

THE KMS11-BD IS STARTED BEFORE ANY DM11 TESTS ARE RUN. THE KMS11 IS INITIALIZED, THE BOP FIRMWARE IS LOADED, STARTED, AND A UNIQUE TEST PATTERN IS TRANSMITTED ON EACH KMS11-BD LINE. DATA IS RECEIVED AND CHECKED AS EACH BUFFER IS TERMINATED AND THE LINE IS THEN RESTARTED. AT ANY TIME DURING TEST EXECUTION, THE OPERATOR MAY CHANGE A TEST PARAMETER BY ENTERING THE APPROPRIATE COMMAND VIA THE TELETYPE KEYBOARD.

THE PROGRAM WILL TYPE 'END PASS' AFTER EVERY TEST PASS.

10.0 LISTING

585

.LIST SEQ,BIN,LOC



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```
.TITLE CZKMFAO KMS11-BD INTERACTION TEST
.ENABLE ABS,AMA
;THIS PROGRAM CONTAINS TEST OF THE DM11-BA/KMS11-BD IN
;THE OFF LINE MODE OF OPERATION ONLY

;SWITCH REGISTER OPTIONS

;SW15=1, HALT ON ERROR
;SW14=1, LOOP ON CURRENT TEST
;SW13=1, SUPPRESS ERROR TYPEOUT
;SW11=1, SUPPRESS ITERATIONS
;SW10=1, ESCAPE TO NEXT TEST ON ERROR
;SW09=1, FREEZE DATA
;SW01=1, START DISCONNECT SEQUENCE
;SW00=0, RESELECT VECTOR AND CONTROL REGISTER ADDRESS
;AFTER PROGRAM RESTART

;STARTING ADDRESS FOR ALL TESTS IS 000200
;RESTART ADDRESS=000200

;TESTS AVAILABLE

;TEST GROUP 0-
;OFF LINE TESTS USING H861 TEST CONNECTOR-FIRST TEST=0
;TEST GROUP 1-
;OFF LINE TESTS USING DC11 TEST CONNECTOR AND MODEM CABLE-FIRST TEST=100

;SYMBOL DEFINITIONS
SW15=100000
SW14=40000
SW13=20000
SW12=10000
SW11=4000
SW10=2000
SW09=1000
SW08=400
SW06=100

.NLIST MC,MD,CND
.LIST ME

;REGISTER DEFINITIONS
R0=X0 ;GENERAL REGISTER
R1=X1 ;GENERAL REGISTER
R2=X2 ;GENERAL REGISTER
R3=X3 ;GENERAL REGISTER
R4=X4 ;GENERAL REGISTER
R5=X5 ;GENERAL REGISTER
SP=X6 ;PROCESSOR STACK POINTER
PC=X7 ;PROGRAM COUNTER
```

```
642
643 ;LOCATION EQUIVALENCIES
644
645 177776 PS=177776
646 .EQUIV PS,PSW
647 012120 RADIX=DIVIS ;CONVERSION FACTOR FOR DECIMAL OUTPUT
648 012114 BINWRD=DIVIDL ;WORD TO BE CONVERTED TO OCTAL ASCII
649 012116 DIGIT=DIVIDH ;ASCII OCTAL DIGIT
650
651 ;CONTROL STATUS REGISTER BIT FUNCTIONS
652
653 000020 BUSY=20 ;LINE SCANNER RUNNING
654 000040 SCNENA=40 ;LINE SCANNER ENABLE
655 000100 INTENA=100 ;INTERRUPT ENABLE
656 000200 DONE=200 ;SCANNER DONE
657 000400 STEP=400 ;CAUSES LINE COUNTER TO BE INCREMENTED BY 1 COUNT
658 001000 MAINT=1000 ;FORCES 1S TO INPUT OF SCRATCH PAD MEMORY
659 002000 CLRMUX=2000 ;CLEAR MULTIPLEXER FUNCTION FLIPFLOPS
660 004000 CLRSCN=4000 ;CLEARS SCANNER SCRATCHPAD MEMORY
661 010000 SECRXF=10000 ;SECONDARY RECEIVE TRANSITION WAS DETECTED BY SCANNER
662 020000 CSF=20000 ;CLEAR TO SEND TRANSITION WAS DETECTED BY SCANNER
663 040000 COF=40000 ;CARRIER TRANSITION WAS DETECTED BY SCANNER
664 100000 RINGF=100000 ;RING SIGNAL WAS DETECTED BY SCANNER
665
666 ;LINE REGISTER BIT FUNCTIONS
667
668 000001 LINENA=1 ;=1. RECOGNIZE TRANSITIONS ON THIS LINE
669 000002 TRMRDY=2 ;=1. SEND TERMINAL READY TO MODEM
670 000004 RS=4 ;=1. SEND REQUEST TO SEND TO MODEM
671 000010 SECTX=10 ;=1. SEND SECONDARY TRANSMIT TO MODEM
672 000020 SECRX=20 ;=1. SECONDARY RECEIVE TURNED ON BY MODEM
673 000040 CS=40 ;=1. CLEAR TO SEND TURNED ON BY MODEM
674 000100 CO=100 ;=1. CARRIER TURNED ON BY MODEM
675 000200 RING=200 ;=1. RING TURNED ON BY MODEM
676
677 ;SOFTWARE TRANSITION FLAGS
678
679 000004 XCO=4 ;CARRIER TRANSITION WAS DETECTED
680 000002 XCS=2 ;CLEAR TO SEND TRANSITION WAS DETECTED
681 000001 XSCRX=1 ;SECONDARY RECEIVE TRANSITION WAS DETECTED
682
683 ;INSTRUCTION DEFINITIONS
684
685 005746 PUSH1SP=5746 ;DECREMENT PROCESSOR STACK 1 WORD
686 005726 POP1SP=5726 ;INCREMENT PROCESSOR STACK 1 WORD
687 010046 PUSHRO=10046 ;SAVE RO ON STACK
688 012600 POPRO=12600 ;RESTORE RO FROM STACK
689 024646 PUSH2SP=24646 ;DECREMENT STACK TWICE
690 022626 POP2SP=22626 ;INCREMENT STACK TWICE
691
692 ;EMT DEFINITION TABLE
693
694 104000 ERRORC=EMT+X ;CONTROL STATUS ERROR SERVICE
695 104001 ERRORL=EMT+X ;LINE STATUS ERROR SERVICE
696 104002 SCOPE=EMT+X ;SCOPE LOOP AND ITERATION SERVICE
697 104003 SCOPEF=EMT+X ;DATA FREEZE SERVICE
```

698	104004	TYPE=EMT+X	:TELETYPE OUTPUT
699	104005	SAVOSP=EMT+X	:SAVE R0-R5, PC+2 OF CALL
700	104006	OCTASC=EMT+X	:CONVERT DATA TO ASCII AND TYPE
701	104007	RESOS=EMT+X	:RESTORE R0-R5
702	104010	CONVERT=EMT+X	:ASCII CONVERSION ROUTINE
703	104011	EXTRACT=EMT+X	:DIGIT EXTRACTION ROUTINE
704	104012	ERROR=EMT+X	:TYPE PC OF FAILING TESTS ONLY
705	104013	INSTRG=EMT+X	:INPUT OCTAL DATA STRING
706	104014	ERRORD=EMT+X	:KMS11 DATA ERROR
707	104015	ERRORS=EMT+X	:KMS11 STATUS ERROR
708	104016	CNTLUU=EMT+X	:CHANGE SWREG ROUTINE
709	104017	CKINTT=EMT+X	:CHECK FOR INTERRUPTS-FLAG STYLE
710	104020	KBDIN=EMT+X	:FAKE INTERRUPT ENTRY POINT
711			
712		:TRAPCATCAER FOR ILLEGAL INTERRUPTS	

```
713
714
715
716
717 000024 000024
718 000026 000340
719 000030 010632
720 000032 000340
721
722
723 000060 000060
724 000062 000340
725
726
727
728 000174 000174
729 000176 000000
730
731
732 000200 000137 001100
733
734
735
736
737
```

                                  ;STANDARD INTERRUPT VECTORS

                                  .=24

                  PFAIL                                  ;POWER FAIL HANDLER  
                  340                                  ;SERVICE AT LEVEL 7  
                  EMTSRV                                ;EMT DISPATCH SERVICE  
                  340                                  ;SERVICE AT LEVEL 7

                                  .=60

                  KBDINT                                ;KEYBOARD MONITOR  
                  340                                  ;SERVICE AT LEVEL 7

                                  .=174

                  DISPREG:0  
                  SWREG: 0

                                  .=200

                  JMP      START                      ;GO TO START OF PROGRAM

```

738
739      001100      001100      . =1100
740      001100      012737      012606      000024      STACK:
741      001100      012737      012606      000024      START:  MOV      #PFAIL,24      ;SET UP POWER FAIL
742                                     ;INTERRUPT SERVICE VECTOR
743      001106      005037      002066      CLR      TIPFLG      ;CLEAR TEST IN PROGRESS FLAG
744      001112      005077      014144      CLR      @TKCSR
745      001116      012706      001100      MOV      #STACK,SP      ;SET UP STACK POINTER
746      001122      013746      000006      SUSWR:  MOV      @#6,-(SP)      ;SAVE VECTORS
747      001126      013746      000004      MOV      @#4,-(SP)
748      001132      012737      001152      000004      MOV      #1,@#4      ;SET UP FOR TIMEOUT
749      001140      022777      177777      014124      CMP      #-1,@SWR      ;REFERENCE HARDWARE SWITCH REGISTER
750      001146      001402      BEQ      2$
751      001150      000407      BR      3$
752      001152      022626      1$:     CMP      (SP)+,(SP)+      ;ADJUST STACK
753      001154      012737      000176      015272      2$:     MOV      #SWREG,SWR      ;POINT TO SOFTWARE SWITCH REG
754      001162      012737      000174      015274      MOV      #DISPREG,DISPLAY      ;POINT TO SOFT DISPLAY REG
755      001170      012637      000004      3$:     MOV      (SP)+,@#4      ;RESTORE VECTORS
756      001174      012637      000006      MOV      (SP)+,@#6
757      001200      005037      001242      CLR      XFLAG      ;XOR = NO
758      001204      013746      000004      MOV      4,-(SP)      ;SAVE 4
759      001210      012737      001246      000004      MOV      #XORSVC,4      ;SET UP SVC ROUTINE
760      001216      005737      177060      TST      177060      ;GOT AN XOR TESTER OUT THERE ?
761      001222      012637      000004      MOV      (SP)+,4      ;YES
762      001226      005137      001242      COM      XFLAG      ;XOR = YES
763      001232      004737      014772      JSR      PC,XOR      ;AUTO VECTOR
764      001236      000137      001254      JMP      STARTO      ;RESTORE TRAPCATCHER
765      001242      000000      XFLAG:  0      ;XOR FLAG
766      001244      000000      FST:    0
767      001246      022626      XORSVC: POP2SP
768      001250      012637      000004      MOV      (SP)+,4 ;RESTORE 4
769      001254      005737      015412      STARTO: TST      TIFLG      ;TYPED TITLE?
770      001260      001005      BNE      1$      ;YES
771      001262      104004      TYPE      ;TYPE 'DM11-BA DIAGNOSTIC'
772      001264      015662      MTITLE
773      001266      012737      000001      015412      MOV      #1,TIFLG      ;SET TITLE TYPED FLAG
774      001274      005737      001242      1$:     TST      XFLAG      ;X OR ?
775      001300      100417      BMI      VECSTR      ;RESTORE TRAPCATCHER
776      001302      005737      000042      TST      42      ;ACT 11?
777      001306      001403      BEQ      START1      ;NO
778      001310      004737      014772      JSR      PC,XOR      ;YES AUTO VECTOR
779      001314      000411      BR      VECSTR      ;GET VECTOR AND REGISTER ADDRESS
780      001316      022737      000176      015272      START1: CMP      #SWREG,SWR
781      001324      001001      BNE      1$
782      001326      104016      CNTRU
783      001330      032777      000001      013734      1$:     BIT      #1,@SWR
784      001336      001160      BNE      STARTN
785      001340      012706      001100      VECSTR: MOV      #STACK,SP      ;SET UP PROCESSOR STACK PCINTER
786      001344      012737      000300      013506      MOV      #300,DATA1      ;ADDRESS OF FIRST FLOATING VECTOR
787      001352      012737      000302      013510      MOV      #302,DATA2      ;ADDRESS OF STATUS WORD
  
```

788	001360	013777	013510	012120	VECSTA:	MOV	DATA2,@DATA1		:MOVE ADDRESS OF STATUS WORD TO VECTOR
789	001366	005077	012116			CLR	@DATA2		:CLEAR STATUS WORD
790									:(FOR HALT ON ILLEGAL INTERRUPT)
791	001372	062737	000004	013506		ADD	#4,DATA1		:NEXT VECTOR
792	001400	062737	000004	013510		ADD	#4,DATA2		:NEXT STATUS WORD
793	001406	023727	013506	001000		CMP	DATA1,#1000		:IS TABLE CLEARED
794	001414	001361				BNE	VECSTA		:IF NOT, CONTINUE
795	001416	005737	001242			TST	XFLAG	:XOR ?	
796	001422	100573				BMI	TSTGO	:YES	
797	001424	005737	000042			TST	42	:ACT 11 ?	
798	001430	001170				BNE	TSTGO	:YES	
799	001432	104013				INSTRG			:GET VECTOR ADDRESS
800	001434	016233				MVECTOR			:MESSAGE 'VECTOR ADDRESS-'
801	001436	000100				100			:LOWER LIMIT FOR ADDRESS
802	001440	000774				774			:UPPER LIMIT FOR ADDRESS
803	001442	015252				DMBVEC			:STORAGE FOR ADDRESS
804	001444	032737	000003	015252	1\$:	BIT	#3,DMBVEC		:TEST 2 LSB OF ADDRESS
805	001452	001404				BEQ	VECST1		:IF 0, CONTINUE
806	001454	012716	001444			MOV	#1\$, (SP)		
807	001460	000137	012436			JMP	INSTER		:INCORRECT ADDRESS, TRY AGAIN
808	001464	013737	015252	015254	VECST1:	MOV	DMBVEC,DMBLVL		:GENERATE ADDRESS OF
809	001472	062737	000002	015254		ADD	#2,DMBLVL		:INTERRUPT STATUS WORD
810	001500	104013				INSTRG			:GET ADDRESS OF CONTROL REGISTER
811	001502	016312				MREGAD			:MESSAGE 'REGISTER ADDRESS-'
812	001504	160000				160000			:LOWER LIMIT FOR ADDRESS
813	001506	176000				176000			:UPPER LIMIT FOR ADDRESS
814	001510	015256				DMBCSR			:STORAGE FOR ADDRESS
815	001512	032737	000007	015256	1\$:	BIT	#7,DMBCSR		:IF 3 LSB ARE NOT 0
816	001520	001404				BEQ	REGST1		
817	001522	012716	001512			MOV	#1\$, (SP)		
818	001526	000137	012436			JMP	INSTER		:INCORRECT ADDRESS, TRY AGAIN
819	001532	013737	015256	015260	REGST1:	MOV	DMBCSR,DMBLSR		:SET UP ADDRESS OF LINE STATUS REGISTER
820	001540	062737	000002	015260		ADD	#2,DMBLSR		

821	001546	104013				KMCPAR: INSTRG	
822	001550	016262				KVECTOR	
823	001552	000100				100	
824	001554	000774				774	
825	001556	015316				KMCVEC	
826	001560	032737	000703	015316	1\$:	BIT	#3,KMCVEC
827	001566	001404				BEQ	2\$
828	001570	012716	001550			MOV	#1\$,(SP)
829	001574	000137	012436			JMP	INSTER
830	001600	012700	015320		2\$:	MOV	#KMCLVL,R0
831	001604	012701	000003			MOV	#3,R1
832	001610	016010	177776		3\$:	MOV	-2(R0),(R0)
833	001614	062720	000002			ADD	#2,(R0)+
834	001620	005301				DEC	R1
835	001622	001372				BNE	3\$
836	001624	104013				INSTRG	
837	001626	016336				KREGAD	
838	001630	160000				160000	
839	001632	176000				176000	
840	001634	015276				KMCCSR	
841	001636	032737	000007	015276	4\$:	BIT	#7,KMCCSR
842	001644	001404				BEQ	5\$
843	001646	012716	001636			MOV	#4\$,(SP)
844	001652	000137	012436			JMP	INSTER
845	001656	012700	015300		5\$:	MOV	#BSEL1,R0
846	001662	012701	000007			MOV	#7,R1
847	001666	016010	177776		6\$:	MOV	-2(R0),(R0)
848	001672	005220				INC	(R0)+
849	001674	005301				DEC	R1
850	001676	001373				BNE	6\$

851	001700	012706	001100		STARTN:	MOV	#STACK,SP		:SET UP PROCESSOR STACK
852	001704	104013				INSTRG			:GET TEST NUMBER
853	001706	016414				MTEST			:MESSAGE 'TEST-'
854	001710	000000				0			:LOWER LIMIT FOR TEST NUMBER
855	001712	000177				177			:UPPER LIMIT FOR TEST NUMBER
856	001714	015334				TSTNO			:STORAGE FOR TEST NUMBER
857	001716	013705	015334		X1A:	MOV	TSTNO,R5		:GET TEST NUMBER
858	001722	042705	177077			BIC	#177077,R5		:EXTRACT TEST GROUP NUMBER
859	001726	006205				ASR	R5		
860	001730	006205				ASR	R5		
861	001732	006205				ASR	R5		
862	001734	006205				ASR	R5		
863	001736	006205				ASR	R5		
864	001740	016537	017130	015370		MOV	GRO(R5),TSTMAX		:GET HIGHEST TEST IN GROUP
865	001746	016537	017114	015366		MOV	TSTLST(R5),TSTPNT		:GET POINTER TO TEST TABLE
866	001754	005737	015366			TST	TSTPNT		:IF 0, INVALID TEST GROUP
867	001760	001004				BNE	STRTOA		
868	001762	012716	001716		X1B:	MOV	#X1A,(SP)		
869	001766	000137	012436			JMP	INSTENT		:TRY AGAIN
870	001772	042737	177700	015334	STRTOA:	BIC	#177700,TSTNO		:GET NUMBER OF FIRST TEST
871									:TO BE EXECUTED IN SELECTED GROUP
872	002000	023737	015334	015370		CMP	TSTNO,TSTMAX		:IS NUMBER TOO LARGE
873	002006	003401				BLE	TSTGO		
874	002010	000764				BR	X1B		
875	002012	012746	000340		TSTGO:	MOV	#340,-(SP)		:SET UP PRIORITY LEVEL
876	002016	005746				PUSH1SP			
877	002020	000005				RESET			
878	002022	004737	012730			JSR	PC,KMCSUP		::SETUP KMC11
879	002026	012737	002304	002306		MOV	#DMYRTI,KRET		:SET UP DUMMY KEYBOARD RETURN
880	002034	005037	015372			CLR	LINFLG		:CLEAR LINE SELECTED FLAG
881	002040	005037	015330			CLR	TRACON		:CLEAR TRACE TRAP FLAG
882	002044	005037	015332			CLR	PASCNT		:CLEAR PASS COUNT
883	002050	104004				TYPE			
884	002052	016430				MCRLF			
885	002054	012737	000001	002066	1\$:	MOV	#1,TIPFLG		:SET TEST IN PROGRESS FLAG
886	002062	000137	011046			JMP	TSTENT		:START TESTING
887	002066	000000			TIPFLG:	0			



```

888                                     ;TELETYPE KEYBOARD INTERRUPT SERVICE ROUTINE
889
890 002070 005037 002066          KBDINT: CLR      TIPFLG          ;CLEAR TEST IN PROGRESS FLAG
891 002074 005037 011744          CLR      TMP1
892 002100 005037 002310          CLR      SINTFL          ;CLEAR SOFTWARE INTERRUPT FLAG
893 002104 117737 013154 011744  MOVB     @TKDBR,TMP1
894 002112 142737 000200 011744  BICB     #200,TMP1
895 002120 122737 000003 011744  CMPB     #3,TMP1          ;IF <CONTROL C> WAS TYPED
896 002126 001011          BNE     KBDIN1          ;TYPE '^C' AND
897 002130 104004          TYPE          ;SELECT NEW TEST
898 002132 016660          MCONTC
899 002134 022626          POP2SP
900 002136 005077 013114          CLR      @DMBCSR
901 002142 005077 013114          CLR      @TKCSR
902 002146 000137 001700          JMP      STARTN
903 002152 122737 000026 011744  KBDIN1: CMPB     #26,TMP1          ;IF <CONTROL V> WAS TYPED
904 002160 001011          BNE     KBDIN2          ;TYPE '^V' AND GET NEW
905 002162 104004          TYPE          ;VECTOR AND REGISTER ADDRESS
906 002164 016663          MCONTV
907 002166 022626          POP2SP
908 002170 005077 013062          CLR      @DMBCSR
909 002174 005077 013062          CLR      @TKCSR
910 002200 000137 001340          JMP      VECSTR
911 002204 122737 000014 011744  KBDIN2: CMPB     #14,TMP1          ;IF <CONTROL L> WAS TYPED
912 002212 001015          BNE     KBDIN3          ;TYPE '^L' AND GET NEW
913 002214 104004          TYPE          ;LINE NUMBERS, UNLESS
914 002216 016666          MCONTL          ;TEST GROUP 0 WAS IN PROGRESS
915 002220 022737 002304 002306  CMP      #DMYRTI,KRET          ;IF <CONTROL L> WAS TYPED IN TEST
916 002226 001426          BEQ     DMYRTI          ;GROUP 0, IGNORE
917 002230 022626          POP2SP
918 002232 005077 013020          CLR      @DMBCSR
919 002236 005077 013020          CLR      @TKCSR
920 002242 000177 000040          JMP      @KRET
921 002246 022737 000176 015272  KBDIN3: CMP      #SWREG,SWR
922 002254 001005          BNE     1$
923 002256 122737 000007 011744  CMPB     #7,TMP1
924 002264 001001          BNE     1$
925 002266 104016          CNTRLU
926 002270 012737 000001 002310  1$:     MOV      #1,SINTFL          ;SET SOFTWARE INTERRUPT FLAG
927 002276 012737 000001 002066  MOV      #1,TIPFLG          ;SET TEST IN PROGRESS FLAG
928 002304 000002          DMYRTI: RTI
929          .EVEN
930 002306 000000          KRET:   0
931 002310 000000          SINTFL: 0

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```
932                                     ;INITIALIZATION CHECK - PERFORMED ONLY AT PROGRAM START
933                                     ;VERIFY THAT CONTROL STATUS REGISTER AND LINE STATUS
934                                     ;REGISTER WERE CLEARED BY INITIALIZE
935
936 002312                               T0:                                     ;REFERENCE DESIGNATION
937 002312 104004                         ;TYPE '8 LINE SCANNER TEST'
938 002314 015630
939 002316 005777 012734                 INIT1:                               ;TEST CONTROL STATUS REGISTER
940 002322 001401                         ;CONTROL STATUS NOT CLEARED, ERROR
941 002324 104012                         ;TEST LINE STATUS REGISTER
942 002326 005777 012726                 TST @DMBCSR
943 002332 001401                         ;LINE STATUS NOT CLEARED, ERROR
944 002334 104012                         ;CHECK FOR LOOP
945 002336 104002                         ;VERIFY THAT "INTERRUPT ENABLE" CAN BE
946                                     ;SET AND CLEARED.
947
948
949
950 002340                               T1:                                     ;REFERENCE DESIGNATION
951 002340 012777 000100 012710          CSTR1: MOV #INTENA,@DMBCSR                ;SET INTERRUPT ENABLE
952 002346 032777 000100 012702          BIT #INTENA,@DMBCSR                ;WAS INTERRUPT ENABLE SET
953 002354 001001                         ;NO, ERROR
954 002356 104012                         ;CLEAR INTERRUPT ENABLE
955 002360 042777 000100 012670          BIC #INTENA,@DMBCSR                ;WAS INTERRUPT ENABLE CLEARED
956 002366 032777 000100 012662          BIT #INTENA,@DMBCSR
957 002374 001401                         ;NO, ERROR
958 002376 104012                         ;CHECK FOR ITERATIONS, LOOP
959 002400 104002
960
961                                     ;VERIFY THAT "DONE" CAN BE SET AND CLEARED
962
963 002402                               T2:                                     ;REFERENCE DESIGNATION
964 002402 012777 000200 012646          CSTR2: MOV #DONE,@DMBCSR              ;SET DONE
965 002410 032777 000200 012640          BIT #DONE,@DMBCSR                  ;WAS DONE SET
966 002416 001001                         ;NO, ERROR
967 002420 104012                         ;CLEAR DONE
968 002422 042777 000200 012626          BIC #DONE,@DMBCSR                  ;WAS DONE CLEARED
969 002430 032777 000200 012620          BIT #DONE,@DMBCSR
970 002436 001401                         ;NO, ERROR
971 002440 104012                         ;CHECK FOR ITERATIONS, LOOP
972 002442 104002
973
974                                     ;VERIFY "MAINTENANCE MODE" CAN BE SET AND CLEARED
975
976 002444                               T3:                                     ;REFERENCE DESIGNATION
977 002444 012777 001000 012604          CSTR3: MOV #MAINT,@DMBCSR            ;SET MAINTENANCE MODE
978 002452 032777 001000 012576          BIT #MAINT,@DMBCSR                 ;WAS MAINTENANCE MODE SET
979 002460 001001                         ;NO, ERROR
980 002462 104012                         ;CLEAR MAINTENANCE MODE
981 002464 042777 001000 012564          BIC #MAINT,@DMBCSR                 ;WAS MAINTENANCE MODE CLEARED
982 002472 032777 001000 012556          BIT #MAINT,@DMBCSR
983 002500 001401                         ;NO, ERROR
984 002502 104012                         ;CHECK FOR ITERATIONS, LOOP
985 002504 104002
986
987                                     ;VERIFY THAT "SCAN ENABLE" CAN BE SET AND CLEARED.
```

988										
989	002506			012542	T4:					:REFERENCE DESIGNATION
990	002506	012777	000040	012542	CSTR4:	MOV	#SCNENA,@DMBCSR			:SET SCAN ENABLE
991	002514	032777	000040	012534		BIT	#SCNENA,@DMBCSR			:WAS SCAN ENABLE SET
992	002522	001001				BNE	+.4			
993										
994	002524	104012				ERROR				:NO, ERROR
995	002526	042777	000040	012522		BIC	#SCNENA,@DMBCSR			:CLEAR SCAN ENABLE
996	002534	032777	000040	012514		BIT	#SCNENA,@DMBCSR			:WAS SCAN ENABLE CLEARED
997	002542	001401				BEQ	+.4			
998										
999	002544	104012				ERROR				:NO, ERROR
1000	002546	104002				SCOPE				:CHECK FOR ITERATIONS, LOOP
1001										
1002										:VERIFY THAT 'BUSY' IS SET WHEN 'SCAN ENABLE' IS SET
1003										:VERIFY THAT 'BUSY' IS CLEARED WHEN 'SCAN ENABLE' IS CLEARED
1004										
1005	002550			012500	T5:					:REFERENCE DESIGNATION
1006	002550	012777	000040	012500	CSTR5:	MOV	#SCNENA,@DMBCSR			:SET SCAN ENABLE
1007	002556	032777	000020	012472		BIT	#BUSY,@DMBCSR			:IS BUSY BIT SET
1008	002564	001001				BNE	+.4			
1009	002566	104012				ERROR				:BUSY NOT SET, ERROR
1010	002570	042777	000040	012460		BIC	#SCNENA,@DMBCSR			:CLEAR SCAN ENABLE
1011	002576	032777	000020	012452		BIT	#BUSY,@DMBCSR			:IS BUSY BIT CLEARED
1012	002604	001401				BEQ	+.4			
1013	002606	104012				ERROR				:BUSY NOT CLEARED, ERROR
1014	002610	104002				SCOPE				:CHECK FOR LOOP, ITERATIONS
1015										
1016										:VERIFY THAT SETTING 'DONE' DOES NOT CAUSE AN
1017										:INTERRUPT IF 'INTERRUPT ENABLE' IS CLEARED.
1018										
1019	002612			177776	T6:					:REFERENCE DESIGNATION
1020	002612	052737	000340	177776	INT1:	BIS	#340,PS			:LOCK OUT INTERRUPTS
1021	002620	005077	012432			CLR	@DMBCSR			:CLEAR CONTROL REGISTER
1022	002624	012777	002660	012420		MOV	#INT1A,@DMBVEC			:SET UP INTERRUPT SERVICE ADDRESS
1023	002632	013777	177776	012414		MOV	PS,@DMBLVL			:SET UP INTERRUPT PRIORITY
1024	002640	052777	000200	012410		BIS	#DONE,@DMBCSR			:SET DONE
1025	002646	042737	000340	177776		BIC	#340,PS			:ALLOW INTERRUPTS
1026	002654	000240				NOP				:DELAY FOR INTERRUPT
1027	002656	000402				BR	INT1B			:NO INTERRUPT, CONTINUE
1028	002660	022626			INT1A:	POP2SP				:RESTORE STACK, INTERRUPT
1029	002662	104012				ERROR				:OCCURED, ERROR
1030	002664	104002			INT1B:	SCOPE				:CHECK FOR LOOP, ITERATIONS
1031										
1032										:VERIFY THAT NO INTERRUPT OCCURS WITH 'INTERRUPT ENABLE'
1033										:SET AND 'DONE' CLEARED.
1034										
1035	002666			177776	T7:					:REFERENCE DESIGNATION
1036	002666	052737	000340	177776	INT2:	BIS	#340,PS			:LOCK OUT INTERRUPTS
1037	002674	005077	012356			CLR	@DMBCSR			:CLEAR CONTROL REGISTER
1038	002700	012777	002734	012344		MOV	#INT2A,@DMBVEC			:SET UP INTERRUPT SERVICE ADDRESS
1039	002706	013777	177776	012340		MOV	PS,@DMBLVL			:SET UP INTERRUPT SERVICE LEVEL
1040	002714	052777	000100	012334		BIS	#INTENA,@DMBCSR			:SET INTERRUPT ENABLE
1041	002722	042737	000340	177776		BIC	#340,PS			:ALLOW INTERRUPTS
1042	002730	000240				NOP				:DELAY FOR INTERRUPTS
1043	002732	000402				BR	INT2B			:NO INTERRUPT, CONTINUE

1044	002734	022626			INT2A:	POP2SP		:RESTORE STACK
1045	002736	104012				ERROR		:INTERRUPT OCCURED, ERROR
1046	002740	104002			INT2B:	SCOPE		:CHECK FOR ITERATIONS, LOOP
1047								
1048								:VERIFY THAT SETTING 'DONE' CAUSES AN INTERRUPT
1049								:WITH 'INTERRUPT ENABLE' SET
1050								
1051	002742				T10:			:REFERENCE DESIGNATION
1052	002742	052737	000340	177776	INT3:	BIS	#340,PS	:LOCK OUT INTERRUPTS
1053	002750	005077	012302			CLR	@DMBCSR	:CLEAR CONTROL REGISTER
1054	002754	012777	003026	012270		MOV	#INT3A,@DMBVEC	:SET UP INTERRUPT SERVICE ADDRESS
1055	002762	012777	000100	012266		MOV	#INTENA,@DMBCSR	:SET 'INTERRUPT ENABLE'
1056	002770	013777	177776	012256		MOV	PS,@DMBLVL	:SET 'INTERRUPT LEVEL'
1057	002776	042737	000340	177776		BIC	#340,PS	:ALLOW INTERRUPTS
1058	003004	052777	000200	012244		BIS	#DONE,@DMBCSR	:SET 'DONE'
1059	003012	000240				NOP		:DELAY FOR INTERRUPT
1060	003014	000240				NOP		
1061	003016	005077	012234			CLR	@DMBCSR	
1062	003022	104012				ERROR		:INTERRUPT OCCURED, ERROR
1063	003024	000401				BR	INT3B	:CONTINUE
1064	003026	022626			INT3A:	POP2SP		:INTERRUPT OCCURED, RESTOR STACK
1065	003030	104002			INT3B:	SCOPE		:CHECK FOR ITERATION, LOOP
1066								

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1067
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1070 003032
1071 003032 005077 012220
1072 003036 042737 000340 177776
1073 003044 052737 000340 177776
1074 003052 012777 003114 012172
1075 003060 013777 177776 012166
1076 003066 012777 000100 012162
1077 003074 052777 000200 012154
1078 003102 000240
1079 003104 000240
1080 003106 005077 012144
1081 003112 000402
1082 003114 022626
1083 003116 104012
1084 003120 104002
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1086
1087
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1090 003122
1091 003122 005077 012130
1092 003126 042737 000340 177776
1093 003134 052737 000300 177776
1094 003142 012777 003204 012102
1095 003150 013777 177776 012076
1096 003156 012777 000100 012072
1097 003164 052777 000200 012064
1098 003172 000240
1099 003174 000240
1100 003176 005077 012054
1101 003202 000402
1102 003204 022626
1103 003206 104012
1104 003210 104002
1105
1106
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1108
1109
1110 003212
1111 003212 005077 012040
1112 003216 042737 000340 177776
1113 003224 052737 000240 177776
1114 003232 012777 003274 012012
1115 003240 013777 177776 012006
1116 003246 012777 000100 012002
1117 003254 052777 000200 011774
1118 003262 000240
1119 003264 000240
1120 003266 005077 011764
1121 003272 000402
1122 003274 022626

:VERIFY THAT NO INTERRUPT OCCURS WITH
: 'INTERRUPT ENABLE' SET AND 'DONE' SET AT PRIORITY 7.
T11:
INT4: CLR @DMBCSR ;REFERENCE DESIGNATION
      BIC #340,PS ;CLEAR CONTROL REGISTER
      BIS #340,PS ;SET PROCESSOR PRIORITY
      MOV #INT4A,@DMBVEC ;TO LEVEL 7.
      MOV PS,@DMBLVL ;SET UP INTERRUPT SERVICE ADDRESS
      MOV #INTENA,@DMBCSR ;SET UP INTERRUPT SERVICE LEVEL
      BIS #DONE,@DMBCSR ;SET INTERRUPT ENABLE
      NOP ;GENERATE INTERRUPT
      NOP ;DELAY FOR INTERRUPT
      CLR @DMBCSR
      BR INT4B ;NO INTERRUPT, CONTINUE
INT4A: POP2SP ;RESTORE STACK
      ERROR ;INTERRUPT OCCURED, ERROR
INT4B: SCOPE ;CHECK FOR ITERATION, LOOP

:VERIFY THAT NO INTERRUPT OCCURS WITH
: 'INTERRUPT ENABLE' SET AND 'DONE' SET AT PRIORITY 6.
T12:
INT5: CLR @DMBCSR ;REFERENCE DESIGNATION
      BIC #340,PS ;CLEAR CONTROL REGISTER
      BIS #300,PS ;SET PROCESSOR PRIORITY
      MOV #INT5A,@DMBVEC ;TO LEVEL 6.
      MOV PS,@DMBLVL ;SET UP INTERRUPT SERVICE ADDRESS
      MOV #INTENA,@DMBCSR ;SET UP INTERRUPT SERVICE LEVEL
      BIS #DONE,@DMBCSR ;SET INTERRUPT ENABLE
      NOP ;GENERATE INTERRUPT
      NOP ;DELAY FOR INTERRUPT
      CLR @DMBCSR
      BR INT5B ;NO INTERRUPT, CONTINUE
INT5A: POP2SP ;RESTORE STACK
      ERROR ;INTERRUPT OCCURED, ERROR
INT5B: SCOPE ;CHECK FOR ITERATION, LOOP

:VERIFY THAT NO INTERRUPT OCCURS WITH
: 'INTERRUPT ENABLE' SET AND 'DONE' SET AT PRIORITY 5.
T13:
INT6: CLR @DMBCSR ;REFERENCE DESIGNATION
      BIC #340,PS ;CLEAR CONTROL REGISTER
      BIS #240,PS ;SET PROCESSOR PRIORITY
      MOV #INT6A,@DMBVEC ;TO LEVEL 5.
      MOV PS,@DMBLVL ;SET UP INTERRUPT SERVICE ADDRESS
      MOV #INTENA,@DMBCSR ;SET UP INTERRUPT SERVICE LEVEL
      BIS #DONE,@DMBCSR ;SET INTERRUPT ENABLE
      NOP ;GENERATE INTERRUPT
      NOP ;DELAY FOR INTERRUPT
      CLR @DMBCSR
      BR INT6B ;NO INTERRUPT, CONTINUE
INT6A: POP2SP ;RESTORE STACK
```

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1123 003276 104012
1124 003300 104002
1125
1126
1127
1128
1129
1130 003302
1131 003302 005077 011750
1132 003306 042737 000340 177776
1133 003314 052737 000200 177776
1134 003322 012777 003364 011722
1135 003330 013777 177776 011716
1136 003336 012777 000100 011712
1137 003344 052777 000200 011704
1138 003352 000240
1139 003354 000240
1140 003356 005077 011674
1141 003362 000402
1142 003364 022626
1143 003366 104012
1144 003370 104002
1145
1146
1147

INT6B: ERROR ; INTERRUPT OCCURED, ERROR
SCOPE ; CHECK FOR ITERATION, LOOP

T14:
INT7: ; VERIFY THAT NO INTERRUPT OCCURS WITH
; "INTERRUPT ENABLE" SET AND "DONE" SET AT PRIORITY 4.
; REFERENCE DESIGNATION
CLR @DMBCSR ; CLEAR CONTROL REGISTER
BIC #340,PS ; SET PROCESSOR PRIORITY
BIS #200,PS ; TO LEVEL 4.
MOV #INT7A,@DMBVEC ; SET UP INTERRUPT SERVICE ADDRESS
MOV PS,@DMBLVL ; SET UP INTERRUPT SERVICE LEVEL
MOV #INTENA,@DMBCSR ; SET INTERRUPT ENABLE
BIS #DONE,@DMBCSR ; GENERATE INTERRUPT
NOP ; DELAY FOR INTERRUPT
NOP
CLR @DMBCSR
BR INT7B ; NO INTERRUPT, CONTINUE
INT7A: POP2SP ; RESTORE STACK
ERROR ; INTERRUPT OCCURED, ERROR
INT7B: SCOPE ; CHECK FOR ITERATION, LOOP
```

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1148  
1149  
1150  
1151 003372  
1152 003372 005077 011660  
1153 003376 042737 000340 177776  
1154 003404 012777 003454 011640  
1155 003412 005077 011636  
1156 003416 052737 000000 177776  
1157 003424 012777 000100 011624  
1158 003432 052777 000200 011616  
1159 003440 000240  
1160 003442 000240  
1161 003444 005077 011606  
1162 003450 104012  
1163 003452 000401  
1164 003454 022626  
1165 003456 104002  
1166  
1167  
1168  
1169  
1170 003460  
1171 003460 005077 011572  
1172 003464 042737 000340 177776  
1173 003472 012777 003542 011552  
1174 003500 005077 011550  
1175 003504 052737 000040 177776  
1176 003512 012777 000100 011536  
1177 003520 052777 000200 011530  
1178 003526 000240  
1179 003530 000240  
1180 003532 005077 011520  
1181 003536 104012  
1182 003540 000401  
1183 003542 022626  
1184 003544 104002  
1185  
1186  
1187  
1188  
1189 003546  
1190 003546 005077 011504  
1191 003552 042737 000340 177776  
1192 003560 012777 003630 011464  
1193 003566 005077 011462  
1194 003572 052737 000100 177776  
1195 003600 012777 000100 011450  
1196 003606 052777 000200 011442  
1197 003614 000240  
1198 003616 000240  
1199 003620 005077 011432  
1200 003624 104012  
1201 003626 000401  
1202 003630 022626  
1203 003632 104002
```

```
      :VERIFY THAT AN INTERRUPT OCCURS WITH "INTERRUPT  
      :ENABLE" SET AND "DONE" SET AT PRIORITY 0.  
T15:  :REFERENCE DESIGNATION  
INT10: CLR @DMBCSR :CLEAR CONTROL REGISTER  
      BIC #340,PS :ALLOW INTERRUPTS  
      MOV #INT10A,@DMBVEC :SET UP INTERRUPT SERVICE ADDRESS  
      CLR @DMBLVL :SET UP INTERRUPT SERVICE PRIORITY  
      BIS #0,PS :SET PROCESSOR PRIORITY TO LEVEL 0.  
      MOV #INTENA,@DMBCSR :SET INTERRUPT ENABLE  
      BIS #DONE,@DMBCSR :GENERATE INTERRUPT  
      NOP :WAIT FOR INTERRUPT  
      NOP  
      CLR @DMBCSR  
      ERROR :NO INTERRUPT, ERROR  
      BR INT10B :CONTINUE  
INT10A: POP2SP :INTERRUPT OCCURED, RESTORE STACK  
INT10B: SCOPE :CHECK FOR INTERATIONS, LOOP.  
  
      :VERIFY THAT AN INTERRUPT OCCURS WITH "INTERRUPT  
      :ENABLE" SET AND "DONE" SET AT PRIORITY 1.  
T16:  :REFERENCE DESIGNATION  
INT11: CLR @DMBCSR :CLEAR CONTROL REGISTER  
      BIC #340,PS :ALLOW INTERRUPTS  
      MOV #INT11A,@DMBVEC :SET UP INTERRUPT SERVICE ADDRESS  
      CLR @DMBLVL :SET UP INTERRUPT SERVICE PRIORITY  
      BIS #40,PS :SET PROCESSOR PRIORITY TO LEVEL 1.  
      MOV #INTENA,@DMBCSR :SET INTERRUPT ENABLE  
      BIS #DONE,@DMBCSR :GENERATE INTERRUPT  
      NOP :WAIT FOR INTERRUPT  
      NOP  
      CLR @DMBCSR  
      ERROR :NO INTERRUPT, ERROR  
      BR INT11B :CONTINUE  
INT11A: POP2SP :INTERRUPT OCCURED, RESTORE STACK  
INT11B: SCOPE :CHECK FOR INTERATIONS, LOOP.  
  
      :VERIFY THAT AN INTERRUPT OCCURS WITH "INTERRUPT  
      :ENABLE" SET AND "DONE" SET AT PRIORITY 2.  
T17:  :REFERENCE DESIGNATION  
INT12: CLR @DMBCSR :CLEAR CONTROL REGISTER  
      BIC #340,PS :ALLOW INTERRUPTS  
      MOV #INT12A,@DMBVEC :SET UP INTERRUPT SERVICE ADDRESS  
      CLR @DMBLVL :SET UP INTERRUPT SERVICE PRIORITY  
      BIS #100,PS :SET PROCESSOR PRIORITY TO LEVEL 2.  
      MOV #INTENA,@DMBCSR :SET INTERRUPT ENABLE  
      BIS #DONE,@DMBCSR :GENERATE INTERRUPT  
      NOP :WAIT FOR INTERRUPT  
      NOP  
      CLR @DMBCSR  
      ERROR :NO INTERRUPT, ERROR  
      BR INT12B :CONTINUE  
INT12A: POP2SP :INTERRUPT OCCURED, RESTORE STACK  
INT12B: SCOPE :CHECK FOR INTERATIONS, LOOP.
```

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1204
1205
1206
1207
1208 003634
1209 003634 005077 011416
1210 003640 042737 000340 177776
1211 003646 012777 003716 011376
1212 003654 005077 011374
1213 003660 052737 000140 177776
1214 003666 012777 000100 011362
1215 003674 052777 000200 011354
1216 003702 000240
1217 003704 000240
1218 003706 005077 011344
1219 003712 104012
1220 003714 000401
1221 003716 022626
1222 003720 104002
1223
1224
1225
1226
1227
1228 003722
1229 003722 005077 011330
1230 003726 042737 000340 177776
1231 003734 005005
1232 003736 012700 000010
1233 003742 010577 011310
1234 003746 017704 011304
1235 003752 020504
1236 003754 001401
1237 003756 104000
1238 003760 104003
1239 003762 003742
1240 003764 005205
1241 003766 005300
1242 003770 001364
1243 003772 104002
1244
1245
1246
1247
1248 003774
1249 003774 042737 000340 177776
1250 004002 005077 011250
1251 004006 005005
1252 004010 012700 000010
1253 004014 012777 000007 011234
1254 004022 052777 000400 011226
1255 004030 017704 011222
1256 004034 020504
1257 004036 001401
1258 004040 104000
1259 004042 104003

:VERIFY THAT AN INTERRUPT OCCURS WITH "INTERRUPT
:ENABLE" SET AND "DONE" SET AT PRIORITY 3.
T20:
INT13: CLR @DMBCSR :REFERENCE DESIGNATION
      BIC #340,PS :CLEAR CONTROL REGISTER
      MOV #INT13A,@DMBVEC :ALLOW INTERRUPTS
      CLR @DMBLVL :SET UP INTERRUPT SERVICE ADDRESS
      BIS #140,PS :SET UP INTERRUPT SERVICE PRIORITY
      MOV #INTENA,@DMBCSR :SET PROCESSOR PRIORITY TO LEVEL 3.
      BIS #DONE,@DMBCSR :SET INTERRUPT ENABLE
      NOP :GENERATE INTERRUPT
      NOP :WAIT FOR INTERRUPT
      CLR @DMBCSR
      ERROR :NO INTERRUPT, ERROR
      BR INT13B :CONTINUE
INT13A: POP2SP :INTERRUPT OCCURED, RESTORE STACK
INT13B: SCOPE :CHECK FOR INTERATIONS, LOOP.

:VERIFY THAT ALL LINE NUMBERS CAN BE WRITTEN INTO AND
:READ BACK FROM LINE COUNTER
T21:
LINT1: CLR @DMBCSR :REFERENCE DESIGNATION
      BIC #340,PS :CLEAR CONTROL STATUS REGISTER
      CLR R5 :ENABLE INTERRUPTS
      MOV #8,R0 :CLEAR EXPECTED LINE NUMBER
      MOV R5,@DMBCSR :SET UP TO TEST 8 LINE NUMBERS
      MOV @DMBCSR,R4 :SET LINE NUMBER
      CMP R5,R4 :READ BACK LINE NUMBER
      BEQ LINT1B :ARE EXPECTED AND RECEIVED
      ERRORC :LINE NUMBERS THE SAME
      SCOPEF :LINE NUMBERS DIFFERENT, ERROR
      LINT1A :CHECK FOR DATA FREEZE
      INC R5 :RETURN FOR DATA FREEZE
      DEC R0 :UPDATE LINE COUNT
      BNE LINT1A :UPDATE LINE NUMBER
      SCOPE :CONTINUE
      :CHECK FOR ITERATION, LOOP

:USING "STEP" MODE, VERIFY THAT THE
:LINE COUNTER CAN BE STEPPED THRU ALL STATES.
T22:
LINT2: BIC #340,PS :REFERENCE DESIGNATION
      CLR @DMBCSR :ENABLE INTERRUPTS
      CLR R5 :CLEAR CONTROL STATUS REGISTER
      MOV #8,R0 :CLEAR EXPECTED LINE COUNT
      MOV #7,@DMBCSR :SET UP TO TEST 8 VALUES
      BIS #STEP,@DMBCSR :FIRST VALUE =0
      MOV @DMBCSR,R4 :STEP LINE COUNTER
      CMP R5,R4 :READ LINE COUNTER
      BEQ LINT2B :COMPARE EXPECTED AND
      ERRORC :RECEIVED LINE NUMBERS
      SCOPEF :LINE COUNTER ERROR
      :CHECK FOR DATA FREEZE
  
```



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1260 004044 003774          LINT2
1261 004046 005205          INC      R5          :UPDATE EXPECTED LINE NUMBER
1262 004050 005300          DEC      R0
1263 004052 001363          BNE     LINT2A
1264 004054 104002          SCOPE          :CHECK FOR ITERATIONS, LOOP
1265
1266          :WRITE 1'S INTO ALL SCANNER MEMORY LOCATIONS.
1267          :VERIFY THAT ALL LOCATIONS HAVE BEEN WRITTEN
1268          :TO 1'S.
1269          :VERIFY THAT "CLEAR SCAN" CLEARS ALL SCANNER
1270          :MEMORY LOCATIONS.
1271
1272 004056          T23:          :REFERENCE DESIGNATION
1273 004056 012777 002000 011172 MEMT1: MOV      #CLRMUX,@DMBCSR :CLEAR CONTROL STATUS REGISTER
1274 004064 042737 000340 177776      BIC      #340,PS      :ENABLE INTERRUPTS
1275 004072 012700 000010          MOV      #8.,R0       :SET UP TO TEST 8 LOCATIONS
1276 004076 052777 001017 011152 MEMT1A: BIS      #MAINT+17,@DMBCSR :SET MAINTENANCE MODE
1277 004104 052777 000400 011144      BIS      #STEP,@DMBCSR :SET LINE COUNTER THRU ALL
1278 004112 005300          DEC      R0           :STATES, WRITING 1'S INTO
1279 004114 001373          BNE     MEMT1A        :ALL MEMORY WORDS
1280 004116 012700 000010          MOV      #8.,R0       :SET UP TO TEST 8 WORDS
1281 004122 012705 070000          MOV      #70000,R5    :SET UP EXPECTED STATUS REGISTER
1282 004126 012777 000007 011122 MEMT1B: MOV      #7,@DMBCSR    :START WITH LINE 0
1283 004134 052777 000400 011114      BIS      #STEP,@DMBCSR :ACCESS SCANNER MEMORY
1284 004142 017704 011110          MOV      @DMBCSR,R4   :READ DATA
1285 004146 020504          CMP      R5,R4        :COMPARE EXPECTED AND RECEIVED
1286 004150 001403          BEQ     MEMT1C        :DATA
1287 004152 104000          ERRORC :CONTROL STATUS OR MEMORY ERROR
1288 004154 104003          SCOPEFF :CHECK FOR DATA FREEZE
1289 004156 004056          MEMT1
1290 004160 005205          MEMT1C: INC      R5          :UPDATE EXPECTED STATUS
1291 004162 005300          DEC      R0           :UPDATE LINE COUNT
1292 004164 001363          BNE     MEMT1B        :CONTINUE
1293 004166 012777 004000 011062 MEMT1D: MOV      #CLRSCN,@DMBCSR :SET "CLEAR SCAN"
1294 004174 032777 000020 011054      BIT      #BUSY,@DMBCSR :WAIT FOR "CLEAR CYCLES"
1295 004202 001374          BNE     -.6
1296 004204 012700 000010          MOV      #8.,R0       :SET UP TO TEST 8 MEMORY
1297 004210 005005          CLR      R5           :LOCATIONS
1298 004212 012777 000007 011036 MEMT1E: MOV      #7,@DMBCSR    :FIRST TO BE TESTED=0
1299 004220 052777 000400 011030      BIS      #STEP,@DMBCSR :ACCESS SEANNER MEMORY
1300 004226 017704 011024          MOV      @DMBCSR,R4   :READ DATA
1301 004232 020504          CMP      R5,R4        :COMPARE EXPECTED AND RECEIVED
1302 004234 001403          BEQ     MEMT1F        :DATA
1303 004236 104000          ERRORC :CONTROL STATUS OF MEMORY ERROR
1304 004240 104003          SCOPEFF :CHECK FOR DATA FREEZE
1305 004242 004166          MEMT1D
1306 004244 005205          MEMT1F: INC      R5          :UPDATE EXPECTED DATA
1307 004246 005300          DEC      R0           :UPDATE LINE COUNT
1308 004250 001363          BNE     MEMT1E        :CONTINUE
1309 004252 104002          SCOPE          :CHECK FOR ITERATIONS, LOOP
1310
1311          :WRITE 1'S INTO SELECTED SCANNER MEMORY LOCATION.
1312          :VERIFY THAT ONLY SELECTED LOCATION WAS WRITTEN INTO.
1313
1314 004254          T24:          :REFERENCE DESIGNATION
1315 004254 005077 010776 MEMT2: CLR      @DMBCSR :CLEAR CONTROL STATUS REGISTER
  
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1316	004260	042737	000340	177776		BIC	#340,PS	:ENABLE INTERRUPTS
1317	004266	012700	000010			MOV	#8.,R0	:SET UP TO TEST 8 ADDRESSES
1318	004272	012702	000007			MOV	#7,R2	:FIRST ADDRESS TO BE TESTED=0
1319	004276	012777	004000	010752	MEMT2A:	MOV	#CLRSCN,@DMBCSR	:CLEAR ACANNER MEMORY
1320	004304	032777	000020	010744		BIT	#BUSY,@DMBCSR	:WAIT FOR CLEAR CYCLE
1321	004312	001374				BNE	.-6	
1322	004314	012777	001000	010734		MOV	#MAINT,@DMBCSR	:SET 'MAINTENANCE MODE'
1323	004322	050277	010730			BIS	R2,@DMBCSR	:SET LINE COUNTER TO TEST ADDRESS-1
1324	004326	052777	000400	010722		BIS	#STEP,@DMBCSR	:WRITE 1'S INTO TEST ADDRESS
1325	004334	042777	001000	010714		BIC	#MAINT,@DMBCSR	:CLEAR 'MAINTENANCE MODE'
1326	004342	012703	000010			MOV	#8.,R3	:SET UP TO TEST ALL 8
1327	004346	012777	000007	010702		MOV	#7,@DMBCSR	:SCANNER MEMORY LOCATIONS
1328	004354	005202				INC	R2	
1329	004356	005001				CLR	R1	
1330	004360	052777	000400	010670	MEMT2B:	BIS	#STEP,@DMBCSR	:ACCESS SCANNER MEMORY
1331	004366	117704	010664			MOVB	@DMBCSR,R4	:READ CONTENTS OF MEMORY
1332	004372	010105				MOV	R1,R5	:SET UP EXPECTED CONTENTS
1333	004374	120402				MOVB	R4,R2	:OF SCANNER MEMORY
1334	004376	001002				BNE	MEMT2C	
1335	004400	052705	070000			BIS	#70000,R5	
1336	004404	020405			MEMT2C:	CMP	R4,R5	:COMPARE EXPECTED AND RECEIVED
1337	004406	001403				BEQ	MEMT2D	:VALUES
1338	004410	104000				ERRORC		:SCANNER MEMORY ERROR
1339	004412	104003				SCOPEF		:CHECK FOR DATA FREEZE
1340	004414	004276				MEMT2A		
1341	004416	005201			MEMT2D:	INC	R1	
1342	004420	005303				DEC	R3	:TEST NEXT SCANNER LOCATION
1343	004422	001356				BNE	MEMT2B	
1344	004424	005300				DEC	R0	:UPDATE LINE COUNT
1345	004426	001323				BNE	MEMT2A	
1346	004430	104002				SCOPE		:CHECK FOR ITERATION, LOOP
1347								
1348								:WITH ALL ACANNER MEMORY LOCATIONS SET TO 1'S,
1349								:WRITE 0'S INTO SELECTED LOCATION
1350								:VERIFY THAT ONLY SELECTED LOCATION WAS CLEARED.
1351								
1352	004432				T25:			:REFERENCE DESIGNATION
1353	004432	005077	010620		MEMT3:	CLR	@DMBCSR	:CLEAR CONTROL STATUS REGISTER
1354	004436	042737	000340	177776		BIC	#340,PS	:ENABLE INTERRUPTS
1355	004444	012700	000010			MOV	#8.,R0	:SET UP TO TEST 8 ADDRESSES
1356	004450	012702	000007			MOV	#7,R2	:FIRST ADDRESS TO BE TESTED=0
1357	004454	012703	000010		MEMT3A:	MOV	#8.,R3	:WRITE 1'S INTO ALL SCANNER
1358	004460	012777	001007	010570		MOV	#MAINT+7,@DMBCSR	:MEMORY LOCATIONS
1359	004466	052777	000400	010562	MEMT3B:	BIS	#STEP,@DMBCSR	
1360	004474	005303				DEC	R3	
1361	004476	001373				BNE	MEMT3B	
1362	004500	010277	010552			MOV	R2,@DMBCSR	:SET LINE COUNTER TO TEST ADDRESS-1
1363	004504	052777	000400	010544		BIS	#STEP,@DMBCSR	:WRITE 0'S INTO TEST ADDRESS
1364	004512	012703	000010			MOV	#8.,R3	:SET UP TO TEST ALL 8
1365	004516	012777	000007	010532		MOV	#7,@DMBCSR	:SCANNER MEMORY LOCATIONS
1366	004524	005202				INC	R2	
1367	004526	005001				CLR	R1	
1368	004530	052777	000400	010520	MEMT3C:	BIS	#STEP,@DMBCSR	:ACCESS SCANNER MEMORY
1369	004536	117704	010514			MOVB	@DMBCSR,R4	:READ CONTENTS OF MEMORY
1370	004542	010105				MOV	R1,R5	:SET UP EXPECTED CONTENTS
1371	004544	120402				MOVB	R4,R2	:OF SCANNER MEMORY

1372	004546	001002				BNE	MEMT3D		
1373	004550	052705	070000			BIS	#70000,R5		
1374	004554	020405			MEMT3D:	CMP	R4,R5		:COMPARE EXPECTED AND
1375	004556	001403				BEQ	MEMT3E		:RECEIVED VALUES
1376	004560	104000				ERRORC			:SCANNER MEMORY ERROR
1377	004562	104003				SCOPEF			:CHECK FOR DATA FREEZE
1378	004564	004454				MEMT3A			
1379	004566	005201			MEMT3E:	INC	R1		
1380	004570	005303				DEC	R3		:TEST NEXT SCANNER LOCATION
1381	004572	001356				BNE	MEMT3C		
1382	004574	005300				DEC	R0		:UPDATE ADDRESS COUNT
1383	004576	001326				BNE	MEMT3A		
1384	004600	104002				SCOPE			:CHECK FOR ITERATION, LOOP
1385									:VERIFY THAT LINE ENABLE FUNCTION FLIP-FLOP CAN
1386									:BE SET AND CLEARED FOR SELECTED LINE
1387									
1388	004602				T26:				:REFERENCE DESIGNATION
1389	004602	005077	010450		MUX1:	CLR	@DMBCSR		:CLEAR CONTROL STATUS REGISTER
1390	004606	042737	000340	177776		BIC	#340,PS		:ENABLE INTERRUPTS
1391	004614	012700	000010			MOV	#8.,R0		:SET UP TO TEST 8 FUNCTION FLIP-FLOP
1392	004620	005001				CLR	R1		:START AT LINE 0
1393	004622	012777	002000	010426	MUX1A:	MOV	#CLRMUX,@DMBCSR		
1394	004630	012702	000010			MOV	#8.,R2		
1395	004634	010177	010416			MOV	R1,@DMBCSR		:SELECT LINE TO BE TESTED
1396	004640	012777	000001	010412		MOV	#LINENA,@DMBLSR		:SET LINE ENABLE FUNCTION FLIP-FLOP
1397	004646	005077	010404			CLR	@DMBCSR		
1398	004652	005005			MUX1B:	CLR	R5		
1399	004654	017704	010400			MOV	@DMBLSR,R4		:READ LINE STATUS REGISTER
1400	004660	117703	010372			MOVB	@DMBCSR,R3		:READ CONTROL STATUS REGISTER
1401	004664	042703	177760			BIC	#177760,R3		:CLEAR UNWANTED BITS
1402	004670	020103				CMP	R1,R3		:IF LINE NUMBER=SELECTED LINE NUMBER,
1403	004672	001002				BNE	MUX1C		:EXCEPT LINE ENABLE FUNCTION FLIP FLOP
1404	004674	012705	000001			MOV	#LINENA,R5		
1405									:TO BE SET
1406	004700	020504			MUX1C:	CMP	R5,R4		:COMPARE EXPECTED AND RECEIVED
1407	004702	001403				BEQ	MUX1D		:RESULTS
1408	004704	104001				ERRORL			:LINE STATUS ERROR
1409	004706	104003				SCOPEF			
1410	004710	004712				MUX1D			
1411	004712	052777	000400	010336	MUX1D:	BIS	#STEP,@DMBCSR		:EXAMINE NEXT LINE
1412	004720	005302				DEC	R2		
1413	004722	001353				BNE	MUX1B		
1414	004724	005005				CLR	R5		
1415	004726	010177	010324		MUX1E:	MOV	R1,@DMBCSR		
1416	004732	010103				MOV	R1,R3		:SET LINE COUNTER TO SELECTED LINE
1417	004734	005077	010320			CLR	@DMBLSR		:CLEAR LINE ENABLE FLIP FLOP
1418	004740	105227	000000			INCB	#0		:DELAY FOR CABLE
1419	004744	001375				BNE	.-4		:DITTO
1420	004746	017704	010306			MOV	@DMBLSR,R4		:READ LINE STATUS REGISTER
1421	004752	005704				TST	R4		:WAS LINE ENABLE FUNCTION FLIP FLOP
1422	004754	001401				BEQ	MUX1F		:CLEARED
1423	004756	104001				ERRORL			:NO, LINE STATUS ERROR
1424	004760	104003			MUX1F:	SCOPEF			:CHECK FOR LOOP ON SAME DATA
1425	004762	004622				MUX1A			
1426	004764	005201				INC	R1		:SELECT NEXT LINE
1427	004766	005300				DEC	R0		:DECREMENT LINE COUNT

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SEQ 0035

1428 004770 001314  
1429 004772 104002

BNE MUX1A  
SCOPE

:CONTINU IF NOT DONE  
:CHECK FOR ITERATIONS, LOOP







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1565
1566
1567
1568
1569 005552
1570 005552 005077 007500
1571 005556 042737 000340 177776
1572 005564 012700 000010
1573 005570 005001
1574 005572 012702 000010
1575 005576 010177 007454
1576 005602 012777 000003 007450
1577 005610 005077 007442
1578 005614 005005
1579 005616 017704 007436
1580 005622 117703 007430
1581 005626 042703 177760
1582 005632 020103
1583 005634 001002
1584 005636 012705 000143
1585
1586 005642 020405
1587 005644 001403
1588 005646 104001
1589 005650 104003
1590 005652 005654
1591 005654 052777 000400 007374
1592 005662 005302
1593 005664 001353
1594 005666 012705 000001
1595 005672 010103
1596 005674 010177 007356
1597 005700 042777 000002 007352
1598 005706 105227 000000
1599 005712 001375
1600 005714 017704 007340
1601 005720 020504
1602 005722 001401
1603 005724 104001
1604 005726 104003
1605 005730 005572
1606 005732 005201
1607 005734 005077 007320
1608 005740 005300
1609 005742 001313
1610 005744 104002

;VERIFY THAT CLEAR TO SEND AND CARRIER ARE SET IF 'LINE ENABLE'
;AND TERMINAL ARE SET FOR SELECTED LINE.

T32:
MUX5: CLR @DMBCSR ;REFERENCE DESIGNATION
      BIC #340,PS ;CLEAR CONTROL REGISTER
      MOV #8.,R0 ;ENABLE INTERRUPTS
      CLR R1 ;SET UP TO TEST 8 LINES
      MOV #8.,R2 ;8 LINES ;START AT LINE 0
MUX5A: MOV R1,@DMBCSR ;SELECT A LINE
      MOV #LINENA+TRMRDY,@DMBLSR ;SET LINE ENABLE +TRMRDY
      CLR @DMBCSR ;CLEAR CONTROL REGISTER
MUX5B: CLR R5 ;CLEAR EXPECTED RESULT
      MOV @DMBLSR,R4 ;READ LINE STATUS
      MOVB @DMBCSR,R3 ;READ LINE NUMBER
      BIC #177760,R3 ;CLEAR UNWANTED BITS
      CMP R1,R3 ;IF RECEIVED LINE=SELECTED LINE
      BNE MUX5C ;EXPECT LINE ENABLE AND
      MOV #LINENA+TRMRDY+CO+CS,R5
MUX5C: CMP R4,R5 ;CLEAR TO SEND AND CARRIER ARE SET
      BEQ MUX5D ;COMPARE EXPECTED AND
      ERRORL ;RECEIVED RESULTS
      SCOPEF ;LINE STATUS ERROR
      MUX5D
MUX5D: BIS #STEP,@DMBCSR ;UPDATE LINE COUNTER
      DEC R2 ;CONTINUE IF ALL CHECKS
      BNE MUX5B ;ARE NOT DONE FOR THIS LINE
      MOV #LINENA,R5 ;EXPECT LINE ENABLE
MUX5E: MOV R1,R3 ;ON SELECTED LINE
      MOV R1,@DMBCSR ;SELECT LINE
      BIC #TRMRDY,@DMBLSR ;CLEAR TERMINAL
      INCB #0 ;DELAY FOR CABLE
      BNE #-4 ;DITTO
      MOV @DMBLSR,R4 ;READ LINE STATUS REGISTER
      CMP R5,R4 ;ONLY LINE ENABLE SHOULD BE
      BEQ MUX5F ;SET ON THIS LINE
      ERRORL ;LINE STATUS ERROR
      SCOPEF ;CHECK FOR LOOP ON SAME DATA
      MUX5A
MUX5F: INC R1 ;UPDATE LINE NUMBER
      CLR @DMBLSR ;CLEAR LINE STATUS REGISTER
      DEC #0 ;CONTINUE IF ALL LINES NOT
      BNE MUX5A ;TESTED
      SCOPE ;CHECK FOR ITERATIONS, LOOP

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1611
1612
1613
1614
1615 005746
1616 005746 005077 007304
1617 005752 042737 000340 177776
1618 005760 012700 000010
1619 005764 005001
1620 005766 012702 000010
1621 005772 010177 007260
1622 005776 012777 000005 007254
1623 006004 005077 007246
1624 006010 005005
1625 006012 017704 007242
1626 006016 117703 007234
1627 006022 042703 177760
1628 006026 020103
1629 006030 001002
1630 006032 012705 000205
1631
1632 006036 020405
1633 006040 001403
1634 006042 104001
1635 006044 104003
1636 006046 006050
1637 006050 052777 000400 007200
1638 006056 005302
1639 006060 001353
1640 006062 012705 000001
1641 006066 010103
1642 006070 010177 007162
1643 006074 042777 000004 007156
1644 006102 105227 000000
1645 006106 001375
1646 006110 017704 007144
1647 006114 020504
1648 006116 001401
1649 006120 104001
1650 006122 104003
1651 006124 005766
1652 006126 005201
1653 006130 005077 007124
1654 006134 005300
1655 006136 001313
1656 006140 104002

;VERIFY THAT RING IS SET IF 'LINE ENABLE'
;AND REQUEST TO SEND ARE SET FOR SELECTED LINE.

T33:
MUX6: CLR @DMBCSR ;REFERENCE DESIGNATION
      BIC #340,PS ;CLEAR CONTROL REGISTER
      MOV #8.,R0 ;ENABLE INTERRUPTS
      CLR R1 ;SET UP TO TEST 8 LINES
      MOV #8.,R2 ;8 LINES ;START AT LINE 0
      MOV R1,@DMBCSR ;SELECT A LINE
      MOV #LINENA+RS,@DMBLSR ;SET LINE ENABLE +RS
      CLR @DMBCSR ;CLEAR CONTROL REGISTER
      CLR R5 ;CLEAR EXPECTED RESULT
      MOV @DMBLSR,R4 ;READ LINE STATUS
      MOVB @DMBCSR,R3 ;READ LINE NUMBER
      BIC #177760,R3 ;CLEAR UNWANTED BITS
      CMP R1,R3 ;IF RECEIVED LINE=SELECTED LINE
      BNE MUX6C ;EXPECT LINE ENABLE AND
      MOV #LINENA+RS+RING,R5 ;RING IS SET

MUX6A:
MUX6B:
MUX6C: CMP R4,R5 ;COMPARE EXPECTED AND
      BEQ MUX6D ;RECEIVED RESULTS
      ERRORL ;LINE STATUS ERROR
      SCOPEF
      MUX6D
MUX6D: BIS #STEP,@DMBCSR ;UPDATE LINE COUNTER
      DEC R2 ;CONTINUE IF ALL CHECKS
      BNE MUX6B ;ARE NOT DONE FOR THIS LINE
      MOV #LINENA,R5 ;EXPECT LINE ENABLE
      MOV R1,R3 ;ON SELECTED LINE
      MOV R1,@DMBCSR ;SELECT LINE
      BIC #RS,@DMBLSR ;CLEAR REQUEST TO SEND
      INCB #0 ;DELAY FOR CABLE
      BNE -4 ;DITTO
      MOV @DMBLSR,R4 ;READ LINE STATUS REGISTER
      CMP R5,R4 ;ONLY LINE ENABLE SHOULD BE
      BEQ MUX6F ;SET ON THIS LINE
      ERRORL ;LINE STATUS ERROR
      SCOPEF ;CHECK FOR LOOP ON SAME DATA
      MUX6A
MUX6E: INC R1 ;UPDATE LINE NUMBER
      CLR @DMBLSR ;CLEAR LINE STATUS REGISTER
      DEC R0 ;CONTINUE IF ALL LINES NOT
      BNE MUX6A ;TESTED
      SCOPE ;CHECK FOR ITERATIONS, LOOP
  
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1657
1658
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1661 006142 T34:
1662 006142 005077 007110 MUX7: CLR @DMBCSR ;REFERENCE DESIGNATION
1663 006146 042737 000340 177776 BIC #340,PS ;CLEAR CONTROL REGISTER
1664 006154 012700 000010 MOV #8.,R0 ;ENABLE INTERRUPTS
1665 006160 005001 CLR R1 ;SET UP TO TEST 8 LINES
1666 006162 012702 000010 MUX7A: MOV #8.,R2 ;8 LINES ;START AT LINE 0
1667 006166 010177 007064 MOV R1,@DMBCSR ;SELECT A LINE
1668 006172 012777 000011 007060 MOV #LINENA+SECTX,@DMBLSR ;SET LINE ENABLE +SECTX
1669 006200 005077 007052 CLR @DMBCSR ;CLEAR CONTROL REGISTER
1670 006204 005005 MUX7B: CLR R5 ;CLEAR EXPECTED RESULT
1671 006206 017704 007046 MOV @DMBLSR,R4 ;READ LINE STATUS
1672 006212 117703 007040 MOVB @DMBCSR,R3 ;READ LINE NUMBER
1673 006216 042703 177760 BIC #177760,R3 ;CLEAR UNWANTED BITS
1674 006222 020103 CMP R1,R3 ;IF RECEIVED LINE=SELECTED LINE
1675 006224 001002 BNE MUX7C ;EXPECT LINE ENABLE AND
1676 006226 012705 000031 MOV #LINENA+SECTX+SECRX,R5
1677
1678 006232 020405 MUX7C: CMP R4,R5 ;SECONDARY RECEIVE IS SET
1679 006234 001403 BEQ MUX7D ;COMPARE EXPECTED AND
1680 006236 104001 ERRORL ;RECEIVED RESULTS
1681 006240 104003 SCOPEF ;LINE STATUS ERROR
1682 006242 006244 MUX7D:
1683 006244 052777 000400 007004 MUX7D: BIS #STEP,@DMBCSR ;UPDATE LINE COUNTER
1684 006252 005302 DEC R2 ;CONTINUE IF ALL CHECKS
1685 006254 001353 BNE MUX7B ;ARE NOT DONE FOR THIS LINE
1686 006256 012705 000001 MOV #LINENA,R5 ;EXPECT LINE ENABLE
1687 006262 010103 MUX7E: MOV R1,R3 ;ON SELECTED LINE
1688 006264 010177 006766 MOV R1,@DMBCSR ;SELECT LINE
1689 006270 042777 000010 006762 BIC #SECTX,@DMBLSR ;CLEAR SECONDARY TRANSMIT
1690 006276 105227 000000 INCB #0 ;DELAY FOR CABLE
1691 006302 001375 BNE .-4 ;DITTO
1692 006304 017704 006750 MOV @DMBLSR,R4 ;READ LINE STATUS REGISTER
1693 006310 020504 CMP R5,R4 ;ONLY LINE ENABLE SHOULD BE
1694 006312 001401 BEQ MUX7F ;SET ON THIS LINE
1695 006314 104001 ERRORL ;LINE STATUS ERROR
1696 006316 104003 SCOPEF ;CHECK FOR LOOP ON SAME DATA
1697 006320 006162 MUX7F:
1698 006322 005201 INC R1 ;UPDATE LINE NUMBER
1699 006324 005077 006730 CLR @DMBLSR ;CLEAR LINE STATUS REGISTER
1700 006330 005300 DEC R0 ;CONTINUE IF ALL LINES NOT
1701 006332 001313 BNE MUX7A ;TESTED
1702 006334 104002 SCOPE ;CHECK FOR ITERATIONS, LOOP

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1703
1704
1705
1706
1707 006336
1708 006336 005077 006714
1709 006342 042737 000340 177776
1710 006350 012700 000010
1711 006354 012777 000017 006676
1712 006362 052777 000400 006666
1713 006370 005300
1714 006372 001370
1715 006374 005003
1716 006376 012700 000010
1717 006402 012777 002000 006646
1718 006410 010377 006642
1719 006414 017704 006640
1720 006420 005005
1721 006422 005704
1722 006424 001403
1723 006426 104001
1724 006430 104003
1725 006432 006402
1726 006434 005205
1727 006436 052777 000001 006614
1728 006444 017704 006610
1729 006450 020504
1730 006452 001403
1731 006454 104001
1732 006456 104003
1733 006460 006402
1734 006462 005203
1735 006464 005077 006570
1736 006470 005300
1737 006472 001346
1738 006474 104002
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1743
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1745 006476
1746 006476 012777 002000 006552
1747 006504 005077 006546
1748 006510 042737 000340 177776
1749 006516 012700 000010
1750 006522 012777 001007 006526
1751 006530 052777 000400 006520
1752 006536 012777 000001 006514
1753 006544 005300
1754 006546 001370
1755 006550 012705 070340
1756 006554 012777 006654 006470
1757 006562 013777 177776 006464
1758 006570 012700 000010

:VERIFY THAT 'CLEAR MULTIPLXER' CLEARS ALL MULTIPLEXER
:FUNCTION FLIP-FLOPS

T35:
MUX8: CLR @DMBCSR ;REFERENCE DESIGNATION
      BIC #340,PS ;CLEAR CONTROL REGISTER
      MOV #8,R0 ;ENABLE INTERRUPTS
      MOV #17,@DMBLSR ;SET UP TO TEST 8 LINES
MUX8A: BIS #STEP,@DMBCSR ;WRITE 1S INTO ALL MULTIPLEXER
      DEC R0 ;FUNCTION FLIPFLOPS
      BNE MUX8A
      CLR R3 ;SET UP FOR 8 LINES
MUX8B: MOV #8,R0
MUX8C: MOV #CLRMUX,@DMBCSR ;CLEAR MULTIPLEXER
      MOV R3,@DMBCSR ;SELECT LINE
      MOV @DMBLSR,R4 ;READ LINE STATUS REGISTER
      CLR R5 ;EXPECT 0S
      TST R4 ;WAS LINE STATUS REGISTER CLEARED
      BEQ MUX8D
      ERRORL ;LINE STATUS ERROR
      SCOPEF ;CHECK FOR LOOP ON SAME DATA
MUX8D: INC R5 ;EXPECT LINE ENABLE
      BIS #LINENA,@DMBLSR ;SET LINE ENABLE ON SELECTED LINE
      MOV @DMBLSR,R4 ;READ LINE STATUS REGISTER
      CMP R5,R4 ;IS ANYTHING BUT LINE ENABLE SET
      BEQ MUX8E
      ERRORL ;LINE STATUS ERROR
      SCOPEF ;CHECK FOR LOOP ON SAME DATA
MUX8E: INC R3 ;UPDATE LINE NUMBER
      CLR @DMBLSR ;CLEAR CURRENT LINE
      DEC R0 ;CONTINUE IF ALL LINES NOT
      BNE MUX8C ;TESTED
      SCOPE ;CHECK FOR ITERATIONS, LOOP

:WRITE 1'S INTO ALL SCANNER MEMORY LOCATIONS
:SET 'LINE ENABLE FOR ALL LINES
:VERIFY THAT AN INTERRUPT OCCURS FOR EACH LINE

T36:
SCNT1: MOV #CLRMUX,@DMBCSR ;REFERENCE DESIGNATION
      CLR @DMBCSR ;CLEAR ALL MULTIPLEXER FLIPFLOPS
      BIC #340,PS ;CLEAR CONTROL REGISTER
      MOV #8,R0 ;ENABLE INTERRUPTS
      MOV #MAINT+7,@DMBCSR ;SET UP TO WRITE 1'S INTO
      BIS #STEP,@DMBCSR ;ALL SCANNER MEMORY LOCATION
      MOV #LINENA,@DMBLSR ;WRITE A LOCATION
      DEC R0 ;LET 'LINE ENABLE'
      BNE SCNT1A
      MOV #70340,R5 ;EXPECT 'DONE'+ 'SCNENA'+ 'COF'+ 'CSF'+ 'SECRXF'
      MOV #SCNT1C,@DMBVEC ;SET UP LOCAL INTERRUPT SERVICE
      MOV PS,@DMBLVL ;SERVICE AT LEVEL 7
      MOV #8,R0
  
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1759	006574	012777	000107	006454		MOV	#INTENA+7,@DMBCSR	:SET INTERRUPT ENABLE
1760	006602	052737	000340	177776	SCNT1B:	BIS	#340,PS	:LOCK OUT INTERRUPTS
1761	006610	052777	000040	006440		BIS	#SCNENA,@DMBCSR	:START SCANNER
1762	006616	042737	000340	177776		BIC	#340,PS	:ENABLE INTERRUPTS
1763	006624	105777	006426			TSTB	@DMBCSR	:WAIT FOR DONE
1764	006630	100375				BPL	.-4	:PROGRAM WILL HANG HERE
1765								:IF DONE NEVER SETS
1766	006632	052737	000340	177776		BIS	#340,PS	:INTERRUPT DID NOT OCCUR
1767	006640	017704	006412			MOV	@DMBCSR,R4	:ERROR
1768	006644	104000				ERRORC		:CONTROL STATUS ERROR
1769	006646	104003				SCOPEF		:CHECK FOR LOOP ON SAME DATA
1770	006650	006476				SCNT1		
1771	006652	000410				BR	SCNT1D	
1772	006654	022626			SCNT1C:	POP2SP		:INTERRUPT OCCURED, REPOSITION STACK
1773	006656	017704	006374			MOV	@DMBCSR,R4	:READ CONTROL STATUS
1774	006662	020504				CMP	R5,R4	:ARE EXPECTED AND RECEIVED
1775	006664	001403				BEQ	SCNT1D	:REGISTERS THE SAME
1776	006666	104000				ERRORC		:NO, LINE STATUS ERROR
1777	006670	104003				SCOPEF		:CHECK FOR LOOP WITH CURRENT DATA
1778	006672	006476				SCNT1		
1779	006674	042777	000240	006354	SCNT1D:	BIC	#SCNENA+DONE,@DMBCSR	:CLEAR SCAN ENABLE AND DONE
1780	006702	005205				INC	R5	:UPDATE EXPECTED RESULT
1781	006704	005300				DEC	R0	:CONTINUE IF NOT DONE
1782	006706	001335				BNE	SCNT1B	
1783	006710	104002				SCOPE		:CHECK FOR ITERATIONS, LOOP
1784								
1785								:WRITE 1'S INTO ALL MULTIPLEXER FUNCTION FLIP-FLOPS
1786								:CLEAR SCANNER MEMORY
1787								:VERIFY THAT AN INTERRUPT OCCURS FOR EACH LINE
1788								
1789	006712				T37:			:REFERENCE DESIGNATION
1790	006712	012700	000010		SCNT2:	MOV	#8,R0	:WRITE 1S INTO ALL
1791	006716	012777	002000	006332		MOV	#CLRMUX,@DMBCSR	:CLEAR MULTIPLEXER
1792	006724	005077	006326			CLR	@DMBCSR	:MULTIPLEXER FUNCTION
1793	006730	042737	000340	177776		BIC	#340,PS	:ENABLE TELETYPE INTERRUPTS
1794	006736	012777	000017	006314	SCNT2A:	MOV	#17,@DMBLSR	:FLIPFLOPS
1795	006744	052777	000400	006304		BIS	#STEP,@DMBCSR	
1796	006752	005300				DEC	R0	
1797	006754	001370				BNE	SCNT2A	
1798	006756	012777	004000	006272		MOV	#CLRSCN,@DMBCSR	:CLEAR SCANNER MEMORY
1799	006764	032777	000020	006264		BIT	#BUSY,@DMBCSR	:WAIT FOR CLEAR CYCLE TO COMPLETE
1800	006772	001374				BNE	.-6	
1801	006774	012700	000010			MOV	#8,R0	:SET UP TO TEST 8 LINES
1802	007000	012705	170340			MOV	#170340,R5	:FIRST EXPECTED RESULT
1803	007004	012777	007100	006240		MOV	#SCNT2C,@DMBVEC	:SET UP LOCAL INTERRUPT RETURN
1804	007012	013777	177776	006234		MOV	PS,@DMBLVL	
1805	007020	012777	000107	006230		MOV	#INTENA+7,@DMBCSR	:SET INTERRUPT ENABLE
1806	007026	052737	000340	177776	SCNT2B:	BIS	#340,PS	:LOCK OUT INTERRUPTS
1807	007034	052777	000040	006214		BIS	#SCNENA,@DMBCSR	:START SCANNER
1808	007042	042737	000340	177776		BIC	#340,PS	:ENABLE INTERRUPTS
1809	007050	105777	006202			TSTB	@DMBCSR	:WAIT FOR DONE
1810	007054	100375				BPL	.-4	:PROGRAM WILL HANG HERE
1811								:IF DONE NEVER SETS
1812	007056	052737	000340	177776		BIS	#340,PS	:LOCK OUT INTERRUPTS
1813	007064	017704	006166			MOV	@DMBCSR,R4	:READ CONTROL STATUS
1814	007070	104000				ERRORC		:INTERRUPT DID NOT OCCUR

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1815 007072 104003          SCOPEF          ;CHECK FOR LOOP ON CURRENT DATA
1816 007074 006712          SCNT2
1817 007076 000410          BR            SCNT2D          ;CONTINUE
1818 007100 022626          SCNT2C: POP2SP          ;INTERRUPT OCCURED, RESTORE STACK
1819 007102 017704 006150  MOV          @DMBCSR,R4      ;READ CONTROL STATUS REGISTER
1820 007106 020504          CMP          R5,R4          ;COMPARE TO EXPECTED RESULT
1821 007110 001403          BEQ          SCNT2D
1822 007112 104000          ERRORC
1823 007114 104003          SCOPEF          ;CHECK FOR LOOP ON CURRENT DATA
1824 007116 006712          SCNT2
1825 007120 042777 000240 006130 SCNT2D: BIC          #SCNENA+DONE,@DMBCSR ;CLEAR SCAN ENABLE AND DONE
1826 007126 005205          INC          R5            ;UPDATE EXPECTED RESULT
1827 007130 005300          DEC          R0            ;CONTINUE IF ALL
1828 007132 001335          BNE          SCNT2B        ;LINES NOT TESTED
1829 007134 104002          SCOPE          ;CHECK FOR ITERATIONS, LOOP
1830
1831
1832          ;SINGLE LINE CABLE TEST
1833          ;FOR USE WITH THE H317-M DISTRIBUTION PANEL
1834          ;H3256 TEST CONNECTORS REPLACE MODEM CABLES
1835
1836
1837
1838 007136          T100:
1839 007136 012737 007156 002306 STRLIN: MOV          #STRLNA,KRET ;REFERENCE DESIGNATION
1840 007144 042737 000340 177776  BIC          #340,PS        ;SET UP FOR NEW LINE SELECTION
1841 007152 104004          TYPE          ;ENABLE INTERRUPTS
1842 007154 016433          MLINE          ;TYPE "SINGLE LINE CABLE TEST"
1843 007156 104013          STRLNA: INSTRG          ;GET LINE NUMBER
1844 007160 016466          MLINEI
1845 007162 000000          0
1846 007164 000007          7
1847 007166 015374          LINE
1848 007170 104004          TYPE
1849 007172 016430          MCRLF
1850
1851          ;VERIFY THAT LINE ENABLE FUNCTION FLIP-FLOP CAN
1852          ;BE SET AND CLEARED FOR SELECTED LINE
1853
1854 007174          T101:
1855 007174 005077 006056          MUX11: CLR          @DMBCSR ;REFERENCE DESIGNATION
1856 007200 042737 000340 177776  BIC          #340,PS        ;CLEAR CONTROL STATUS REGISTER
1857 007206 013701 015374          MOV          LINE,R1        ;ENABLE INTERRUPTS
1858 007212 012777 002000 006036 MUX11A: MOV          #CLRMUX,@DMBCSR
1859 007220 012702 000010          MOV          #8,R2
1860 007224 010177 006026          MOV          R1,@DMBCSR    ;SELECT LINE TO BE TESTED
1861 007230 012777 000001 006022  MOV          #LINENA,@DMBLSR ;SET LINE ENABLE FUNCTION FLIP-FLOP
1862 007236 005077 006014          CLR          @DMBCSR
1863 007242 005005          MUX11B: CLR          R5
1864 007244 017704 006010          MOV          @DMBLSR,R4    ;READ LINE STATUS REGISTER
1865 007250 117703 005002          MOV          @DMBCSR,R3    ;READ CONTROL STATUS REGISTER
1866 007254 042703 177760          BIC          #177760,R3    ;CLEAR UNWANTED BITS
1867 007260 020103          CMP          R1,R3        ;IF LINE NUMBER=SELECTED LINE NUMBER,
1868 007262 001002          BNE          MUX11C        ;EXCEPT LINE ENABLE FUNCTION FLIP FLOP
1869 007264 012705 000001          MOV          #LINENA,R5
1870          ;TO BE SET

```

```
1871 007270 020504          MUX11C: CMP      R5,R4          ;COMPARE EXPECTED AND RECEIVED
1872 007272 001403          BEQ      MUX11D          ;RESULTS
1873 007274 104001          ERRORL           ;LINE STATUS ERROR
1874 007276 104003          SCOPEF
1875 007300 007302          MUX11D
1876 007302 052777 000400 005746 MUX11D: BIS      #STEP,@DMBCSR      ;EXAMINE NEXT LINE
1877 007310 005302          DEC      R2
1878 007312 001353          BNE      MUX11B
1879 007314 005005          CLR      R5
1880 007316 010177 005734 MUX11E: MOV      R1,@DMBCSR
1881 007322 010103          MOV      R1,R3          ;SET LINE COUNTER TO SELECTED LINE
1882 007324 005077 005730          CLR      @DMBLSR        ;CLEAR LINE ENABLE FLIP FLOP
1883 007330 105227 000000          INCB     #0             ;DELAY FOR CABLE
1884 007334 001375          BNE      -4             ;DITTO
1885 007336 017704 005716          MOV      @DMBLSR,R4     ;READ LINE STATUS REGISTER
1886 007342 005704          TST      R4             ;WAS LINE ENABLE FUNCTION FLIP FLOP
1887 007344 001401          BEQ      MUX11F        ;CLEARED
1888 007346 104001          ERRORL           ;NO, LINE STATUS ERROR
1889 007350 104002          MUX11F: SCOPE        ;CHECK FOR ITERATIONS, LOOP
```

```

1890                                     ;VERIFY THAT TERMINAL READY FUNCTION FLIP-FLOP CAN
1891                                     ;BE SET AND CLEARED FOR SELECTED LINE
1892
1893 007352                               T102:                               ;REFERENCE DESIGNATION
1894 007352 005077 005700                MUX12: CLR @DMBCSR                ;CLEAR CONTROL STATUS REGISTER
1895 007356 042737 000340 177776        BIC #340,PS                       ;ENABLE INTERRUPTS
1896 007364 013701 015374                MOV LINE,R1
1897 007370 012777 002000 005660        MUX12A: MOV #CLRMUX,@DMBCSR
1898 007376 012702 000010                MOV #8.,R2
1899 007402 010177 005650                MOV R1,@DMBCSR                    ;SELECT LINE TO BE TESTED
1900 007406 012777 000002 005644        MOV #TRMRDY,@DMBLSR              ;SET TERMINAL READY FUNCTION FLIP-FLOP
1901 007414 005077 005636                CLR @DMBCSR
1902 007420 005005                MUX12B: CLR R5
1903 007422 017704 005632                MOV @DMBLSR,R4                    ;READ LINE STATUS REGISTER
1904 007426 117703 005624                MOV @DMBCSR,R3                    ;READ CONTROL STATUS REGISTER
1905 007432 042703 177760                BIC #177760,R3                    ;CLEAR UNWANTED BITS
1906 007436 020103                CMP R1,R3                          ;IF LINE NUMBER=SELECTED LINE NUMBER,
1907 007440 001002                BNE MUX12C                          ;EXCEPT TERMINAL READY FUNCTION FLIP FLOP
1908 007442 012705 000002                MOV #TRMRDY,R5
1909
1910 007446 020504                MUX12C: CMP R5,R4                    ;TO BE SET
1911 007450 001403                BEQ MUX12D                          ;COMPARE EXPECTED AND RECEIVED
1912 007452 104001                ERRORL                               ;RESULTS
1913 007454 104003                SCOPEF                               ;LINE STATUS ERROR
1914 007456 007460                MUX12D:                               ;
1915 007460 052777 000400 005570        BIS #STEP,@DMBCSR                ;EXAMINE NEXT LINE
1916 007466 005302                DEC R2
1917 007470 001353                BNE MUX12B
1918 007472 005005                CLR R5
1919 007474 010177 005556                MUX12E: MOV R1,@DMBCSR
1920 007500 010103                MOV R1,R3                          ;SET LINE COUNTER TO SELECTED LINE
1921 007502 005077 005552                CLR @DMBLSR                        ;CLEAR TERMINAL READY FLIP FLOP
1922 007506 105227 000000                INCB #0                             ;DELAY FOR CABLE
1923 007512 001375                BNE -4                              ;D1 TO
1924 007514 017704 005540                MOV @DMBLSR,R4                    ;READ LINE STATUS REGISTER
1925 007520 005704                TST R4                             ;WAS TERMINAL READY FUNCTION FLIP FLOP
1926 007522 001401                BEQ MUX12F                          ;CLEARED
1927 007524 104001                ERRORL                               ;NO, LINE STATUS ERROR
1928 007526 104002                MUX12F: SCOPE                       ;CHECK FOR ITERATIONS, LOOP

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1929                                     ;VERIFY THAT REQUEST TO SEND FUNCTION FLIP-FLOP CAN
1930                                     ;BE SET AND CLEARED FOR SELECTED LINE
1931
1932 007530                               T103:                               ;REFERENCE DESIGNATION
1933 007530 005077 005522                MUX13: CLR @DMBCSR                ;CLEAR CONTROL STATUS REGISTER
1934 007534 042737 000340 177776        BIC #340,PS                       ;ENABLE INTERRUPTS
1935 007542 013701 015374                MOV LINE,R1
1936 007546 012777 002000 005502        MUX13A: MOV #CLRMUX,@DMBCSR
1937 007554 012702 000010                MOV #8.,R2
1938 007560 010177 005472                MOV R1,@DMBCSR                    ;SELECT LINE TO BE TESTED
1939 007564 012777 000004 005466        MOV #RS,@DMBLSR                    ;SET REQUEST TO SEND FUNCTION FLIP-FLGP
1940 007572 005077 005460                CLR @DMBCSR
1941 007576 005005                MUX13B: CLR R5
1942 007600 017704 005454                MOV @DMBLSR,R4                    ;READ LINE STATUS REGISTER
1943 007604 117703 005446                MOVB @DMBCSR,R3                    ;READ CONTROL STATUS REGISTER
1944 007610 042703 177760                BIC #177760,R3                    ;CLEAR UNWANTED BITS
1945 007614 020103                CMP R1,R3                          ;IF LINE NUMBER=SELECTED LINE NUMBER,
1946 007616 001002                BNE MUX13C                          ;EXCEPT REQUEST TO SEND FUNCTION FLIP FLOP
1947 007620 012705 000004                MOV #RS,R5
1948
1949 007624 020504                MUX13C: CMP R5,R4                    ;TO BE SET
1950 007626 001403                BEQ MUX13D                          ;COMPARE EXPECTED AND RECEIVED
1951 007630 104001                ERRORL                               ;RESULTS
1952 007632 104003                SCOPEF                               ;LINE STATUS ERROR
1953 007634 007636                MUX13D:                               ;EXAMINE NEXT LINE
1954 007636 052777 000400 005412        BIS #STEP,@DMBCSR
1955 007644 005302                DEC R2
1956 007646 001353                BNE MUX13B
1957 007650 005005                CLR R5
1958 007652 010177 005400                MUX13E: MOV R1,@DMBCSR
1959 007656 010103                MOV R1,R3                          ;SET LINE COUNTER TO SELECTED LINE
1960 007660 005077 005374                CLR @DMBLSR                        ;CLEAR REQUEST TO SEND FLIP FLOP
1961 007664 105227 000000                INCB #0                              ;DELAY FOR CABLE
1962 007670 001375                BNE -4                              ;DITTO
1963 007672 017704 005362                MOV @DMBLSR,R4                    ;READ LINE STATUS REGISTER
1964 007676 005704                TST R4                              ;WAS REQUEST TO SEND FUNCTION FLIP FLOP
1965 007700 001401                BEQ MUX13F                          ;CLEARED
1966 007702 104001                ERRORL                               ;NO, LINE STATUS ERROR
1967 007704 104002                MUX13F: SCOPE                       ;CHECK FOR ITERATIONS, LOOP

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1968                                     :VERIFY THAT SECONDARY TRANSMIT FUNCTION FLIP-FLOP CAN
1969                                     :BE SET AND CLEARED FOR SELECTED LINE
1970
1971 007706                               T104:                                     :REFERENCE DESIGNATION
1972 007706 005077 005344                MUX14: CLR @DMBCSR                       :CLEAR CONTROL STATUS REGISTER
1973 007712 042737 000340 177776        BIC #340,PS                          :ENABLE INTERRUPTS
1974 007720 013701 015374                MOV LINE,R1
1975 007724 012777 002000 005324        MUX14A: MOV #CLRMUX,@DMBCSR
1976 007732 012702 000010                MOV #8,R2
1977 007736 010177 005314                MOV R1,@DMBCSR                       :SELECT LINE TO BE TESTED
1978 007742 012777 000010 005310        MOV #SECTX,@DMBLSR                   :SET SECONDARY TRANSMIT FUNCTION FLIP-FLOP
1979 007750 005077 005302                CLR @DMBCSR
1980 007754 005005                MUX14B: CLR R5
1981 007756 017704 005276                MOV @DMBLSR,R4                       :READ LINE STATUS REGISTER
1982 007762 117703 005270                MOV @DMBCSR,R3                       :READ CONTROL STATUS REGISTER
1983 007766 042703 177760                BIC #177760,R3                       :CLEAR UNWANTED BITS
1984 007772 020103                CMP R1,R3                             :IF LINE NUMBER=SELECTED LINE NUMBER,
1985 007774 001002                BNE MUX14C                            :EXCEPT SECONDARY TRANSMIT FUNCTION FLIP FLOP
1986 007776 012705 000010                MOV #SECTX,R5
1987
1988 010002 020504                MUX14C: CMP R5,R4                     :TO BE SET
1989 010004 001403                BEQ MUX14D                            :COMPARE EXPECTED AND RECEIVED
1990 010006 104001                ERRORL                                :RESULTS
1991 010010 104003                SCOPEF                                :LINE STATUS ERROR
1992 010012 010014                MUX14D
1993 010014 052777 000400 005234        MUX14D: BIS #STEP,@DMBCSR            :EXAMINE NEXT LINE
1994 010022 005302                DEC R2
1995 010024 001353                BNE MUX14B
1996 010026 005005                CLR R5
1997 010030 010177 005222                MUX14E: MOV R1,@DMBCSR
1998 010034 010103                MOV R1,R3                             :SET LINE COUNTER TO SELECTED LINE
1999 010036 005077 005216                CLR @DMBLSR                           :CLEAR SECONDARY TRANSMIT FLIP FLOP
2000 010042 105227 000000                INCB #0                                :DELAY FOR CABLE
2001 010046 001375                BNE -4                                 :DITTO
2002 010050 017704 005204                MOV @DMBLSR,R4                       :READ LINE STATUS REGISTER
2003 010054 005704                TST R4                                :WAS SECONDARY TRANSMIT FUNCTION FLIP FLOP
2004 010056 001401                BEQ MUX14F                            :CLEARED
2005 010060 104001                ERRORL                                :NO, LINE STATUS ERROR
2006 010062 104002                MUX14F: SCOPE                        :CHECK FOR ITERATIONS, LOOP

```

```

2007
2008
2009
2010
2011 010064
2012 010064 005077 005166
2013 010070 042737 000340 177776
2014 010076 013701 015374
2015 010102 012702 000010
2016 010106 010177 005144
2017 010112 012777 000003 005140
2018 010120 005077 005132
2019 010124 005005
2020 010126 017704 005126
2021 010132 117703 005120
2022 010136 042703 177760
2023 010142 020103
2024 010144 001002
2025 010146 012705 000143
2026
2027 010152 020405
2028 010154 001403
2029 010156 104001
2030 010160 104003
2031 010162 010164
2032 010164 052777 000400 005064
2033 010172 005302
2034 010174 001353
2035 010176 012705 000001
2036 010202 010103
2037 010204 010177 005046
2038 010210 042777 000002 005042
2039 010216 105227 000000
2040 010222 001375
2041 010224 017704 005030
2042 010230 020504
2043 010232 001401
2044 010234 104001
2045 010236 104002

      :VERIFY THAT CLEAR TO SEND AND CARRIER ARE SET IF 'LINE ENABLE'
      :AND TERMINAL ARE SET FOR SELECTED LINE.

T105:
MUX15: CLR @DMBCSR ;REFERENCE DESIGNATION
      BIC #340,PS ;CLEAR CONTROL REGISTER
      MOV LINE,R1 ;ENABLE INTERRUPTS
MUX15A: MOV #8,R2 ;8 LINES
      MOV R1,@DMBCSR ;SELECT A LINE
      MOV #LINENA+TRMRDY,@DMBLSR ;SET LINE ENABLE +TRMRDY
      CLR @DMBCSR ;CLEAR CONTROL REGISTER
MUX15B: CLR R5 ;CLEAR EXPECTED RESULT
      MOV @DMBLSR,R4 ;READ LINE STATUS
      MOVB @DMBCSR,R3 ;READ LINE NUMBER
      BIC #177760,R3 ;CLEAR UNWANTED BITS
      CMP R1,R3 ;IF RECEIVED LINE=SELECTED LINE
      BNE MUX15C ;EXPECT LINE ENABLE AND
      MOV #LINENA+TRMRDY+CO+CS,R5
MUX15C: CMP R4,R5 ;CLEAR TO SEND AND CARRIER ARE SET
      BEQ MUX15D ;COMPARE EXPECTED AND
      ERRORL ;RECEIVED RESULTS
      SCOPEF ;LINE STATUS ERROR
MUX15D: BIS #STEP,@DMBCSR ;UPDATE LINE COUNTER
      DEC R2 ;CONTINUE IF ALL CHECKS
      BNE MUX15B ;ARE NOT DONE FOR THIS LINE
      MOV #LINENA,R5 ;EXPECT LINE ENABLE
MUX15E: MOV R1,R3 ;ON SELECTED LINE
      MOV R1,@DMBCSR ;SELECT LINE
      BIC #TRMRDY,@DMBLSR ;CLEAR TERMINAL
      INCB #0 ;DELAY FOR CABLE
      BNE -4 ;DITTO
      MOV @DMBLSR,R4 ;READ LINE STATUS REGISTER
      CMP R5,R4 ;ONLY LINE ENABLE SHOULD BE
      BEQ MUX15F ;SET ON THIS LINE
      ERRORL ;LINE STATUS ERROR
MUX15F: SCOPE ;CHECK FOR ITERATIONS, LOOP
  
```

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2046
2047
2048
2049
2050 010240
2051 010240 005077 005012
2052 010244 042737 000340 177776
2053 010252 013701 015374
2054 010256 012702 000010
2055 010262 010177 004770
2056 010266 012777 000005 004764
2057 010274 005077 004756
2058 010300 005005
2059 010302 017704 004752
2060 010306 117703 004744
2061 010312 042703 177760
2062 010316 020103
2063 010320 001002
2064 010322 012705 000205
2065
2066 010326 020405
2067 010330 001403
2068 010332 104001
2069 010334 104003
2070 010336 010340
2071 010340 052777 000400 004710
2072 010346 005302
2073 010350 001353
2074 010352 012705 000001
2075 010356 010103
2076 010360 010177 004672
2077 010364 042777 000004 004666
2078 010372 105227 000000
2079 010376 001375
2080 010400 017704 004654
2081 010404 020504
2082 010406 001401
2083 010410 104001
2084 010412 104002

;VERIFY THAT RING IS SET IF 'LINE ENABLE'
;AND REQUEST TO SEND ARE SET FOR SELECTED LINE.

T106:
MUX16: CLR @DMBCSR ;REFERENCE DESIGNATION
      BIC #340,PS ;CLEAR CONTROL REGISTER
      MOV LINE,R1 ;ENABLE INTERRUPTS
MUX16A: MOV #8,R2 ;8 LINES
      MOV R1,@DMBCSR ;SELECT A LINE
      MOV #LINENA+RS,@DMBLSR ;SET LINE ENABLE +RS
      CLR @DMBCSR ;CLEAR CONTROL REGISTER
MUX16B: CLR R5 ;CLEAR EXPECTED RESULT
      MOV @DMBLSR,R4 ;READ LINE STATUS
      MOVB @DMBCSR,R3 ;READ LINE NUMBER
      BIC #177760,R3 ;CLEAR UNWANTED BITS
      CMP R1,R3 ;IF RECEIVED LINE=SELECTED LINE
      BNE MUX16C ;EXPECT LINE ENABLE AND
      MOV #LINENA+RS+RING,R5
MUX16C: CMP R4,R5 ;RING IS SET
      BEQ MUX16D ;COMPARE EXPECTED AND
      ERRORL MUX16D ;RECEIVED RESULTS
      SCOPEF ;LINE STATUS ERROR
MUX16D: BIS #STEP,@DMBCSR ;UPDATE LINE COUNTER
      DEC R2 ;CONTINUE IF ALL CHECKS
      BNE MUX16B ;ARE NOT DONE FOR THIS LINE
      MOV #LINENA,R5 ;EXPECT LINE ENABLE
MUX16E: MOV R1,R3 ;ON SELECTED LINE
      MOV R1,@DMBCSR ;SELECT LINE
      BIC #RS,@DMBLSR ;CLEAR REQUEST TO SEND
      INCB #0 ;DELAY FOR CABLE
      BNE #-4 ;DITTO
      MOV @DMBLSR,R4 ;READ LINE STATUS REGISTER
      CMP R5,R4 ;ONLY LINE ENABLE SHOULD BE
      BEQ MUX16F ;SET ON THIS LINE
      ERRORL ;LINE STATUS ERROR
MUX16F: SCOPE ;CHECK FOR ITERATIONS, LOOP
  
```

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2085
2086           ;VERIFY THAT SECONDARY RECEIVE IS SET IF 'LINE ENABLE'
2087           ;AND SECONDARY TRANSMIT ARE SET FOR SELECTED LINE.
2088
2089 010414      T107:           ;REFERENCE DESIGNATION
2090 010414 005077 004636      MUX17: CLR @DMBCSR           ;CLEAR CONTROL REGISTER
2091 010420 042737 000340 177776 BIC #340,PS           ;ENABLE INTERRUPTS
2092 010426 013701 015374      MOV LINE,R1
2093 010432 012700 000010      MUX17A: MOV #8,R2           ;8 LINES
2094 010436 010177 004614      MOV R1,@DMBCSR           ;SELECT A LINE
2095 010442 012777 000011 004610 MOV #LINENA+SECTX,@DMBLSR ;SET LINE ENABLE +SECTX
2096 010450 005077 004602      CLR @DMBCSR           ;CLEAR CONTROL REGISTER
2097 010454 005005      MUX17B: CLR R5           ;CLEAR EXPECTED RESULT
2098 010456 017704 004576      MOV @DMBLSR,R4          ;READ LINE STATUS
2099 010462 117703 004570      MOVB @DMBCSR,R3         ;READ LINE NUMBER
2100 010466 042703 177760      BIC #177760,R3         ;CLEAR UNWANTED BITS
2101 010472 020103      CMP R1,R3              ;IF RECEIVED LINE=SELECTED LINE
2102 010474 001002      BNE MUX17C             ;EXPECT LINE ENABLE AND
2103 010476 012705 000031      MOV #LINENA+SECTX+SECRX,R5
2104
2105 010502 020405      MUX17C: CMP R4,R5      ;SECONDARY RECEIVE IS SET
2106 010504 001403      BEQ MUX17D             ;COMPARE EXPECTED AND
2107 010506 104001      ERRORL                ;RECEIVED RESULTS
2108 010510 104003      SCOPEF                ;LINE STATUS ERROR
2109 010512 010514      MUX17D:
2110 010514 052777 000400 004534 BIS #STEP,@DMBCSR      ;UPDATE LINE COUNTER
2111 010522 005302      DEC R2                 ;CONTINUE IF ALL CHECKS
2112 010524 001353      BNE MUX17B             ;ARE NOT DONE FOR THIS LINE
2113 010526 012705 000001      MOV #LINENA,R5         ;EXPECT LINE ENABLE
2114 010532 010103      MUX17E: MOV R1,R3       ;ON SELECTED LINE
2115 010534 010177 004516      MOV R1,@DMBCSR        ;SELECT LINE
2116 010540 042777 000010 004512 BIC #SECTX,@DMBLSR    ;CLEAR SECONDARY TRANSMIT
2117 010546 105227 000000      INCB #0                ;DELAY FOR CABLE
2118 010552 001375      BNE #-4                ;DITTO
2119 010554 017704 004500      MOV @DMBLSR,R4        ;READ LINE STATUS REGISTER
2120 010560 020504      CMP R5,R4              ;ONLY LINE ENABLE SHOULD BE
2121 010562 001401      BEQ MUX17F             ;SET ON THIS LINE
2122 010564 104001      ERRORL                ;LINE STATUS ERROR
2123 010566 104002      MUX17F: SCOPE         ;CHECK FOR ITERATIONS, LOOP
2124           ;END OF PASS
2125           ;UPDATE PASS COUNT
2126           ;TYPE END OF PASS MESSAGE
2127
2128 010570      EOP:
2129 010570 005237 015332      INC PASCNT             ;UPDATE PASS COUNT
2130 010574 012737 000001 015334 MOV #1,TSTNO           ;START AT FIRST TEST OF GROUP
2131 010602 104004      TYPE                  ;RING BELL
2132 010604 017016      MEPASS
2133 010606 013701 000042      MOV 42,R1              ;ARE YOU ON ACT11?
2134 010612 001515      BEQ TSTENT             ;NO
2135 010614 000005      RESET
2136 010616 004711      LOGICAL: JSR PC,(R1)
2137 010620 000240      NOP
2138 010622 000240      NOP
2139 010624 000240      NOP
2140 010626 000137 011046      JMP TSTENT             ;GET ADDRESS OF FIRST TEST
  
```

```
2141
2142
2143
2144
2145
2146
2147 010632 011646
2148 010634 162716 000002
2149 010640 017616 000000
2150 010644 006316
2151 010646 042716 177001
2152 010652 062716 017050
2153 010656 017616 000000
2154 010662 000136
2155
2156
2157 010664 105777 004372
2158 010670 100001
2159 010672 104020
2160 010674 000002
2161
2162
2163
2164
2165
2166
2167
2168
2169
2170 010676 005737 001242
2171 010702 100022
2172 010704 013746 000004
2173 010710 012737 010730 000004
2174 010716 005737 177060
2175 010722 012637 000004
2176 010726 000404
2177 010730 022626
2178 010732 012637 000004
2179 010736 000402
2180 010740 000137 011042
2181 010744 000137 011046
2182 010750
2183 010750 005037 177776
2184 010754 012777 000100 004300
2185 010762 005737 015326
2186 010766 001404
2187 010770 032777 002000 004274
2188 010776 001021
2189 011000 032777 040000 004254
2190 011006 001041
2191 011010 032777 004000 004254
2192 011016 001011
2193 011020 005337 015340
2194 011024 001406
2195 011026 013716 015336
2196 011032 042777 000100 004222

;EMT DISPATCH SERVICE
;ARGUMENT OF EMT IS EXTRACTED
;AND USED AS OFFSET TO OBTAIN POINTER
;TO SELECTED SUBROUTINE

EMTSRV: MOV (SP),-(SP) ;GET PC OF RETURN
SUB #2,(SP) ;=PC OF EMT
MOV @ (SP),(SP) ;GET EMT
EMTOK: ASL (SP) ;MULTIPLY EMT ARG BY 2
BIC #177001,(SP) ;CLEAR UNWANTED BITS
ADD #EMTTAB,(SP) ;POINTER TO SUBROUTINE ADDRESS
MOV @ (SP),(SP) ;SUBROUTINE ADDRESS
JMP @ (SP)+ ;GO TO SUBROUTINE

CKINT: TSTB @TKCSR
BPL 1$
KBDIN
1$: RTI

;END OF SUBTEST SERVICE
;CHECK FOR LOOP ON CURRENT TEST
;CHECK FOR ESCAPE TO NEXT TEST ON ERROR
;UPDATE ITERATION COUNT AND EXIT TO NEXT TEST IF 0

;TEST XOR FLAG (XFLAG) FOR EXISTANCE OF XOR TESTER.

LOOP: TST XFLAG ;IS THERE AN XOR TESTER OUT THERE ?
BPL 4$ ;NO
MOV 4, -(SP) ;SAVE 4
MOV #1$, 4 ;SET UP SVC ROUTINE
TST 177060 ;GOT SOMETHING LIKE SLAVE SYNC
MOV (SP)+, 4 ;YOU BETCHUM
BR 2$
1$: POP2SP ;RESTORE STACK
MOV (SP)+, 4 ;RESTORE 4
BR 3$
2$: JMP LOOPX ;GO TO NEXT TEST
3$: JMP TSTENT ;GO
4$:

CLR PSW
MOV #INTENA,@TKCS
5$: TST ERRFLG ;IF ERROR OCCURED FLAG=1
BEQ LOOPS ;CHECK FOR ESCAPE TO NEXT TEST
BIT #SW10,@SWR ;IF SW10=1
BNE LOOPX ;ESCAPE TO NEXT TEST
BIT #SW14,@SWR ;IF SW14=1
BNE LOOPX ;LOOP ON CURRENT TEST
BIT #SW11,@SWR ;IF SW11=1
BNE LOOPX ;INHIBIT ITERATIONS
DEC ICOUNT ;UPDATE ITERATION COUNT
BEQ LOOPX ;IF ICOUNT=0, GO TO NEXT TEST
LOOPER: MOV RETURN,(SP) ;SET UP FOR RETURN TO CURRENT TEST
BIC #INTENA,@TKCSR
```



```
2226 ;GENERAL ERROR SERVICE
2227 ;ONLY PC OF FAILING TEST IS OUTPUT TO TELEPRINTER
2228
2229 011164 005037 015326 ERR: CLR ERRFLG ;ALWAYS TYPE PC+2
2230 ;OF TEST THAT FAILED
2231 011170 005037 011362 CLR ERRMSG ;NO MESSAGE
2232 011174 005037 011374 CLR ERTAB ;NO TABLE OF DATA
2233 011200 000440 BR ERRGEN ;OUTPUT ERROR MESSAGE
2234
2235 ;KMS11 DATA ERROR SERVICE
2236
2237 ;FORMAT FOR ERROR TYPEOUT IS
2238
2239 ;XXXXXX KMS11 DATA ERROR
2240 ;EXP REC KMS11 LINE
2241 ;AA BB CC
2242
2243 ;WHERE XXXXXX=PC+2 OF CALL TO ERROR ROUTINE
2244 ; AA=EXPECTED DATA BYTE
2245 ; BB=RECEIVED DATA BYTE
2246 ; CC=KMS11 LINE ON WHICH ERROR OCCURED
2247 011202 005037 015326 ERRD: CLR ERRFLG ;ALWAYS OUTPUT ALL DATA
2248 011206 012737 015563 011362 MOV #MTRANE,ERRMSG ;TYPE 'KMS11 DATA ERROR'
2249 011214 012737 011450 011374 MOV #ERTAB1,ERTAB ;TABLE OF DATA
2250 011222 000427 BR ERRGEN ;OUTPUT ERROR MESSAGE
2251
2252 ;KMS11 STATUS ERROR SERVICE
2253
2254 ;FORMAT FOR KMS11 STATUS ERROR IS
2255
2256 ;XXXX KMS11 STATUS ERROR
2257 ;SELO SEL2 KMS11 LINE
2258 ;AAA BBB CC
2259
2260 ;WHERE XXXXXX=PC+2 OF CALL TO ERROR ROUTINE
2261 ; AAA=KMS11-BD SELO STATUS AT ERROR
2262 ; BBB=KMS11-BD SEL2 STATUS AT ERROR
2263 ; CC=KMS11 LINE ON WHICH ERROR OCCURED
2264
2265
2266 011224 005037 015326 ERRS: CLR ERRFLG ;ALWAYS OUTPUT ALL DATA
2267 011230 012737 015504 011362 MOV #MLINE1,ERRMSG ;TYPE 'KMS11 STATUS ERROR'
2268 ;EXP REC LINE''
2269 011236 012737 011466 011374 MOV #ERTAB2,ERTAB ;TABLE OF DATA
2270 011244 000416 BR ERRGEN ;OUTPUT ERROR MESSAGE
2271
2272
2273 ;'"CONTROL STATUS'" ERROR SERVICE
2274 ;FORMAT FOR CONTROL STATUS ERROR IS
2275
2276 ;XXXXXX STATUS ERROR
2277 ;EXP REC
2278 ;AAAAAA BBBB88
2279
2280 ;WHERE XXXXXX=PC+2 OF CALL TO ERROR ROUTINE
2281 ; AAAAAA=EXPECTED CONTROL STATUS AT TIME OF ERROR
```

```

2282 ;          BBBB=RECEIVED(ACTUAL) CONTROL STATUS AT TIME OF ERROR
2283
2284
2285 011246 012737 015416 011362 ERRCS: MOV      #MSTATE,ERRMSG      ;TYPE 'STATUS ERROR
2286                                     ;'EXP REC'
2287 011254 012737 011516 011374 MOV      #ERTAB4,ERTAB      ;TABLE OF DATA
2288 011262 000407 BR          ERRGEN        ;OUTPUT DATA
2289
2290 ;LINE STATUS ERROR SERVICE
2291
2292 ;FORMAT FOR LINE STATUS ERROR IS
2293
2294 ;XXXX LINE ERROR
2295 ;EXP REC  LINE  SEL
2296 ;AAA  DDD  CC   DD
2297
2298 ;WHERE XXXXXX=PC+2 OF CALL TO ERROR ROUTINE
2299 ;
2300 ; AAA=EXPECTED LINE STATUS AT TIME OF ERROR
2301 ; BBB=RECEIVED LINE STATUS AT TIME OF ERROR
2302 ; CC=LINE ON WHICH ERROR OCCURED
2303 ; DD=THE LINE ON WHICH THE PROGRAM WAS OPERATING
2304
2305 011264 012737 015447 011362 ERRLS: MOV      #MLINER,ERRMSG
2306 011272 012737 011530 011374 MOV      #ERTAB5,ERTAB
2307 011300 000400 BR          ERRGEN
2308
2309 ;GENERAL ERROR HANDLER
2310 ;TYPE PC+2 OF TEST THAT FAILED
2311 ;TYPE ERROR MESSAGE (IF ANY)
2312 ;TYPE DATA RELATING TO FAILURE (IF ANY)
2313
2314 011302 005037 177776 ERRGEN: CLR      PSW
2315 011306 012777 000100 003746 MOV      #INTENA,@TKCSR
2316 011314 032777 020000 003750 BIT      #SW13,@SWR
2317 011322 001026 BNE      .3 ;IF SW13=1, DO NOT
2318 011324 021637 015360 CMP      (SP),SAVPC ;TYPE ERROR MESSAGE
2319 011330 001402 BEQ      .+6 ;SAME ERROR AGAIN
2320 011332 005037 015326 CLR      ERRFLG
2321 011336 104005 SAVOSP
2322 011340 005737 015326 TST      ERRFLG ;IF ERROR OCCURED FLAG=1,
2323 011344 001007 BNE      .1 ;TYPE DATA ONLY
2324 011346 104006 OCTASC ;TYPE PC+2 OF CALL TO ERROR ROUTINE
2325 011350 011442 ERTAB0
2326 011352 005737 011362 TST      ERRMSG
2327 011356 001407 BEQ      .2
2328 011360 104004 TYPE ;TYPE ERROR MESSAGE
2329 011362 000000 ERRMSG: 0
2330 011364 005737 011374 .1: TST      ERTAB
2331 011370 001402 BEQ      .2
2332 011372 104006 JCTASC ;TYPE DATA
2333 011374 000000 ERTAB: 0
2334 011376 104007 .2: RES05 ;RESTORE RC-R5
2335
2336 ;ERROR HALT SERVICE
2337

```



```

2338 011400 032777 100000 003664 .3: BIT #SW15,@SWR ;IF SW15=0, DO NOT
2339 011406 001406 BEQ .4 ;HALT ON ERROR
2340 011410 000000 HALT ;HALT AND DISPLAY ADDRESS OF FAILING TEST
2341 011412 022737 000176 015272 CMP #SWREG,SWR
2342 011420 001001 BNE .4
2343 011422 104016 CNTRLUU
2344 011424 012737 000001 015326 .4: MOV #1,ERRFLG ;SET ERROR OCCURED FLAG
2345 011432 042777 000100 003622 BIC #INTENA,@TKCSR
2346 011440 000002 RTI ;RETURN TO TEST
2347
2348
2349
2350 ;TABLE S OF DATA FOR ERROR TYPEOUT
2351
2352 ;TABLE FOR TRANSITION STATUS ERROR
2353
2354 011442 000001 ERTAB0: 1
2355 011444 000006 6
2356 011446 015360 SAVPC
2357 011450 000003 ERTAB1: 3
2358 011452 000003 3
2359 011454 013502 GOOD ;CONTAINS EXPECTED DATA BYTE
2360 011456 000003 3
2361 011460 013504 BAD ;CONTAINS RECEIVED DATA BYTE
2362 011462 000002 2
2363 011464 013444 LINEL ;CONTAINS NUMBER OF LINE WHERE ERROR OCCURED
2364 011466 000003 ERTAB2: 3
2365 011470 000006 6
2366 011472 013470 OSELO ;CONTAINS KMS11 SEL0
2367 011474 000006 6
2368 011476 013472 OSEL2 ;CONTAINS KMS11 SEL2
2369 011500 000002 2
2370 011502 013444 LINEL ;CONTAINS NUMBER OF LINE WHERE ERROR OCCURED
2371 011504 000002 ERTAB3: 2
2372 011506 000006 6
2373 011510 015352 SAVR4
2374 011512 000003 3
2375 011514 015350 SAVR3
2376 011516 000002 ERTAB4: 2
2377 011520 000006 6
2378 011522 015354 SAVR5 ;CONTAINS EXPECTED CONTROL STATUS
2379 011524 000006 6
2380 011526 015352 SAVR4 ;CONTAINS RECEIVED CONTROL STATUS
2381 011530 000004 ERTAB5: 4
2382 011532 000003 3
2383 011534 015354 SAVR5 ;CONTAINS EXPECTED LINE STATUS
2384 011536 000003 3
2385 011540 015352 SAVR4 ;CONTAINS RECEIVED LINE STATUS
2386 011542 000002 2
2387 011544 015350 SAVR3 ;CONTAINS NUMBER OF LINE WHERE ERROR OCCURED
2388 011546 000002 2
2389 011550 015344 SAVR1 ;CONTAINS NUMBER OF LINE UNDER TEST
2390
2391 011552 000001 SWRTB: 1
2392 011554 000006 6
2393 011556 000176 SWREG
  
```

```

2394
2395
2396 011560 017605 000000
2397 011564 062716 000002
2398 011570 012737 000010 012120
2399 011576 012704 016715
2400 011602 012537 015362
2401 011606 012537 015364
2402 011612 013537 012114
2403 011616 104010
2404 011620 005337 015362
2405 011624 001370
2406 011626 112714 000100
2407 011632 005737 011750
2408 011636 001002
2409 011640 104004
2410 011642 016713
2411 011644 000002
2412
2413
2414 011646 005037 011744
2415 011652 012737 000001 011746
2416 011660 104004
2417 011662 016671
2418 011664 052737 000001 011750
2419 011672 104006
2420 011674 011552
2421 011676 104004
2422 011700 016715
2423 011702 104013
2424 011704 016701
2425 011706 000000
2426 011710 177777
2427 011712 011744
2428 011714 123727 012564 0000i>
2429 011722 001403
2430 011724 013777 011744 003340
2431 011732 005037 011746
2432 011736 005037 011750
2433 011742 000002
2434 011744 000000
2435 011746 000000
2436 011750 000000
2437
2438
2439
2440 011752 013700 015364
2441 011756 012701 017034
2442 011762 104011
2443 011764 062737 000060 012116
2444 011772 113721 012116
2445 011776 005300
2446 012000 001370
2447 012002 114124
2448 012004 005337 015364
2449 012010 001374

; CONVERT OCTAL TO ASCII AND OUTPUT ON TTY
OCTASN: MOV @ (SP), R5 ; GET POINTER TO TABLE OF DATA
ADD #2, (SP)
MOV #10, RADIX
MOV #MBCD+2, R4 ; SET UP POINTER FOR CONVERTED DATA
MOV (R5)+, WRDCNT ; GET NUMBER OF WORDS TO BE CONVERTED
OCTAS1: MOV (R5)+, CHRCNT ; GET NUMBER OF DIGITS IN WORD
MOV @ (R5)+, BINWRD ; GET DATA TO BE CONVERTED
CONVERT ; CONVERT TO ASCII
DEC WRDCNT ; IF ALL DATA IS NOT CONVERTED
BNE OCTAS1 ; CONTINUE
MOVB #100, (R4) ; PUT TERMINATOR AT END OF MESSAGE
TST SMLN
BNE 1$
TYPE ; OUTPUT CONVERTED DATA
MBCD ; TO TELETYPE
RTI ; RETURN TO CALLING ROUTINE

1$:

CNTLU: CLR TMP1
MOV #1, TMP2
TYPE
SSWREQ
BIS #1, SMLN
OCTASC
SWRTB
TYPE
MBCD+2
INSTRG
$NEWIS
0
177777
TMP1
CMPB INBUF, #15
BEQ 1$
MOV TMP1, @SWR
1$: CLR TMP2
CLR SMLN
RTI

TMP1: 0
TMP2: 0
SMLN: 0

; INTEGER BINARY TO ASCII CONVERSION COMMON ROUTINE
BINASC: MOV CHRCNT, R0 ; SET UP COUNT FOR DIGITS TO BE CONVERTED
MOV #TEMTAB, R1 ; SET UP POINTER FOR TEMPORARY STORAGE
BINASA: EXTRACT ; EXTRACT ONE DIGIT
ADD #60, DIGIT ; CONVERT FROM BCD TO ASCII
MOVB DIGIT, (R1)+ ; STORE DIGIT
DEC R0 ; IF ALL DIGITS NOT DONE,
BNE BINASA ; CONTINUE
BINASB: MOVB -(R1), (R4)+ ; REVERSE ORDER OF DIGITS
DEC CHRCNT ; IF ALL CHARACTERS ARE NOT
BNE BINASB ; IN ORDER, CONTINUE

```

```

2450 012012 112724 000040      MOVB   #40,(R4)+      ;INSERT SPACE AFTER LAST DIGIT
2451 012016 000002              RTI                  ;RETURN TO CALLING ROUTINE
2452
2453                          ;SINGLE PRECISION UNSIGNED DIVIDE LOOP
2454
2455 012020 005037 012116      DIVI:  CLR      DIVIDH
2456 012024 023737 012116 012120  DIVIU:  CMP      DIVIDH,DIVIS
2457 012032 103027              BHIS   DIVIB
2458 012034 012737 000021 012074      MOV    #17.,DIVCNT
2459 012042 000407              BR    DIVIC
2460 012044 023737 012116 012120  DIVIA:  CMP      DIVIDH,DIVIS
2461 012052 103403              BLO   DIVIC
2462 012054 163737 012120 012116      SUB    DIVIS,DIVIDH
2463 012062 006137 012114      DIVIC:  ROL    DIVIDL
2464 012066 006137 012116      ROL    DIVIDH
2465 012072 005327              DEC   (PC)+
2466 012074 000000      DIVCNT: 0
2467 012076 001362              BNE   DIVIA
2468 012100 006037 012116      ROR   DIVIDH
2469 012104 005137 012114      COM   DIVIDL
2470 012110 000002              RTI
2471 012112 000000      DIVIB:  HALT
2472 012114 000000      DIVIDL: 0
2473 012116 000000      DIVIDH: 0
2474 012120 000000      DIVIS: 0
2475
2476                          ;SAVE PC OF TEST THAT FAILED AND R0-R5
2477
2478 012122 016637 000004 015360  SV05P:  MOV    4(SP),SAVPC
2479
2480                          ;SAVE R0-R5
2481
2482 012130 010537 015354      SV05:  MOV    R5,SAVR5
2483 012134 010437 015352      MOV    R4,SAVR4
2484 012140 010337 015350      MOV    R3,SAVR3
2485 012144 010237 015346      MOV    R2,SAVR2
2486 012150 010137 015344      MOV    R1,SAVR1
2487 012154 010037 015342      MOV    R0,SAVR0
2488 012160 000002              RTI
2489
2490                          ;RESTORE R0-R5
2491
2492 012162 013700 015342      RS05:  MOV    SAVR0,R0
2493 012166 013701 015344      MOV    SAVR1,R1
2494 012172 013702 015346      MOV    SAVR2,R2
2495 012176 013703 015350      MOV    SAVR3,R3
2496 012202 013704 015352      MOV    SAVR4,R4
2497 012206 013705 015354      MOV    SAVR5,R5
2498 012212 000002              RTI
2499
2500                          ;TELETYPE OUTPUT ROUTINE
2501
2502 012214 017605 000000      TYPER:  MOV    @ (SP),R5      ;GET POINTER TO MESSAGE (ON STACK)
2503 012220 062716 000002      ADD    #2,(SP)          ;CORRECT STACK FOR RETURN
2504 012224 105777 003036      TYPERA: TSTB   @TPCSR    ;WAIT FOR TELEPRINTER READY
2505 012230 100375              BPL   TYPERA

```

2506	012232	122715	000100		CMPB	#100,(R5)		:IF CHARACTER IS NOT TERMINATOR, TYPE IT
2507	012236	001001			BNE	TYPER1		
2508	012240	000002			RTI			:CHARACTER IS TERMINATOR, EXIT
2509	012242	122715	000042		TYPER1: CMPB	#42,(R5)		:IF CHARACTER=42,
2510	012246	001406			BEQ	TYPECL		:TYPE LINE FEED
2511	012250	122715	000045		CMPB	#45,(R5)		:IF CHARACTER=45,
2512	012254	001403			BEQ	TYPECL		:TYPE CARRIAGE RETURN
2513	012256	112577	003006		TYPER2: MOVB	(R5)+,@TPDBR		:GET CHARACTER
2514	012262	000760			BR	TYPERA		:TYPE IT
2515	012264	142715	000040		TYPECL: BICB	#40,(R5)		:CONVERT CODE OF 42 OR 45
2516	012270	152715	000010		BISB	#10,(R5)		:TO 12 OR 15
2517	012274	0C0770			BR	TYPER2		:TYPE IT
2518								
2519								
2520								:INPUT OCTAL CHARACTER STRING
2521								:TERMINATOR IS CARRIAGE RETURN
2522								:IF MORE THAN SEVEN (7) CHARACTERS INCLUDING
2523								:CARRIAGE RETURN ARE TYPED, THE IN PUT WILL
2524								:BE RE-REQUESTED
2525								
2526	012276				INSTR:			
2527	012276	011605			MOV	(SP),R5		:GET POINTER TO ARGUMENTS
2528	012300	012537	012324		MOV	(R5)+,MSG		:GET MESSAGE TO BE TYPED
2529	012304	012537	012556		MOV	(R5)+,LOLIM		:GET LOWER LIMIT
2530	012310	012537	012560		MOV	(R5)+,HILIM		:GET UPPER LIMIT
2531	012314	012537	012562		MOV	(R5)+,STORE		:GET DATA STORAGE LOCATION
2532	012320	010516			MOV	R5,(SP)		:RESTORE STACK
2533	012322	104004			INSTR1: TYPE			:TYPE MESSAGE
2534	012324	000000			MSG:	0		
2535	012326	012704	012564		MOV	#INBUF,R4		:SET UP CHARACTER INPUT BUFFER
2536	012332	012703	000007		MOV	#7,R3		:SET UP INPUT COUNT
2537	012336	105777	002720		INSTRB: TSTB	@TKCSR		:WAIT FOR CHARACTER
2538	012342	100375			BPL	INSTRB		
2539	012344	005037	002310		INSTRB: CLR	SINTFL		
2540	012350	117737	002710	011744	MOVB	@TKDBR,TMP1		
2541	012356	142737	000200	011744	BICB	#200,TMP1		
2542	012364	113714	011744		MOVB	TMP1,(R4)		
2543	012370	121427	000007		CMPB	(R4),#7		
2544	012374	001420			BEQ	INSTR		
2545	012376	121427	000015		CMPB	(R4),#15		:IS CHARACTER TERMINATOR
2546	012402	001420			BEQ	INSTR2		:IF IT IS, CONVERT INPUT STRING
2547	012404	121427	000025		CMPB	(R4),#25		
2548	012410	001003			BNE	1\$		
2549	012412	005037	011744		CLR	TMP1		
2550	012416	000741			BR	INSTR1		
2551	012420	112477	002644		1\$: MOVB	(R4)+,@TPDBR		:TYPE CHARACTER IF NOT TERMINATOR
2552	012424	105777	002636		INSTRC: TSTB	@TPCSR		:WAIT TO FINISH TYPING
2553	012430	100375			BPL	INSTRC		
2554	012432	005303			DEC	R3		:UPDATE RECEIVED COUNT
2555	012434	001340			BNE	INSTRB		:AND CONTINUE
2556	012436	104004			INSTR: TYPE			:TYPE '?' AND RE-REQUEST INPUT
2557	012440	016424			MQM			
2558	012442	000727			BR	INSTR1		
2559								
2560								:CONVERT ASCII STRING TO OCTAL
2561								

```

2562 012444 104004
2563 012446 016430
2564 012450 012704 012564
2565 012454 005003
2566 012456 122714 000015
2567
2568 012462 001431
2569 012464 121427 000060
2570 012470 002762
2571 012472 121427 000067
2572 012476 003357
2573 012500 142714 000060
2574 012504 152403
2575 012506 121427 000015
2576 012512 001404
2577 012514 006303
2578 012516 006303
2579 012520 006303
2580 012522 000760
2581
2582
2583
2584 012524 020337 012560
2585 012530 101342
2586 012532 020337 012556
2587 012536 103737
2588 012540 010377 000016
2589 012544 000002
2590 012546 005737 011746
2591 012552 001731
2592 012554 000002
2593 012556 000000
2594 012560 000000
2595 012562 000000
2596 012564 000000
2597
2598
2599
2600
2601 012606 010046
2602 012610 010146
2603 012612 010246
2604 012614 010346
2605 012616 010446
2606 012620 010546
2607 012622 013746 000024
2608 012626 010637 015356
2609 012632 012737 012644 000024
2610 012640 0C0000
2611 012642 000776
2612
2613
2614
2615 012644 013706 015356
2616 012650 012605
2617 012652 012604

INSTR2: TYPE
MCRLF
MOV #INBUF,R4 ;GET POINTER TO ASCII STRING
CLR R3
CMPB #15,(R4) ;IS TERMINATOR FIRST
;CHARACTER IN STRING

INSTRD: BEQ CHCK
CMPB (R4),#60 ;IS CHARACTER OCTAL DIGIT
BLT INSTER ;IF 67>=CHAR>=60
CMPB (R4),#67 ;CHARACTER IS OCTAL DIGIT
BGT INSTER
BICB #60,(R4) ;STRIP ASCII
BISB (R4)+,R3 ;GENERATE OCTAL NUMBER
CMPB (R4),#15 ;IF END OF STRING, CHECK LIMITS
BEQ INSTER3
ASL R3 ;MULTIPLY DIGIT BY 10 (OCTAL)
ASL R3
ASL R3
BR INSTRD ;GET NEXT DIGIT

;TEST NUMBER TO SEE IF IT IS WITHIN LIMITS

INSTR3: CMP R3,HILIM ;TEST HI LIMIT
BHI INSTER ;IF R3>HILIM, ERROR
CMP R3,LOLIM ;TEST LOW LIMIT
BLO INSTER ;IF R3<LOLIM, ERROR
MOV R3,@STORE ;STORE NUMBER
RTI ;EXIT

CHCK: TST TMP2
BEQ INSTER

LOLIM: 0
HILIM: 0
STORE: 0
INBUF: 0
.=.+20

;ENTER HERE ON POWER FAILURE

PFAIL: MOV R0,-(SP) ;SAVE R0-R5 ON PROCESSOR STACK
MOV R1,-(SP)
MOV R2,-(SP)
MOV R3,-(SP)
MOV R4,-(SP)
MOV R5,-(SP)
MOV 24,-(SP)
MOV SP,SAVSP ;SAVE STACK POINTER
MOV #RESTART,24 ;SET UP FOR POWER UP TRAP
HALT ;HALT ON POWER DOWN NORMAL
BR .-2

;PROCESSOR WILL TRAP HERE WHEN POWER IS RESTORED

RESTAR: MOV SAVSP,SP ;RESTORE STACK POINTER
MOV (SP)+,R5 ;RESTORE R0-R5
MOV (SP)+,R4

```

2618	012654	012603		MOV	(SP)+,R3	
2619	012656	012602		MOV	(SP)+,R2	
2620	012660	012601		MOV	(SP)+,R1	
2621	012662	012600		MOV	(SP)+,R0	
2622	012664	012737	012606 000024	MOV	#PFAIL,24	;SET UP FOR POWER FAILURE
2623	012672	005726		POP1SP		
2624	012674	104004		TYPE		
2625	012676	016603		MPFAIL		
2626	012700	005737	002066	TST	TIPFLG	
2627	012704	001002		BNE	RESTA1	
2628	012706	000137	001254	JMP	START0	
2629	012712	104004		RESTA1: TYPE		
2630	012714	016623		MPF1		
2631	012716	012716	000340	MOV	#340,(SP)	
2632	012722	005746		PUSH1SP		
2633	012724	000137	011046	JMP	TSTENT	

2634  
 2635  
 2636  
 2637  
 2638 012730 004737 014540  
 2639 012734 005037 014042  
 2640 012740 012700 023600  
 2641 012744 113720 014042  
 2642 012750 105237 014042  
 2643 012754 020027 025620  
 2644 012760 103771  
 2645 012762 005037 013500  
 2646 012766 004737 013604  
 2647 012772 000424  
 2648 012774 004737 013740  
 2649 013000 000421  
 2650 013002 004737 014230  
 2651 013006 000416  
 2652 013010 012777 013226 002304  
 2653 013016 012777 000240 002300  
 2654 013024 004737 013064  
 2655 013030 004737 013110  
 2656 013034 152777 000100 002240  
 2657 013042 000207  
 2658  
 2659 013044 017737 002226 013470  
 2660 013052 017737 002224 013472  
 2661 013060 104015  
 2662 013062 000770  
 2663  
 2664 013064 004737 014674  
 2665 013070 013700 014274  
 2666 013074 004737 013166  
 2667 013100 004737 014724  
 2668 013104 000771  
 2669 013106 000207  
 2670  
 2671 013110 004737 014674  
 2672 013114 013700 014274  
 2673 013120 004737 013134  
 2674 013124 004737 014724  
 2675 013130 000771  
 2676 013132 000207

.SBTTL KMS11 ROUTINES  
 ;KMS11 (KMC11) SETUP ROUTINES  
 KMCSUP: JSR PC,CLRBFS  
 CLR \$TMPO  
 MOV #BUFR,RO  
 1\$: MOV \$TMPO,(RO)+  
 INCB \$TMPO  
 CMP RO,#BUFR+2020  
 BLO 1\$  
 CLR ENUMBR ;INIT ERROR NUMBER  
 JSR PC,LDMODE ;LOAD FIRMWARE  
 BR 5\$ ;ERROR RETURN  
 JSR PC,INTKMC ;INIT THE FIRMWARE  
 BR 5\$ ;ERROR RETURN  
 JSR PC,INTALL ;INIT ALL LINES  
 BR 5\$ ;ERROR RETURN  
 MOV #OPI,@KMCV1 ;SETUP VECTOR  
 MOV #240,@KMCL1  
 JSR PC,RECALL ;SETUP ALL RECVS  
 JSR PC,SNDA11 ;ENABLE ALL XMITs  
 BISB #100,@SEL2  
 1\$: RTS ;EXIT  
 5\$: MOV @SELO,OSELO  
 MOV @SEL2,OSEL2  
 ERRORS ;\*\*\*\*\*; KMC11 ERROR - RUN KMS11 TESTS  
 BR 5\$ ;FIX IT  
 RECALL: JSR PC,SETLIN ;INIT LINE COUNT  
 1\$: MOV CURLIN,RO  
 JSR PC,RBUF  
 JSR PC,GETLN  
 BR 1\$  
 RTS PC  
 SNDA11: JSR PC,SETLIN  
 1\$: MOV CURLIN,RO  
 JSR PC,XBUF  
 JSR PC,GETLN  
 BR 1\$  
 RTS PC

2677	013134	004737	014046		XBUF:	JSR	PC,REQNT		
2678	013140	000775				BR	XBUF		
2679	013142	110077	002136			MOVB	RO,@SEL3		
2680	013146	012777	023600	002132		MOV	#BUFR,@SEL4		
2681	013154	060077	002126			ADD	RO,@SEL4		:OFFSET BY LINE #
2682	013160	060077	002122			ADD	RO,@SEL4		:TIMES 2
2683	013164	000411				BR	BUFGO		
2684	013166	004737	014056		RBUF:	JSR	PC,REQNR		
2685	013172	000775				BR	RBUF		
2686	013174	110077	002104			MOVB	RO,@SEL3		
2687	013200	006300				ASL	RO		
2688	013202	016077	013446	002076		MOV	PBUFR(RO),@SEL4		
2689	013210	013777	013466	002074	BUFGO:	MOV	PBFCNT,@SEL6		
2690	013216	004737	014502			JSR	PC,INPDUN		
2691	013222	104015				ERRORS			
2692	013224	000207				RTS	PC		:EXIT
2693									
2694	013226	010046			OPI:	MOV	RO,-(SP)		
2695	013230	017737	002042	013470		MOV	@SEL0,OSEL0		
2696	013236	017737	002040	013472		MOV	@SEL2,OSEL2		
2697	013244	017737	002036	013474		MOV	@SEL4,OSEL4		
2698	013252	017737	002034	013476		MOV	@SEL6,OSEL6		
2699	013260	113737	013473	013444		MOVB	OSEL2+1,LINEL		
2700	013266	042737	177770	013444		BIC	#-10,LINEL		
2701	013274	013700	013472			MOV	OSEL2,RO		
2702	013300	042700	177770			BIC	#-10,RO		
2703	013304	006300				ASL	RO		
2704	013306	000170	013312			JMP	@OSUB(RO)		
2705	013312	013416			OSUB:	XDO			
2706	013314	013326				XXCO			
2707	013316	013336				ILLF			
2708	013320	013336				ILLF			
2709	013322	013342				RDO			
2710	013324	013332				RCO			
2711	013326	104015			XXCO:	ERRORS			
2712	013330	000776				BR	XXCO		
2713	013332	104015			RCO:	ERRORS			
2714	013334	000776				BR	RCO		
2715	013336	104015			ILLF:	ERRORS			
2716	013340	000776				BR	ILLF		
2717	013342	013700	013444		RDO:	MOV	LINEL,RO		
2718	013346	146037	013514	013512		BICB	LBITS(RO),RFLGS		
2719	013354	004737	014572			JSR	PC,CHKDTA		:CHECK DATA
2720	013360	005737	013512			TST	RFLGS		
2721	013364	001403				BEQ	1\$		:SKIP IF ALL DONE
2722	013366	004737	013524			JSR	PC,CKDEAD		:CHECK FOR DEAD LINE
2723	013372	000416				BR	XXDO		
2724	013374	004737	014540		1\$:	JSR	PC,CLRBFS		
2725	013400	105077	001676			CLRB	@SEL2		:CLEAR LAST OUTPUT REQUEST
2726	013404	004737	013064			JSR	PC,RECALL		
2727	013410	004737	013110			JSR	PC,SNDALL		
2728	013414	000405				BR	XXDO		
2729	013416	013700	013444		XDO:	MOV	LINEL,RO		
2730	013422	146037	013514	013513		BICB	LBITS(RO),XFLGS		
2731	013430	112777	000100	001644	XXDO:	MOVE	#100,@SEL2		
2732	013436	012600				MOV	(SP)+,RO		



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KMS11 ROUTINES

SEQ 0064

2733 013440 000002

RTI

2734 013442 000377  
2735  
2736 013443  
2737 013444 000000  
2738 013446 025622  
2739 013450 027632  
2740 013452 031642  
2741 013454 033652  
2742 013456 035662  
2743 013460 037672  
2744 013462 041702  
2745 013464 043712  
2746 013466 010000  
2747 013470 000000  
2748 013472 000000  
2749 013474 000000  
2750 013476 000000  
2751 013500 000000  
2752 013502 000000  
2753 013504 000000  
2754 013506 000000  
2755 013510 000000  
2756 013512 177777  
2757 013513  
2758 013514 200 100 040  
2759 013517 020 010 004  
2760 013522 002 001  
2761  
2762  
2763 013524 005000  
2764 013526 005770 013446  
2765 013532 001405  
2766 013534 005720  
2767 013536 020027 000020  
2768 013542 103771  
2769 013544 000207  
2770 013546 104004  
2771 013550 016363  
2772 013552 010037 013602  
2773 013556 006237 013602  
2774 013562 062737 040060 013602  
2775 013570 104004  
2776 013572 013602  
2777 013574 104004  
2778 013576 016401  
2779 013600 000755  
2780 013602 040060

LINEB: 377  
CLINE=-1  
LINES: 0  
PBUFR: BF0  
BF1  
BF2  
BF3  
BF4  
BF5  
BF6  
BF7  
PBF CNT: 10000  
OSEL0: 0  
OSEL2: 0  
OSEL4: 0  
OSEL6: 0  
ENUMBR: 0  
GOOD: 0  
BAD: 0  
DATA1: 0  
DATA2: 0  
RFLGS: -1  
XFLGS=-1  
LBITS: .BYTE 200,100,40,20,10,4,2,1 ;200=LINE0,.....,1=LINE7

:B7-0 = LINE 0-7. CHANGE THIS BYTE  
:TO CONTROL THE KMS11-BD LINES SELECTED

CKDEAD: CLR R0  
1\$: TST @PBUFR(R0) ;CHECK FOR LINE ACTIVITY  
BEQ 3\$ ;0=DEAD LINE  
2\$: TST (R0)+  
CMP R0,#20  
BLO 1\$  
RTS PC  
3\$: TYPE  
DEDMES  
MOV R0,4\$  
ASR 4\$  
ADD #40060,4\$  
TYPE  
4\$  
TYPE  
DEDMS1  
BR 2\$  
4\$: 40060

```

2781                                     ;THIS ROUTINE WILL LOAD THE DESIRED FIRMWARE (PARAMETER
2782                                     ;BLOCK SPECIFIED) TO THE CURRENTLY ACTIVE KMC-11
2783
2784 013604 013737 000004 013736 LDMODE: MOV 4,6$ ;SAVE
2785 013612 012737 013720 000004 MOV #4$,@#4 ;TIME OUT TRAP ROUTINE
2786 013620 012777 002000 001450 MOV #2000,@SELO
2787 013626 013737 013736 000004 MOV 6$,@#4
2788 013634 005037 013734 CLR 5$ ;INITIALIZE THE ADDRESS COUNTER
2789 013640 012705 017400 MOV #BOPFRM,R5 ;POINTER TO BOP FIRMWARE
2790 013644 2$: ;LOAD THE DATA WORD INTO KMC11
2791 013644 013777 013734 001434 MOV 5$,@SEL4 ;LOAD ADDRESS
2792 013652 012577 001434 001434 MOV (R5)+,@SEL6 ;LOAD THE DATA WORD
2793 013656 052777 020000 001412 BIS #20000,@SELO
2794 013664 000240 NOP
2795 013666 000240 NOP
2796 013670 042777 020000 001400 BIC #20000,@SELO
2797 ;UPDATE THE ADDRESS AND TEST FOR DONE
2798 013676 005237 013734 INC 5$ ;+1 TO ADDRESS COUNTER
2799 013702 022737 002000 013734 CMP #2000,5$
2800 013710 001355 BNE 2$
2801 013712 062716 000002 ADD #2,(SP) ;GOOD RETURN
2802 013716 000207 RTS PC ;RETURN WHEN DONE
2803 013720 4$: ;INDICATE KMC-11 NOT FOUND
2804 013720 062706 000004 ADD #4,SP ;RESTORE STACK
2805 013724 012737 000001 013500 MOV #1,ENUMBR ;E1=KMC11 NOT FOUND
2806 013732 000207 RTS PC ;ERROR RETURN
2807
2808 013734 000000 5$: 0 ;ADDRESS COUNTER
2809 013736 000000 6$: 0 ;TEMP. STORE
2810
2811                                     ;THE FOLLOWING ROUTINE WILL INITIALIZE THE CURRENT KMC-11
2812                                     ;FIRMWARE BY ISSUING A MASTER CLEAR AND SETTING THE RUN
2813                                     ;BIT. A WATCH-LOOP IS EXECUTED TO ASSURE THAT THE FIRMWARE
2814                                     ;IS RESPONDING TO THE USER COMMANDS. IF THE FIRMWARE
2815                                     ;SHOULD BE HUNG OR FAILS TO RESPOND A RETURN TO PC IS
2816                                     ;EXECUTED, OTHERWISE PC+2
2817
2818 013740 012737 000015 014040 INTKMC: MOV #15,3$
2819 013746 112777 000377 001326 MOVB #377,@SEL2
2820 013754 005077 001316 CLR @SELO ;*: CLEAR RUN, IF UP
2821 013760 012777 040000 001310 MOV #40000,@SELO ;SET MASTER CLEAR
2822 013766 012777 100000 001302 MOV #100000,@SELO ;RUN
2823 013774 005037 014042 CLR $TMP0
2824 014000 105237 014042 1$: INCB $TMP0 ;WAIT LOOP
2825 014004 001375 BNE 1$
2826 014006 105777 001270 TSTB @SEL2 ;DONE?
2827 014012 001407 BEQ 2$ ;B=Y
2828 014014 005337 014040 DEC 3$
2829 014020 001367 BNE 1$
2830 014022 012737 000002 013500 MOV #2,ENUMBR ;KMC11 DID NOT INITIALIZE
2831 014030 000207 RTS PC
2832 014032 062716 000002 2$: ADD #2,(SP)
2833 014036 000207 RTS PC
2834 014040 000000 3$: 0
2835 014042 000000 $TMP0: 0
2836 014044 000000 $TMP1: 0

```

2837 :THIS ROUTINE TEST THAT A 'REQUEST IN' CAN BE DONE BY  
 2838 :CHECKING THAT NO OUTPUT REQUESTS ARE POSTED (SEL2) AND THAT  
 2839 :THE FIRMWARE RESPONDS TO A REQUEST IN BY POSTING THE READY-IN.  
 2840 :IF THE REQUEST IN CAN BE DONE THE RETURN IS TO PC+2 OTHERWISE TO PC

```

2841
2842 014046 112777 000040 001222 REQNT: MOVB #40,@SELO ;TRANSMIT BUFFER IN REQ.
2843 014054 000417 BR REQGO
2844 014056 112777 000044 001212 REQNR: MOVB #44,@SELO ;REC. BUFFER IN REQUEST
2845 014064 000413 BR REQGO
2846 014066 112777 000045 001202 REQNC: MOVB #45,@SELO ;CONTROL IN RECEIVE REQUEST
2847 014074 000407 BR REQGO
2848 014076 112777 000041 001172 REQNX: MOVB #41,@SELO ;CONTROL IN TRANSMIT REQUEST
2849 014104 000403 BR REQGO
2850 014106 112777 000043 001162 REQNI: MOVB #43,@SELO ;INITIALIZE IN REQUEST
2851 014114 012737 000003 013500 REQGO: MOV #3,ENUMBR ;E3= OUTPUT REQUEST PENDING
2852 014122 105777 001154 TSTB @SEL2 ;OUTPUT REQUESTED
2853 014126 100413 BMI 2$ ;B=Y
2854 014130 005037 014042 CLR $TMP0
2855 014134 105777 001136 1$: TSTB @SELO ;IS REQUEST GRANTED?
2856 014140 100407 BMI 3$ ;B=Y
2857 014142 005237 014042 INC $TMP0 ;ALLOW TIME FOR RESPONSE
2858 014146 001372 BNE 1$ ;TRY AGAIN
2859 014150 012737 000004 013500 MOV #4,ENUMBR ;E4= RDYIN DID NOT SET
2860 014156 000207 2$: RTS PC ;RETURN PC
2861 014160 062716 000002 3$: ADD #2,(SP)
2862 014164 000207 RTS PC
2863
2864
2865
2866 :THIS ROUTINE WILL LOAD THE LINE INITIALIZE COMMAND
2867 :IN TO THE DEVICE REGISTERS, CURLIN=LINE # (AT THIS POINE RDY=IN
2868 :IS SET)
2868 014166 113777 014274 001110 INTLIN: MOVB CURLIN,@SEL3
2869 014174 012777 000400 001110 MOV #400,@SEL6 ;ENABLE LINE
2870 014202 005077 001100 CLR @SEL4 ;UNUSED
2871 014206 012737 000005 013500 MOV #5,ENUMBR ;E5= LINE INIT FAILED
2872 014214 004737 014502 JSR PC,INPDUN
2873 014220 000207 RTS PC ;RDY-IN FAILED TO DROP
2874 014222 062716 000002 ADD #2,(SP)
2875 014226 000207 RTS PC ;COMMAND COMPLETED
2876
2877 :THIS ROUTINE WILL INITIALIZE ALL THE LINES STARTING AT LINE 1
2878 014230 004737 014674 INTALL: JSR PC,SETLIN
2879 014234 004737 014106 1$: JSR PC,REQNI
2880 014240 000413 BR 3$ ;A REQUEST IN FAILED
2881 014242 004737 014166 JSR PC,INTLIN
2882 014246 000410 BR 3$ ;LINE INITIALIZATE COMMAND FAILED TO COMPLETE
2883 014250 004737 014320 JSR PC,STCLK
2884 014254 000405 BR 3$ ;ERROR
2885 014256 004737 014724 JSR PC,GETLN
2886 014262 000764 BR 1$
2887 014264 062716 000002 2$: ADD #2,(SP)
2888 014270 000207 3$: RTS PC
2889 014272 000000 HOLDB: 0
2890 014274 000000 CURLIN: 0
  
```

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2891                                     ;THIS ROUTINE WILL ISSUE A LINE INITIALIZE TO THE LINE
2892                                     ;SPECIFIED IN "CURLIN"
2893
2894 014276 004737 014106      INTLNE: JSR      PC,REQNI
2895 014302 000405              BR        1$
2896 014304 004737 014166      JSR      PC,INTLIN
2897 014310 000402              BR        1$
2898 014312 062716 000002      ADD      #2,(SP)          ;SET GOOD RETURN
2899 014316 000207              RTS        PC
2900
2901                                     ;THIS ROUTINE WILL SET THE MAINTENANCE LOOP AND START THE
2902                                     ;CLOCK. IF COMMAND FAILS TO EXECUTE A RETURN IS MADE TO
2903                                     ;PC, OTHERWISE TO PC+2.
2904
2905 014320 004737 014066      STCLK: JSR      PC,REQNC
2906 014324 000420              BR        2$              ;CANNOT ISSUE COMMAND
2907 014326 113777 014274 000750  MOVB     CURLIN,@SEL3    ;SELECT LINE #
2908 014334 112777 000100 000752  MOVB     #100,@SEL7     ;INDICATE LOADING A MAINT. COMMAND
2909 014342 112777 000000 000742  MOVB     #0,@SEL6       ;SET EXTERNAL CLOCK
2910 014350 005077 000732              CLR      @SEL4          ;UNUSED
2911 014354 012737 000006 013500  MOV      #6,ENUMBR     ;E6= CNT-IN MAINT FAILED TO CPMLETE
2912 014362 004737 014502              JSR      PC,INPDUN
2913 014366 000207              RTS        PC          ;COMMAND NOT COMPLETED
2914 014370 062716 000002      2$:    ADD      #2,(SP)
2915 014374 000207              3$:    RTS        PC
2916
2917                                     ;THIS ROUTINE WILL ISSUE A LINE RESET COMMAND TO THE
2918                                     ;LINE SPECIFIED BY "CURLIN".
2919
2920 014376 004737 014066      LRSET: JSR      PC,REQNC
2921 014402 000417              BR        2$              ;OUT REQ. OR HUNG
2922 014404 113777 014274 000672  MOVB     CURLIN,@SEL3    ;LD LINE #
2923 014412 112777 000020 000674  MOVB     #20,@SEL7     ;LINE RESET COMMAND
2924 014420 005077 000662              CLR      @SEL4          ;UNUSED
2925 014424 105077 000662              CLRB    @SEL6          ;UNUSED
2926 014430 012737 000007 013500  MOV      #7,ENUMBR     ;E7= LINE RESET FAILED TO COMPLETE
2927 014436 004737 014502              JSR      PC,INPDUN
2928 014442 000207              RTS        PC
2929 014444 062716 000002      2$:    ADD      #2,(SP)
2930 014450 000207              RTS        PC

```

```

2931                                     :THIS ROUTINE WILL MONITOR THE REQUEST OUT OF SEL2
2932                                     :FOR SETTING WITHIN DURATION OF 1 LOOP
2933
2934 014452 005037 014042      REQOUT: CLR      $TMP0
2935 014456 105777 000620      1$:   TSTB    @SEL2      ;OUTPUT REQUESTED?
2936 014462 100404              BMI     2$           ;B=YES
2937 014464 005237 014042      INC     $TMP0
2938 014470 001372              BNE    1$           ;TRY AGAIN
2939 014472 000207              RTS     PC          ;NO OUTPUT REQUESTED
2940 014474 062716 000002      2$:   ADD    #2,(SP)
2941 014500 000207              RTS     PC          ;OUTPUT IS REQUESTED
2942                                     :THIS ROUTINE WILL TEST THAT THE INPUT STATUS COMMAND
2943                                     :WILL COMPLETE (RDY IN DROPS)
2944
2945 014502 042777 000040 000566 INPDUN: BIC     #40,@SELO
2946 014510 005037 014042      CLR     $TMP0      ;INSRUCT COMMAND READY
2947 014514 105777 000556      1$:   TSTB    @SELO      ;INPUT DONE?
2948 014520 100004              BPL    2$           ;B=YES
2949 014522 005237 014042      INC     $TMP0
2950 014526 001372              BNE    1$
2951 014530 000207              RTS     PC          ;COMMAND NOT ACCEPTED
2952 014532 062716 000002      2$:   ADD    #2,(SP)
2953 014536 000207              RTS     PC          ;COMMAND DONE
2954
2955 014540 113737 013442 013512 CLRBF5: MOVB   LINEB,RFLGS
2956 014546 113737 013442 013513 MOVB   LINEB,XFLGS
2957 014554 012700 025622      MOV    #BF0,R0
2958 014560 005020              1$:   CLR    (R0)+
2959 014562 020027 045722      CMP    R0,#BFND
2960 014566 103774              BLO   1$
2961 014570 000207              RTS     PC
  
```

2962	014572	013700	013444		CHKDTA:	MOV	LINEL,RO
2963	014576	006300				ASL	RO
2964	014600	016037	013446	014770		MOV	PBUFR(RO),EDP
2965	014606	012737	023600	014042		MOV	#BUFR,\$TMP0
2966	014614	060037	014042			ADD	RO,\$TMP0
2967	014620	012737	002000	014044		MOV	#2000,\$TMP1
2968	014626	127777	177210	000134	1\$:	CMPB	@\$TMP0,@EDP
2969	014634	001407				BEQ	2\$
2970	014636	117737	177200	013502		MOVB	@\$TMP0,GOOD
2971	014644	117737	000120	013504		MOVB	@EDP,BAD
2972	014652	104014				ERRORD	
2973	014654	005237	014770		2\$:	INC	EDP
2974	014660	005237	014042			INC	\$TMP0
2975	014664	005337	014044			DEC	\$TMP1
2976	014670	001356				BNE	1\$
2977	014672	000207				RTS	PC
2978							
2979	014674	113737	013442	013443	SETLIN:	MOVB	LINEB,CLINE
2980	014702	012737	177777	014274		MOV	#-1,CURLIN
2981	014710	004737	014724			JSR	PC,GETLN
2982	014714	000207				RTS	PC
2983	014716	000000				HALT	
2984							
2985	014720	106337	013443		GETLNO:	ASLB	CLINE
2986	014724	005237	014274		GETLN:	INC	CURLIN
2987	014730	105737	013443			TSTB	CLINE
2988	014734	001404				BEQ	1\$
2989	014736	100370				BPL	GETLNO
2990	014740	106337	013443			ASLB	CLINE
2991	014744	000207				RTS	PC
2992	014746	113737	013442	013443	1\$:	MOVB	LINEB,CLINE
2993	014754	012737	177777	014274		MOV	#-1,CURLIN
2994	014762	062716	000002			ADD	#2,(SP)
2995	014766	000207				RTS	PC
2996							
2997	014770	000000			EDP:	0	

;NO LINES ENABLED!

```

2998
2999 014772 013746 000020
3000 014776 013746 000022
3001 015002 012737 015174 000020
3002 015010 012737 000340 000022
3003 015016 012737 000300 013506
3004 015024 012737 000302 013510
3005 015032 013777 013510 176446
3006 015040 012777 000004 176442
3007 015046 062737 000004 013506
3008 015054 062737 000004 013510
3009 015062 023727 013506 001000
3010 015070 001360
3011 015072 012737 000000 015334
3012 015100 012737 017134 015366
3013 015106 052737 000340 177776
3014 015114 005077 000136
3015 015120 012777 000100 000130
3016 015126 042737 000340 177776
3017 015134 052777 000200 000114
3018 015142 000240
3019 015144 012637 000022
3020 015150 012637 000020
3021 015154 005077 000076
3022 015160 052737 000340 177776
3023 015166 104012
3024 015170 000000
3025 015172 000426
3026 015174 011637 015252
3027 015200 162737 000002 015252
3028 015206 013737 015252 015254
3029 015214 162737 000002 015252
3030 015222 012737 000340 177776
3031 015230 005077 000022
3032 015234 022626
3033 015236 022626
3034 015240 012637 000022
3035 015244 012637 000020
3036 015250 000207
3037
3038
3039
3040
3041 015252 000540
3042 015254 000542
3043 015256 164200
3044 015260 164202
3045 015262 177560
3046 015264 177562
3047 015266 177564
3048 015270 177566
3049 015272 177570
3050 015274 177570
3051
3052 015276
3053 015276

```

```

;THE FOLLOWING AUTO VECTORS USING THE FIRST BASE ADDRESS
XOR:  MOV 20,-(SP) ;SAVE 20
      MOV 22,-(SP) ;SAVE 22
      MOV #2$,20 ;IOT INTR VECTOR
      MOV #340,22 ;IOT INTR LVL
      MOV #300,DATA1
      MOV #302,DATA2
1$:   MOV DATA2,@DATA1
      MOV #IOT,@DATA2 ;IOT TRAP
      ADD #4,DATA1
      ADD #4,DATA2
      CMP DATA1,#1000
      BNE 1$
      MOV #0,TSTNO ;SET UP DEFAULT
      MOV #TSTTBO,TSTPNT
      BIS #340,PS ;PREVENT INTERRUPTS
      CLR @DMBCSR
      MOV #INTENA,@DMBCSR ;SET INTERRUPT ENABLE
      BIC #340,PS ;ALLOW INTERRUPTS
      BIS #DONE,@DMBCSR ;SET DONE..AND INTERRUPT
      NOP
      MOV (SP)+,22 ;YOU DIDN'T INTERRUPT ?
      MOV (SP)+,20 ;RESTORE 20 & 22
      CLR @DMBCSR ;STOP ALL INTERRUPT
      BIS #340,PS
      ERROR
      HALT ;YOU SHOULD HAVE INTERRUPTED
      BR 3$
2$:   MOV (SP),DMBVEC ;EXTRACT VECTOR +4
      SUB #2,DMBVEC ;CREATE LVL
      MOV DMBVEC,DMBLVL ;SAVE
      SUB #2,DMBVEC ;CREATE AND SAVE VEC
      MOV #340,PS ;PREVENT INTERRUPTS
      CLR @DMBCSR
      POP2SP
      POP2SP
      MOV (SP)+,22 ;RESTORE 22
      MOV (SP)+,20 ;RESTORE 20
3$:   RTS PC

```

```

;INDIRECT POINTERS
DMBVEC: 540 ;DM11-BA INTERRUPT VECTOR
DMBLVL: 542 ;DM11-BA ONTERRUPT PRIORITY
DMBCSR: 164200 ;DM11-BA CONTROL STATUS REGISTER
DMBLSR: 164202 ;DM11-BA CONTROL STATUS REGISTER
TKCSR: 177560
TKDBR: 177562
TPCSR: 177564
TPDBR: 177566
SWR: 177570
DISPLAY:177570
KMCCSR:
SELO:

```



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KMS11 ROUTINES

Sc 2

3054	015276	174100	BSEL0:	174100
3055	015300		SEL1:	
3056	015300	174101	BSEL1:	174101
3057	015302		SEL2:	
3058	015302	174102	BSEL2:	174102
3059	015304		SEL3:	
3060	015304	174103	BSEL3:	174103
3061	015306		SEL4:	
3062	015306	174104	BSEL4:	174104
3063	015310		SEL5:	
3064	015310	174105	BSEL5:	174105
3065	015312		SEL6:	
3066	015312	174106	BSEL6:	174106
3067	015314		SEL7:	
3068	015314	174107	BSEL7:	174107
3069				
3070	015316	000300	KMCVEC:	300
3071	015320	000302	KMCLVL:	302
3072	015322	000304	KMCV1:	304
3073	015324	000306	KMCL1:	306

```
3074                                     ;PROGRAM VARIABLES
3075
3076 015326 000000 ERRFLG: 0
3077 015330 000000 TRACON: 0
3078 015332 000000 PASCNT: 0
3079 015334 000000 TSTNO: 0
3080 015336 000000 RETURN: 0
3081 015340 000000 ICOUNT: 0
3082 015342 000000 SAVR0: 0
3083 015344 000000 SAVR1: 0
3084 015346 000000 SAVR2: 0
3085 015350 000000 SAVR3: 0
3086 015352 000000 SAVR4: 0
3087 015354 000000 SAVR5: 0
3088 015356 000000 SAVSP: 0
3089 015360 000000 SAVPC: 0
3090 015362 000000 WRDCNT: 0
3091 015364 000000 CHRCNT: 0
3092 015366 017134 TSTPNT: TSTTB0
3093 015370 000000 TSTMAX: 0
3094 015372 000000 LINFLG: 0
3095 015374 000000 LINE: 0
3096 015376 000000 LINORG: 0
3097 015400 000000 LINANS: 0
3098 015402 000000 ANSFLG: 0
3099 015404 000000 ORGFLG: 0
3100 015406 000000 TIME1: 0
3101 015410 000000 TIME2: 0
3102 015412 000000 TIFLG: 0
3103 015414 000000 RNGRET: 0
3104
3105 015416 052123 052101 051525 MSTATE: .ASCII ;STATUS ERROR%'EXP REC@;
3106 015424 042440 051122 051117
3107 015432 021045 054105 020120
3108 015440 020040 051040 041505
3109 015446 100
3110 015447 114 047111 020105 MLINER: .ASCII ;LINE ERROR%'EXP REC LINE SEL@;
3111 015454 051105 047522 022522
3112 015462 042442 050130 051040
3113 015470 041505 046040 047111
3114 015476 020105 042523 040114
3115 015504 046513 030523 020061 MLINE1: .ASCII ;KMS11 STATUS ERROR%'SELO SEL2 KMS11 LINE@;
3116 015512 052123 052101 051525
3117 015520 042440 051122 051117
3118 015526 021045 042523 030114
3119 015534 020040 020040 042523
3120 015542 031114 020040 020040
3121 015550 046513 030523 020061
3122 015556 044514 042516 100
3123 015563 113 051515 030461 MTRANE: .ASCII ;KMS11 DATA ERROR%'EXP REC KMS11 LINE@;
3124 015570 042040 052101 020101
3125 015576 051105 047522 022522
3126 015604 042442 050130 051040
3127 015612 041505 045440 051515
3128 015620 030461 046040 047111
3129 015626 040105
```

3130	015630	021045	021045	020070
3131	015636	044514	042516	051440
3132	015644	040503	047116	051105
3133	015652	052040	051505	022524
3134	015660	040042		
3135	015662	021045	021045	055103
3136	015670	046513	040506	020060
3137	015676	046513	030523	026461
3138	015704	042102	044440	052116
3139	015712	051105	041501	044524
3140	015720	047117	052040	051505
3141	015726	022524	042	
3142	015731	045	042	
3143	015733	124	051505	020124
3144	015740	051107	052517	020120
3145	015746	035060	021045	
3146	015752	043117	020106	044514
3147	015760	042516	052040	051505
3148	015766	051524	052440	042523
3149	015774	047111	020107	031510
3150	016002	032462	020066	042524
3151	016010	052123	041440	047117
3152	016016	042516	052103	051117
3153	016024	020123	047101	020104
3154	016032	031510	033461	046455
3155	016040	050040	047101	046105
3156	016046	022456	042	
3157	016051	106	051111	052123
3158	016056	052040	051505	020124
3159	016064	020075	030060	022460
3160	016072	042		
3161	016073	124	051505	020124
3162	016100	051107	052517	020120
3163	016106	035061	021045	
3164	016112	043117	020106	044514
3165	016120	042516	052040	051505
3166	016126	051524	052440	042523
3167	016134	047111	020107	031510
3168	016142	032462	020066	042524
3169	016150	052123	041440	047117
3170	016156	042516	052103	051117
3171	016164	020123	047101	020104
3172	016172	031510	033461	046455
3173	016200	050040	047101	046105
3174	016206	022456	042	
3175	016211	106	051111	052123
3176	016216	052040	051505	036524
3177	016224	030440	030060	021045
3178	016232	100		
3179	016233	045	042042	030515
3180	016240	020061	042526	052103
3181	016246	051117	040440	042104
3182	016254	042522	051523	040055
3183	016262	021045	046513	030523
3184	016270	020061	042526	052103
3185	016276	051117	040440	042104

M16: .ASCII ;%'X'8 LINE SCANNER TEST%'@;

MTITLE: .ASCII ;%'X'CZKMFAO KMS11-BD INTERACTION TEST%';

.ASCII ;%';  
.ASCII ;TEST GROUP 0:%';

.ASCII ;OFF LINE TESTS USEING H3256 TEST CONNECTORS AND H317-M PANEL.%';

.ASCII ;FIRST TEST = 000%';

.ASCII ;TEST GROUP 1:%';

.ASCII ;OFF LINE TESTS USEING H3256 TEST CONNECTORS AND H317-M PANEL.%';

.ASCII ;FIRST TEST= 100%'@;

MVECTOR: .ASCII ;%'DM11 VECTOR ADDRESS-@;

KVECTOR: .ASCII ;%'KMS11 VECTOR ADDRESS-@;

3186	016304	042522	051523	040055	
3187	016312	021045	046504	030461	MREGAD: .ASCII ;X'DM11 CSR ADDRESS-a;
3188	016320	041440	051123	040440	
3189	016326	042104	042522	051523	
3190	016334	040055			
3191	016336	021045	046513	030523	KREGAD: .ASCII ;X'KMS11 CSR ADDRESS-a;
3192	016344	020061	051503	020122	
3193	016352	042101	051104	051505	
3194	016360	026523	100		
3195	016363	045	045442	051515	DEDMES: .ASCII ;X'KMS11 LINE a;
3196	016370	030461	046040	047111	
3197	016376	020105	100		
3198	016401	040	051511	042040	DEDMES1: .ASCII ; IS DEADX'a;
3199	016406	040505	022504	040042	
3200	016414	021045	042524	052123	MTEST: .ASCII ;X'TEST-a;
3201	016422	040055			
3202	016424	020040	040077		MQM: .ASCII ; ?a;
3203	016430	021045	100		MCRLF: .ASCII ;X'a;
3204	016433	045	051442	047111	MLINE: .ASCII ;X'SINGLE LINE CABLE TESTX'a;
3205	016440	046107	020105	044514	
3206	016446	042516	041440	041101	
3207	016454	042514	052040	051505	
3208	016462	022524	040042		
3209	016466	021045	044514	042516	MLINEI: .ASCII ;X'LINE NUMBER-a;
3210	016474	047040	046525	042502	
3211	016502	026522	100		
3212	016505	106	052101	046101	MFATAL: .ASCII ;FATAL ERRORX'CSTAT LSTATa;
3213	016512	042440	051122	051117	
3214	016520	021045	051503	040524	
3215	016526	020124	046040	052123	
3216	016534	052101	100		
3217	016537	045	052042	040522	MTRNDE: .ASCII ;X'TRANSITION DETECTEDX'CSTAT LSTATa;
3218	016544	051516	052111	047511	
3219	016552	020116	042504	042524	
3220	016560	052103	042105	021045	
3221	016566	051503	040524	020124	
3222	016574	046040	052123	052101	
3223	016602	100			
3224	016603	045	050042	053517	MPFAIL: .ASCII ;X'POWER FAILUREa;
3225	016610	051105	043040	044501	
3226	016616	052514	042522	100	
3227	016623	055	052503	051122	MPF1: .ASCII ;-CURRENT TEST WILL RESTARTX'a;
3228	016630	047105	020124	042524	
3229	016636	052123	053440	046111	
3230	016644	020114	042522	052123	
3231	016652	051101	022524	040042	
3232	016660	041536	100		MCONTC: .ASCII ;^Ca;
3233	016663	136	040126		MCONTV: .ASCII ;^Va;
3234	016666	046136	100		MCONTL: .ASCII ;^La;
3235	016671	045	051442	051127	SSWREQ: .ASCII ;X'SWR= a;
3236	016676	020075	100		
3237	016701	040	020040	047040	\$NEWIS: .ASCII ; NEW= a;
3238	016706	053505	020075	100	
3239	016713	045	042		MBCD: .ASCII ;X';
3240		017015			.=.+100
3241		017016			.EVEN

```
3242 017016 021045 047105 020104 MEPASS: .ASCII ;X'END PASS a;
3243 017024 040520 051523 020040
3244 017032 040040
3245 017034 000000 TEMTAB: 0
3246 017046 000000 .=.+10
3247
3248 017046 000000 0
3249
3250 ;EMT DISPATCH TABLE
3251
3252 017050 011246 EMTTAB: ERRCS
3253 017052 011264 ERRLS
3254 017054 010676 LOOP
3255 017056 011122 FREEZE
3256 017060 012214 TYPER
3257 017062 012122 SVOSP
3258 017064 011560 OCTASN
3259 017066 012162 RSOS
3260 017070 011752 BINASC
3261 017072 012020 DIVI
3262 017074 011164 ERR
3263 017076 012276 INSTR
3264 017100 011202 ERRD
3265 017102 011224 ERRS
3266 017104 011646 CNTLU ;CALLED BY EMT CNTLUU
3267 017106 010664 CKINT ;CALLED BY EMT CKINTT
3268 017110 002070 KBDINT ;CALLED BY EMT KBDIN
3269 017112 000000 EMTLIM: 0
3270 017114 017134 TSTLST: TSTTB0
3271 017116 017336 TSTTB1
3272 017120 000000 0
3273 017122 000000 0
3274 017124 000000 0
3275 017126 000000 0
3276 017130 000037 GRO: NO-1
3277 017132 000007 N1-100-1
3278 017134 002312 TSTTB0: T0
3279 017136 000001 1
3280 017140 002340 T1
3281 017142 004000 TIMES
3282 017144 002402 T2
3283 017146 004000 TIMES
3284 017150 002444 T3
3285 017152 004000 TIMES
3286 017154 002506 T4
3287 017156 004000 TIMES
3288 017160 002550 T5
3289 017162 004000 TIMES
3290 017164 002612 T6
3291 017166 004000 TIMES
3292 017170 002666 T7
3293 017172 004000 TIMES
3294 017174 002742 T10
3295 017176 004000 TIMES
3296 017200 003032 T11
3297 017202 004000 TIMES
```

3298	017204	003122	T12
3299	017206	004000	TIMES
3300	017210	003212	T13
3301	017212	004000	TIMES
3302	017214	003302	T14
3303	017216	004000	TIMES
3304	017220	003372	T15
3305	017222	004000	TIMES
3306	017224	003460	T16
3307	017226	004000	TIMES
3308	017230	003546	T17
3309	017232	004000	TIMES
3310	017234	003634	T20
3311	017236	004000	TIMES
3312	017240	003722	T21
3313	017242	004000	TIMES
3314	017244	003774	T22
3315	017246	000400	TIMES
3316	017250	004056	T23
3317	017252	000400	TIMES
3318	017254	004254	T24
3319	017256	000400	TIMES
3320	017260	004432	T25
3321	017262	000200	TIMES
3322	017264	004602	T26
3323	017266	000200	TIMES
3324	017270	004774	T27
3325	017272	000200	TIMES
3326	017274	005166	T30
3327	017276	000200	TIMES
3328	017300	005360	T31
3329	017302	000200	TIMES
3330	017304	005552	T32
3331	017306	000200	TIMES
3332	017310	005746	T33
3333	017312	000200	TIMES
3334	017314	006142	T34
3335	017316	000200	TIMES
3336	017320	006336	T35
3337	017322	004000	TIMES
3338	017324	006476	T36
3339	017326	004000	TIMES
3340	017330	006712	T37
3341	017332	004000	TIMES
3342	017334	000000	0
3343	017336	007136	TSTTB1: T100
3344	017340	000001	1
3345	017342	007174	T101
3346	017344	004000	TIMES
3347	017346	007352	T102
3348	017350	004000	TIMES
3349	017352	007530	T103
3350	017354	004000	TIMES
3351	017356	007706	T104
3352	017360	004000	TIMES
3353	017362	010064	T105

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SEQ 0078

3354	017364	004000	TIMES
3355	017366	010240	T106
3356	017370	004000	TIMES
3357	017372	010414	T107
3358	017374	004000	TIMES
3359	017376	000000	0





3416	020046	000771	063224	000420	
3417	020054	070217	076715		
3418	020060	100750	120600	102231	.WORD 100750,120600,102231,120620,102374,057625,070077,103242
3419	020066	120620	102374	057625	
3420	020074	070077	103242		
3421	020100	002533	100501	002563	.WORD 002533,100501,002563,100501,002012,074615,023204,103251
3422	020106	100501	002012	074615	
3423	020114	023204	103251		
3424	020120	062604	003200	070217	.WORD 062604,003200,070217,042700,004000,056727,004002,010000
3425	020126	042700	004000	056727	
3426	020134	004002	010000		
3427	020140	000410	056407	043220	.WORD 000410,056407,043220,062400,070200,016604,076617,076614
3428	020146	062400	070200	016604	
3429	020154	076617	076614		
3430	020160	076604	076605	023700	.WORD 076604,076605,023700,102676,002402,100437,002774,000773
3431	020166	102676	002402	100437	
3432	020174	002774	000773		
3433	020200	062274	100437	023300	.WORD 062274,100437,023300,000770,062274,000776,063224,000420
3434	020206	000770	062274	000776	
3435	020214	063224	000420		
3436	020220	070217	076715	000771	.WORD 070217,076715,000771,062274,100750,023300,000770,062274
3437	020226	062274	100750	023300	
3438	020234	000770	062274		
3439	020240	000771	062274	060615	.WORD 000771,062274,060615,061620,103037,070217,000440,062715
3440	020246	061620	103037	070217	
3441	020254	000440	062715		
3442	020260	000404	063225	000410	.WORD 000404,063225,000410,004002,010000,056407,043224,062404
3443	020266	004002	010000	056407	
3444	020274	043224	062404		
3445	020300	070204	016405	076617	.WORD 070204,016405,076617,016400,016400,016400,076605,100437
3446	020306	016400	016400	016400	
3447	020314	076605	100437		
3448	020320	004600	070217	042727	.WORD 004600,070217,042727,064214,043221,076701,000410,004002
3449	020326	064214	043221	076701	
3450	020334	000410	004002		
3451	020340	010000	056407	043220	.WORD 010000,056407,043220,062400,070200,016404,076617,076614
3452	020346	062400	070200	016404	
3453	020354	076617	076614		
3454	020360	016400	016400	062604	.WORD 016400,016400,062604,100437,063204,000500,060664,061231
3455	020366	100437	063204	000500	
3456	020374	060664	061231		
3457	020400	000773	063224	100750	.WORD 000773,063224,100750,057635,103445,147232,016132,056230
3458	020406	057635	103445	147232	
3459	020414	016132	056230		
3460	020420	000420	070216	062735	.WORD 000420,070216,062735,100445,062233,016447,016172,014401
3461	020426	100445	062233	016447	
3462	020434	016172	014401		
3463	020440	062230	042224	056406	.WORD 062230,042224,056406,105037,056225,055230,000402,070016
3464	020446	105037	056225	055230	
3465	020454	000402	070016		
3466	020460	120600	106030	120620	.WORD 120600,106030,120620,106651,036400,036420,100445,042225
3467	020466	106651	036400	036420	
3468	020474	100445	042225		
3469	020500	056407	105043	104425	.WORD 056407,105043,104425,041230,003004,056404,104426,016464
3470	020506	041230	003004	056404	
3471	020514	104426	016464		

3472	020520	002132	056230	000400	.WORD	002132,056230,000400,060220,002172,062230,100445,016573
3473	020526	060220	002172	062230		
3474	020534	100445	016573			
3475	020540	104450	062233	016457	.WORD	104450,062233,016457,104416,016132,054220,056230,042224
3476	020546	104416	016132	054220		
3477	020554	056230	042224			
3478	020560	056406	105123	056225	.WORD	056406,105123,056225,055230,056411,105100,042411,105512
3479	020566	055230	056411	105100		
3480	020574	042411	105512			
3481	020600	070216	000420	076735	.WORD	070216,000420,076735,134600,106114,120620,106651,036400
3482	020606	134600	106114	120620		
3483	020614	106651	036400			
3484	020620	036420	100445	070076	.WORD	036420,100445,070076,016533,120600,106114,120620,106651
3485	020626	016533	120600	106114		
3486	020634	120620	106651			
3487	020640	036400	036420	100445	.WORD	036400,036420,100445,042225,056407,105127,104473,041230
3488	020646	042225	056407	105127		
3489	020654	104473	041230			
3490	020660	003004	056404	104474	.WORD	003004,056404,104474,016573,043221,000411,070016,043622
3491	020666	016573	043221	000411		
3492	020674	070016	043622			
3493	020700	107167	002372	063122	.WORD	107167,002372,063122,063122,063122,063522,062602,060522
3494	020706	063122	063122	063522		
3495	020714	062602	060522			
3496	020720	062230	060601	002132	.WORD	062230,060601,002132,062230,000402,002172,062230,070216
3497	020726	062230	000402	002172		
3498	020734	062230	070216			
3499	020740	054620	061620	107165	.WORD	054620,061620,107165,002614,100445,002602,100445,002132
3500	020746	002614	100445	002602		
3501	020754	100445	002132			
3502	020760	060601	062230	100445	.WORD	060601,062230,100445,054220,054220,057221,000411,070016
3503	020766	054220	054220	057221		
3504	020774	000411	070016			
3505	021000	043222	104541	016607	.WORD	043222,104541,016607,002172,000401,062230,100445,002614
3506	021006	002172	000401	062230		
3507	021014	100445	002614			
3508	021020	002172	000401	062230	.WORD	002172,000401,062230,100445,007200,070216,042727,064214
3509	021026	100445	007200	070216		
3510	021034	042727	064214			
3511	021040	056700	000411	070016	.WORD	056700,000411,070016,043225,004002,010000,056407,043224
3512	021046	043225	004002	010000		
3513	021054	056407	043224			
3514	021060	000410	062404	070204	.WORD	000410,062404,070204,016400,076617,076614,054220,076605
3515	021066	016400	076617	076614		
3516	021074	054220	076605			
3517	021100	023700	061620	106645	.WORD	023700,061620,106645,002401,100445,002774,000775,062274
3518	021106	002401	100445	002774		
3519	021114	000775	062274			
3520	021120	100445	063224	000500	.WORD	100445,063224,000500,060664,061231,000773,063224,002172
3521	021126	060664	061231	000773		
3522	021134	063224	002172			
3523	021140	000404	062230	104672	.WORD	000404,062230,104672,002172,000777,063224,000401,062230
3524	021146	002172	000777	063224		
3525	021154	000401	062230			
3526	021160	043635	103445	007200	.WORD	043635,103445,007200,070216,042727,064214,056700,004002
3527	021166	070216	042727	064214		

3528	021174	056700	004002		
3529	021200	010000	056407	043220	.WORD 010000,056407,043220,000410,062400,070200,016400,076617
3530	021206	000410	062400	070200	
3531	021214	016400	076617		
3532	021220	076614	054220	016400	.WORD 076614,054220,016400,062604,100445,043620,106720,114673
3533	021226	062604	100445	043620	
3534	021234	106720	114673		
3535	021240	002740	004001	002701	.WORD 002740,004001,002701,004600,070017,002700,004001,002701
3536	021246	004600	070017	002700	
3537	021254	004001	002701		
3538	021260	000673	062232	000407	.WORD 000673,062232,000407,062230,060220,000400,002372,062230
3539	021266	062230	060220	000400	
3540	021274	002372	062230		
3541	021300	000431	062234	114673	.WORD 000431,062234,114673,123561,107320,061620,106377,106753
3542	021306	123561	107320	061620	
3543	021314	106377	106753		
3544	021320	060521	113471	114673	.WORD 060521,113471,114673,004002,010000,056407,043220,000410
3545	021326	004002	010000	056407	
3546	021334	043220	000410		
3547	021340	062400	070200	016405	.WORD 062400,070200,016405,076617,016400,016400,023260,000410
3548	021346	076617	016400	016400	
3549	021354	023260	000410		
3550	021360	060660	061620	061620	.WORD 060660,061620,061620,061620,076620,002410,114673,120400
3551	021366	061620	076620	002410	
3552	021374	114673	120400		
3553	021400	061620	112435	070216	.WORD 061620,112435,070216,047234,043635,117673,002172,000404
3554	021406	047234	043635	117673	
3555	021414	002172	000404		
3556	021420	062230	000772	063224	.WORD 062230,000772,063224,007200,042727,064214,056700,004002
3557	021426	007200	042727	064214	
3558	021434	056700	004002		
3559	021440	010000	056407	043220	.WORD 010000,056407,043220,000410,062400,070200,016400,076617
3560	021446	000410	062400	070200	
3561	021454	016400	076617		
3562	021460	076614	016400	016400	.WORD 076614,016400,016400,016772,114673,047234,043635,117673
3563	021466	016772	114673	047234	
3564	021474	043635	117673		
3565	021500	000776	023301	063661	.WORD 000776,023301,063661,062234,060461,062234,004600,042727
3566	021506	062234	060461	062234	
3567	021514	004600	042727		
3568	021520	064214	043221	076701	.WORD 064214,043221,076701,014410,004002,010000,056407,043220
3569	021526	014410	004002	010000	
3570	021534	056407	043220		
3571	021540	062400	070200	016404	.WORD 062400,070200,016404,076617,076614,016400,016400,016772
3572	021546	076617	076614	016400	
3573	021554	016400	016772		
3574	021560	114673	123141	000437	.WORD 114673 123141,000437,063222,000740,063261,020700,060662
3575	021566	063222	000740	063261	
3576	021574	020700	060662		
3577	021600	060701	062234	114673	.WORD 060701,062234,114673,120400,061620,112604,070216,047634
3578	021606	120400	061620	112604	
3579	021614	070216	047634		
3580	021620	116673	043635	113520	.WORD 116673,043635,113520,000401,064334,043635,113523,114673
3581	021626	000401	064334	043635	
3582	021634	113523	114673		
3583	021640	060535	113526	110513	.WORD 060535,113526,110513,060535,113526,114673,054220,016414

3584	021646	060535	113526	114673	
3585	021654	054220	016414		
3586	021660	054220	054220	136500	.WORD 054220,054220,136500,136520,123160,000740,063260,063120
3587	021666	136520	123160	000740	
3588	021674	063260	063120		
3589	021700	063140	063140	063120	.WORD 063140,063140,063120,063120,076460,123141,063161,123160
3590	021706	063120	076460	123141	
3591	021714	063161	123160		
3592	021720	000401	063260	111155	.WORD 000401,063260,111155,063160,063260,063161,111165,063160
3593	021726	063160	063260	063161	
3594	021734	111165	063160		
3595	021740	111165	070076	002461	.WORD 111165,070076,002461,000407,070016,076601,000401,076660
3596	021746	000407	070016	076601	
3597	021754	000401	076660		
3598	021760	123160	000436	076660	.WORD 123160,000436,076660,000440,063260,000420,063300,000403
3599	021766	000440	063260	000420	
3600	021774	063300	000403		
3601	022000	060675	070216	076700	.WORD 060675,070216,076700,114673,047634,116673,043635,113615
3602	022006	114673	047634	116673	
3603	022014	043635	113615		
3604	022020	000401	064334	043635	.WORD 000401,064334,043635,113620,114673,060535,113623,110610
3605	022026	113620	114673	060535	
3606	022034	113623	110610		
3607	022040	060535	113623	114673	.WORD 060535,113623,114673,054220,016477,054220,136500,136520
3608	022046	054220	016477	054220	
3609	022054	136500	136520		
3610	022060	123160	000740	063260	.WORD 123160,000740,063260,063120,063140,063140,063120,076520
3611	022066	063120	063140	063140	
3612	022074	063120	076520		
3613	022100	016500	016421	123140	.WORD 016500,016421,123140,000402,076740,111670,111256,123160
3614	022106	000402	076740	111670	
3615	022114	111256	123160		
3616	022120	000401	063260	063160	.WORD 000401,063260,063160,076660,123160,110661,123160,000401
3617	022126	076660	123160	110661	
3618	022134	123160	000401		
3619	022140	076660	000436	076660	.WORD 076660,000436,076660,000403,060675,070217,076675,114673
3620	022146	000403	060675	070217	
3621	022154	076675	114673		
3622	022160	123160	000401	063260	.WORD 123160,000401,063260,063160,111677,076660,110661,070077
3623	022166	063160	111677	076660	
3624	022174	110661	070077		
3625	022200	123560	113304	002533	.WORD 123560,113304,002533,110705,002603,000412,070017,110661
3626	022206	110705	002603	000412	
3627	022214	070017	110661		
3628	022220	060220	060220	060220	.WORD 060220,060220,060220,060220,060220,060220,060220,060220
3629	022226	060220	060220	060220	
3630	022234	060220	060220		
3631	022240	060220	060220	060220	.WORD 060220,060220,060220,060220,060220,060220,060220,060220
3632	022246	060220	060220	060220	
3633	022254	060220	060220		
3634	022260	060220	060220	060220	.WORD 060220,060220,060220,060220,060220,060220,060220,060220
3635	022266	060220	060220	060220	
3636	022274	060220	060220		
3637	022300	060220	060220	060220	.WORD 060220,060220,060220,060220,060220,060220,060220,060220
3638	022306	060220	060220	060220	
3639	022314	060220	060220		

3640	022320	060220	060220	060220	.WORD	060220,060220,060220,060220,060220,060220,060220,060220
3641	022326	060220	060220	060220		
3642	022334	060220	060220			
3643	022340	060220	060220	060220	.WORD	060220,060220,060220,060220,060220,060220,060220,060220
3644	022346	060220	060220	060220		
3645	022354	060220	060220			
3646	022360	060220	060220	060220	.WORD	060220,060220,060220,060220,060220,060220,060220,060220
3647	022366	060220	060220	060220		
3648	022374	060220	060220			
3649	022400	174610	004002	010000	.WORD	174610,004002,010000,043620,115606,076560,014410,043225
3650	022406	043620	115606	076560		
3651	022414	014410	043225			
3652	022420	062405	070205	057625	.WORD	062405,070205,057625,116167,057637,061620,061620,061620
3653	022426	116167	057637	061620		
3654	022434	061620	061620			
3655	022440	061620	061223	057234	.WORD	061620,061223,057234,057220,000560,057222,060662,061620
3656	022446	057220	000560	057222		
3657	022454	060662	061620			
3658	022460	061620	061620	061620	.WORD	061620,061620,061620,063223,055226,064214,060605,061620
3659	022466	063223	055226	064214		
3660	022474	060605	061620			
3661	022500	116500	000600	070017	.WORD	116500,000600,070017,043221,000500,076701,014420,074661
3662	022506	043221	000500	076701		
3663	022514	014420	074661			
3664	022520	061620	077303	055224	.WORD	061620,077303,055224,055225,057220,063120,063120,063120
3665	022526	055225	057220	063120		
3666	022534	063120	063120			
3667	022540	063120	000700	060660	.WORD	063120,000700,060660,060703,061227,003360,120440,060660
3668	022546	060703	061227	003360		
3669	022554	120440	060660			
3670	022560	063305	000600	060705	.WORD	063305,000600,060705,061222,060525,117602,000700,114705
3671	022566	061222	060525	117602		
3672	022574	000700	114705			
3673	022600	070217	043221	000500	.WORD	070217,043221,000500,062701,000420,060661,061620,063303
3674	022606	062701	000420	060661		
3675	022614	061620	063303			
3676	022620	060605	117552	000402	.WORD	060605,117552,000402,070017,056222,062203,056226,056227
3677	022626	070017	056222	062203		
3678	022634	056226	056227			
3679	022640	057220	123221	054661	.WORD	057220,123221,054661,061311,055230,000403,070017,054406
3680	022646	061311	055230	000403		
3681	022654	070017	054406			
3682	022660	061224	057220	061105	.WORD	061224,057220,061105,115135,114540,043220,000404,062400
3683	022666	115135	114540	043220		
3684	022674	000404	062400			
3685	022700	120600	116140	120620	.WORD	120600,116140,120620,116145,114454,000400,061231,000773
3686	022706	116145	114454	000400		
3687	022714	061231	000773			
3688	022720	061226	114454	060601	.WORD	061226,114454,060601,117112,000403,070017,056406,043220
3689	022726	117112	000403	070017		
3690	022734	056406	043220			
3691	022740	076500	115163	114512	.WORD	076500,115163,114512,043221,000404,076401,114512,054620
3692	022746	043221	000404	076401		
3693	022754	114512	054620			
3694	022760	061620	061620	061620	.WORD	061620,061620,061620,061620,061223,055224,055225,055226
3695	022766	061620	061223	055224		

3696	022774	055225	055226		
3697	023000	055227	114465	123620	.WORD 055227,114465,123620,000700,061311,114476,123400,061620
3698	023006	000700	061311	114476	
3699	023014	123400	061620		
3700	023020	117212	100425	123400	.WORD 117212,100425,123400,000600,061300,060520,117621,000625
3701	023026	000600	061300	060520	
3702	023034	117621	000625		
3703	023040	114705	000600	061231	.WORD 114705,000600,061231,000664,114705,123400,061620,117251
3704	023046	000664	114705	123400	
3705	023054	061620	117251		
3706	023060	123077	000407	063277	.WORD 123077,000407,063277,063137,063137,063137,073537,062231
3707	023066	063137	063137	063137	
3708	023074	073537	062231		
3709	023100	004600	060417	063236	.WORD 004600,060417,063236,120400,116247,116673,110503,106715
3710	023106	120400	116247	116673	
3711	023114	110503	106715		
3712	023120	104743	060600	117655	.WORD 104743,060600,117655,114606,000001,060520,117660,100425
3713	023126	114606	000001	060520	
3714	023134	117660	100425		
3715	023140	000600	061231	000664	.WORD 000600,061231,000664,114705,123400,061620,117270,114630
3716	023146	114705	123400	061620	
3717	023154	117270	114630		
3718	023160	060600	103425	114606	.WORD 060600,103425,114606,123000,000500,061260,000401,114705
3719	023166	123000	000500	061260	
3720	023174	000401	114705		
3721	023200	123440	103425	000500	.WORD 123440,103425,000500,061262,000401,063230,100425,000000
3722	023206	061262	000401	063230	
3723	023214	100425	000000		
3724	023220	000000	000000	000000	.WORD 000000,000000,000000,000000,000000,000000,000000,000000
3725	023226	000000	000000	000000	
3726	023234	000000	000000		
3727	023240	000000	000000	000000	.WORD 000000,000000,000000,000000,000000,000000,000000,000000
3728	023246	000000	000000	000000	
3729	023254	000000	000000		
3730	023260	000000	000000	000000	.WORD 000000,000000,000000,000000,000000,000000,000000,000000
3731	023266	000000	000000	000000	
3732	023274	000000	000000		
3733	023300	000000	000000	000000	.WORD 000000,000000,000000,000000,000000,000000,000000,000000
3734	023306	000000	000000	000000	
3735	023314	000000	000000		
3736	023320	000000	000000	000000	.WORD 000000,000000,000000,000000,000000,000000,000000,000000
3737	023326	000000	000000	000000	
3738	023334	000000	000000		
3739	023340	001007	114761	001027	.WORD 001007,114761,001027,114763,001047,114765,001067,114767
3740	023346	114763	001047	114765	
3741	023354	001067	114767		
3742	023360	001107	114771	001127	.WORD 001107,114771,001127,114773,001147,114775,001167,114777
3743	023366	114773	001147	114775	
3744	023374	001167	114777		
3745	023400				
3746	023400				
3747	023400	000100			
3748	023600	001011			
3749	025622	001004			
3750	027632	001004			
3751	031642	001004			

BOPEND:  
ENDA:  
PATCH: .BLKW 100  
BUFR: .BLKW 1011  
BF0: .BLKW 1004  
BF1: .BLKW 1004  
BF2: .BLKW 1004

CZKMFAO KMS11-BD INTERACTION TEST  
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KMS11 ROUTINES

SEQ 0086

3752 033652 001004  
3753 035662 001004  
3754 037672 001004  
3755 041702 001004  
3756 043712 001004  
3757 045722 000000  
3758  
3759 000001

BF3: .BLKW 1004  
BF4: .BLKW 1004  
BF5: .BLKW 1004  
BF6: .BLKW 1004  
BF7: .BLKW 1004  
BFND: 0

.END

;THAT'S ALL FOLKS!













MUX1F	004760	1422	1424#	
MUX11	007174	1855#		
MUX11A	007212	1858#		
MUX11B	007242	1863#	1878	
MUX11C	007270	1868	1871#	
MUX11D	007302	1872	1875	1876#
MUX11E	007316	1880#		
MUX11F	007350	1887	1889#	
MUX12	007352	1894#		
MUX12A	007370	1897#		
MUX12B	007420	1902#	1917	
MUX12C	007446	1907	1910#	
MUX12D	007460	1911	1914	1915#
MUX12E	007474	1919#		
MUX12F	007526	1926	1928#	
MUX13	007530	1933#		
MUX13A	007546	1936#		
MUX13B	007576	1941#	1956	
MUX13C	007624	1946	1949#	
MUX13D	007636	1950	1953	1954#
MUX13E	007652	1958#		
MUX13F	007704	1965	1967#	
MUX14	007706	1972#		
MUX14A	007724	1975#		
MUX14B	007754	1980#	1995	
MUX14C	010002	1985	1988#	
MUX14D	010014	1989	1992	1993#
MUX14E	010030	1997#		
MUX14F	010062	2004	2006#	
MUX15	010064	2012#		
MUX15A	010102	2015#		
MUX15B	010124	2019#	2034	
MUX15C	010152	2024	2027#	
MUX15D	010164	2028	2031	2032#
MUX15E	010202	2036#		
MUX15F	010236	2043	2045#	
MUX16	010240	2051#		
MUX16A	010256	2054#		
MUX16B	010300	2058#	2073	
MUX16C	010326	2063	2066#	
MUX16D	010340	2067	2070	2071#
MUX16E	010356	2075#		
MUX16F	010412	2082	2084#	
MUX17	010414	2090#		
MUX17A	010432	2093#		
MUX17B	010454	2097#	2112	
MUX17C	010502	2102	2105#	
MUX17D	010514	2106	2109	2110#
MUX17E	010532	2114#		
MUX17F	010566	2121	2123#	
MUX2	004774	1434#		
MUX2A	005014	1438#	1470	1473
MUX2B	005044	1443#	1458	
MUX2C	005072	1448	1451#	
MUX2D	005104	1452	1455	1456#
MUX2E	005120	1460#		

MUX2F	005152	1467	1469#											
MUX3	005166	1479#												
MUX3A	005206	1483#	1515	1518										
MUX3B	005236	1488#	1503											
MUX3C	005264	1493	1496#											
MUX3D	005276	1497	1500	1501#										
MUX3E	005312	1505#												
MUX3F	005344	1512	1514#											
MUX4	005360	1524#												
MUX4A	005400	1528#	1560	1563										
MUX4B	005430	1533#	1548											
MUX4C	005456	1538	1541#											
MUX4D	005470	1542	1545	1546#										
MUX4E	005504	1550#												
MUX4F	005536	1557	1559#											
MUX5	005552	1570#												
MUX5A	005572	1574#	1605	1609										
MUX5B	005614	1578#	1593											
MUX5C	005642	1583	1586#											
MUX5D	005654	1587	1590	1591#										
MUX5E	005672	1595#												
MUX5F	005726	1602	1604#											
MUX6	005746	1616#												
MUX6A	005766	1620#	1651	1655										
MUX6B	006010	1624#	1639											
MUX6C	006036	1629	1632#											
MUX6D	006050	1633	1636	1637#										
MUX6E	006066	1641#												
MUX6F	006122	1648	1650#											
MUX7	006142	1662#												
MUX7A	006162	1666#	1697	1701										
MUX7B	006204	1670#	1685											
MUX7C	006232	1675	1678#											
MUX7D	006244	1679	1682	1683#										
MUX7E	006262	1687#												
MUX7F	006316	1694	1696#											
MUX8	006336	1708#												
MUX8A	006354	1711#	1714											
MUX8B	006402	1717#	1725	1733										
MUX8C	006410	1718#	1737											
MUX8D	006434	1722	1726#											
MUX8E	006462	1730	1734#											
MVECTO	016233	800	3179#											
MO =	000040	3280#	3282#	3284#	3286#	3288#	3290#	3292#	3294#	3296#	3298#	3300#	3302#	3304#
		3306#	3308#	3310#	3312#	3314#	3316#	3318#	3320#	3322#	3324#	3326#	3328#	3330#
		3332#	3334#	3336#	3338#	3340#	3342#	3345	3347	3349	3351	3353	3355	3357
		3345#	3347#	3349#	3351#	3353#	3355#	3357#	3359#					
M1 =	000110	938	3130#											
M16 =	015630	936#	1838#											
N =	000100	936#	937#	950	951#	963	964#	976	977#	989	990#	1005	1006#	1019
NO =	000040	1020#	1035	1036#	1051	1052#	1070	1071#	1090	1091#	1110	1111#	1130	1131#
		1151	1152#	1170	1171#	1189	1190#	1208	1209#	1228	1229#	1248	1249#	1272
		1273#	1314	1315#	1352	1353#	1388	1389#	1433	1434#	1478	1479#	1523	1524#
		1569	1570#	1615	1616#	1661	1662#	1707	1708#	1745	1746#	1789	1790#	3276
		3280												
N1 =	000110	1838#	1839#	1854	1855#	1893	1894#	1932	1933#	1971	1972#	2011	2012#	2050













CZKMAO KMS11-BD INTERACTION TEST  
CZKMFA.P11 20-OCT-81 17:07

I 8  
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CROSS REFERENCE TABLE -- MACRO NAMES

SEQ 0099

COMMEN	630#	737#	936#	1067#	1148#	1831#	1838#	3280#	3345#						
EMTDEF	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708
	709	710	737#												
INTS	932#	1148	1167	1186	1205										
MUXS1	932#	1385	1430	1475	1520	1851	1890	1929	1968						
MUXS2	932#	1565	1611	1657	2007	2046	2085								
NOINT	932#	1067	1087	1107	1127										
TM	738#	3280	3282	3284	3286	3288	3290	3292	3294	3296	3298	3300	3302	3304	3306
	3308	3310	3312	3314	3316	3318	3320	3322	3324	3326	3328	3330	3332	3334	3336
	3338	3340	3345	3347	3349	3351	3353	3355	3357						
TS	736#	936	950	963	976	989	1005	1019	1035	1051	1070	1090	1110	1130	1151
	1170	1189	1208	1228	1248	1272	1314	1352	1388	1433	1478	1523	1569	1615	1661
	1707	1745	1789	1838	1854	1893	1932	1971	2011	2050	2089				
TSS	736#														

. ABS. 045724 000

ERRORS DETECTED: 0

CZKMFA,CZKMFA/CRF/SOL/NL:TOC=CZKMFA  
RUN-TIME: 29 51 7 SECONDS  
RUN-TIME RATIO: 227/88=2.5  
CORE USED: 11K (21 PAGES)