M8254

(IPBM) FIELD DIAGNOSTIC

MD-11-DRLPN-A

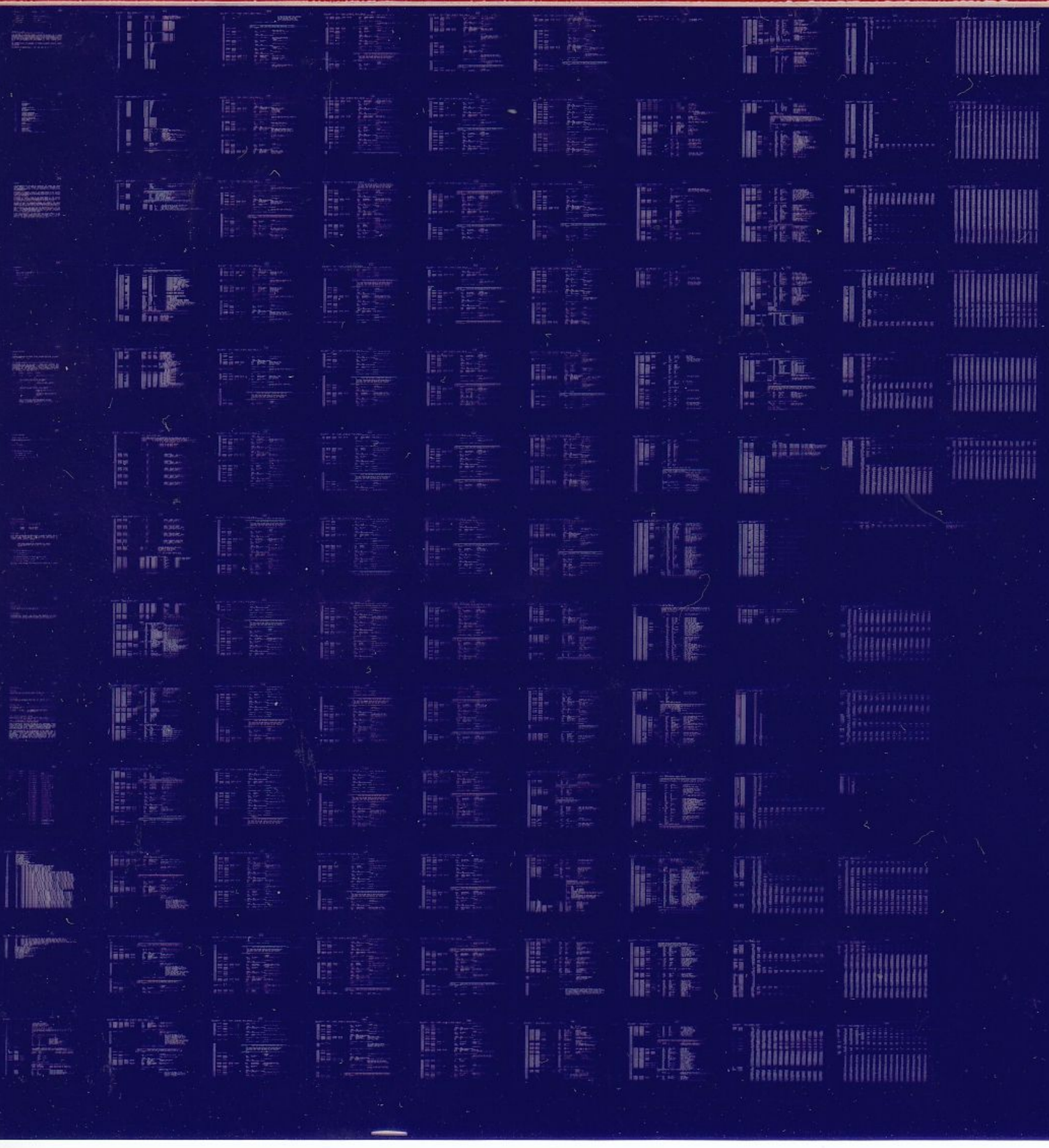
EP-DRLPN-A-DL

FICHE 1 OF 1

MAR 1978

digital

MADE IN USA



PRODUCT CODE: MAINDEC-11-DRLPN-A-D

PRODUCT NAME: M8254 (IPBM) FIELD DIAGNOSTIC

DATE CREATED: JAN. 1978

MAINTAINER: DIAGNOSTIC ENGINEERING

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1.0 ABSTRACT

THIS PROGRAM ALLOWS THE USER TO CHECK-OUT OR DEBUG THE M8254 (IPBM) MODULE. THIS PROGRAM REQUIRES SPECIAL HARDWARE SETUP. THE M8254 MODULE IS PART OF THE LPA-11XX OPTION. THE M8254 JOINS THE UNIBUS AND AN I/O BUS TOGETHER, WITH USE OF TWO MICROPROCESSORS.

REFERENCES TO "MASTER", "SIDE 1", OR "UBSR" REFER TO THE SECTION OF LOGIC ON THE M8254 WHICH RESPONDS OR DEALS WITH PDP-11 UNIBUS. "UBSR" IS THE NAME FOR THE STATUS REGISTER SEEN BY THE UNIBUS SIDE MICRO-PROCESSOR.

REFERENCES TO "SLAVE", "SIDE 2", OR "IOSR" REFER TO THE SECTION OF LOGIC ON THE M8254 WHICH RESPONDS OR DEALS WITH THE I/O BUS MICRO-PROCESSOR. IN THIS DIAGNOSTIC WE CONSIDER THAT SECTION OF BUS ORIGINALY CONNECTED TO THE M8200-YC TO BE THE IO-BUS.

YOU NEED NOT RUN THIS DIAGNOSTIC UNLESS YOU SUSPECT THE M8254 MODULE IS BAD. YOU SHOULD HAVE ALREADY HAVE RUN BOTH M8200-YC DIAGNOSTICS, FOR IF THEY FAIL, THIS DIAGNOSTIC WILL NOT RUN. YOU SHOULD ALSO BE CERTAIN THAT THE KMC-11 IS IN GOOD RUNNING ORDER.

THIS DIAGNOSTIC WILL-NOT-CHECK OUT THE ARBITRATION LOGIC OF THE M8254. TO CHECK ARBITRATION LOGIC RUN "MD-11-DRLPA". IF "NPRS" FAIL, IT WILL REPORT THE PROBLEM AS AN I/O DEVICE ADDRESSING ERROR. IF THE "BR" ARBITRATION CIRCUITRY IS BAD, IT WILL SHOW UP AS A LPA-11 MICRO-CODE FUNCTION ERROR.

TO RUN THIS DIAGNOSTIC, YOU MUST CABLE THE UNIBUS TO THE I/O BUS WITH A UNIBUS CABLE. WHEN DOING THIS, MAKE SURE THE TOTAL UNIBUS LOADS FOR THE SYSTEM DOES NOT EXCEED THE UNIBUS SPEC. ON THE M8200-YC YOU MUST TURN SWITCH 7 OF E76 ON. ALSO W1 MUST BE CUT. SW7 OF E76 DISABLES THE MICRO-CODE FROM RUNNING.

2.0 REQUIREMENTS

2.1 EQUIPMENT

1. PDP-11 FAMILY COMPUTER WITH 16K OF MEMORY (OR MORE) AND CONSOLE I/O FACILITIES (I.E. TTY)
2. M8254 TO BE TESTED
3. 1 KMC-11,1 M8200-YC
4. 1 UNIBUS CABLE

2.2 STORAGE

THIS PROGRAM OCCUPIES AND USES 16K OF MEMORY.

3.0 LOADING PROCEDURE

3.1 METHOD

STANDARD PROCEDURE FOR NORMAL BINARY PROGRAM SHOULD BE FOLLOWED. THIS PROGRAM IS SUPPLIED ON MULTI-MEDIA AND CAN BE LOADED BY XXDP,ACT, OR APT.

3.2 NON-STANDARD ADDRESS, VECTOR OR MULTIPLE M8254 CHECK OUT

THIS PROGRAM IS SET UP TO CHECK A M8254 WITH STANDARD TEST STATION SET-UP AS LISTED BELOW. IT IS IMPORTANT THAT IF THE TEST STATION EQUIPMENT ADDRESSES VARY, THAT YOU ONLY CHANGE THESE LOCATIONS. IF YOU RUN MULTIPLE M8254 MODULES, THE ADDRESS VARIENCE BETWEEN TEST SET-UPS IS 20. THIS IS A VARIABLE THAT MAY BE CHANGED. YOU MUST ENTER HOW MANY M8254 MODULES YOU WISH TO RUN, THE DEFAULT AT LOAD TIME IS 1.

TAG	ADDRESS	CONTENTS	COMMENTS
$BASE	001246	170460	;;BASE ADDRESS OF EQUIPMENT

NOTE

THIS LOCATION MUST REFLECT THE ADDRESS OF THE KMC-11 USED TO TEST THE FIRST M8254.

VAR1:	001364	000010	;VARIENCE IN ADDR. BETWEEN ; KMC 1 AND THE M8200-YC.

NOTE

THIS LOCATION MUST REFLECT THE VARIENCE IN ADDRESS THE M8200-YC HAS OVER THE KMC-11.

MCNT:	001366	1	;NUMBER OF M8254 MODULES TO ; CHECK OUT
VAR2:	001370	20	;VARIENCE IN ADDR. BETWEEN TEST ; SET-UPS IF TESTING MULTIPLE ; M8254'S.

NOTE

THIS LOCATION ONLY USED WHEN RUNNING MULTIPLE M8254. IT REFLECTS THE DIFFERENCE IN ADDRESS BETWEEN THE CURRENT TEST STATION KMC-11 AND THE NEXT TEST STATION KMC-11.

NCNT:	001372	1	;CURRENT TEST STATION

SEQ 0006

4.0 STARTING PROCEDURE

4.1 CONTROL SWITCH SETTINGS

BEFORE STARTING THE DIAGNOSTIC, SET ALL SWITCH REGISTER BITS AS DESIRED, SEE SECTION 5.1.

4.2 STARTING ADDRESS

200 START OF TEST

4.3 PROGRAM AND/OR OPERATOR ACTION

1. LOAD PROGRAM INTO MEMORY
2. LOAD ADDRESS 200
3. SET SWITCH REGISTER TO DESIRED SETTING
4. START PROGRAM

5.0 OPERATING PROCEDURE

5.1 SWITCH REGISTER FUNCTION

SWR BIT	OCTAL	FUNCTION WHEN SET
15	100000	HALT ON ERROR
14	040000	LOOP ON TEST
13	020000	INHIBIT ERROR TYPEOUT

5.2 SCOPE LOOPS

IF AN ERROR OCCURS AND THE USER WISHES TO SCOPE THE ERROR SWITCH REG. BIT 15 SHOULD BE SET TO HALT ON ERROR. WHEN THE CPU IS HALTED ON ERROR, SWITCH REG BIT 14 (LOOP ON TEST) AND SWR BIT 13 (INHIBIT ERROR TYPEOUT) SHOULD BE SET. SWR BIT 15 SHOULD BE CLEARED AND CPU SHOULD BE CONTINUED.

NOTE

SOME SCOPE LOOPS MAY BE IMPOSSIBLE TO OBTAIN OR NOT REPEATABLE DUE TO THE FACT THAT THREE ASYNCHRONOUS CPUS ARE RUNNING TO GENERATE THE ERROR.

5.3 PROGRAM AND/OR OPERATOR ACTION

1. WHEN THE PROGRAM IS INITIALLY STARTED IT WILL TYPE:

   MD-11-DRLPN-A

2. THE PROGRAM EXERCISES THE M8254 ON FIRST PASS.
3. ANY DETECTED ERRORS ARE REPORTED FOR CURRENT PASS.
4. AN "END PASS" MESSAGE IS TYPED.

THE FIRST "PASS" THROUGH THE PROGRAM IS QUICK VERIFY OR A SHORT ONE. ALL OTHER PASSES WILL ITERATE ON EACH SUBTEST UNLESS INHIBITED.

6.0 ERRORS

6.1 ERROR PRINT-OUT

PRINTOUT VARIES WITH THE ERROR DETECTED. THE ERROR PC TYPED OUT IS THE ACTUAL LOCATION OF THE ERROR CALL.

6.2 SET-UP ERRORS

THIS DIAGNOSTIC "WATCHS" THE KMC-11 AND M8200-YC FOR FATAL CONDITIONS THAT WOULD OTHERWISE CAUSE THE DIGNOSTIC TO "HANG". IF THE DIAGNOSTIC EITHER PRINTS AN ERROR OR HALTS INDICATING THIS CONDITION, YOU SHOULD RUN KMC-11 AND/OR M8200-YC DIAGNOSTICS.

7.0 RESTRICTIONS

NONE.

8.0 MISCELLANEOUS

8.1 POWER FAIL

THIS PROGRAM WILL NOT SUPPORT POWER FAILURES. IF A POWER FAILURE OCCURS, YOU MUST RELOAD AND RESTART THIS PROGRAM.

8.2 XXDP,ACT,APT

THIS PROGRAM IS CHAINABLE UNDER XXDP, ACT, OR APT. ALTOUGH "APT HOOKS" HAVE BEEN INSTALLED, THEY HAVE NOT BEEN TESTED.

8.3 EXECUTION TIME

THE EXECUTION TIME WILL VARY BETWEEN CPUS. THE APPROXIMATE TIMES ARE LISTED BELOW:

1.0 MINUTE (60 SEC) -NO ERRORS-ITERATIONS INHIBITED
3.0 MINUTE (180 SEC) -NO ERRORS-WITH ITERATIONS.
(LISTED UNDER MIS.)

8.4 LPA11 (SYSTEM) DIAGNOSTIC SUMMARY

DIAGNOSTICS FOR THE LPA11 ARE WRITTEN AT THREE LEVELS: (1) TOTAL PDP-11 SYSTEM, (2) LPA11 SYSTEM; AND, (3) LP.11 OPTIONS.

LEVEL 1, IS DESIGNED TO ISOLATE A FAILURE TO THE LPA11 SYSTEM. ALL OPTIONS ON THE PDP-11 ARE EXERCISED.

LEVEL 2 DIAGNOSTICS ISOLATE A FAILURE TO THE INDIVIDUAL OPTION WITHIN THE LPA11. THE LEVEL 2 DIAGNOSTIC IS MD-11-DRLPA. WHEN THE USER RUNS DRLPA HE CAN GENERALLY TELL WHICH OPTION DIAGNOSTIC (LEVEL 3) TO RUN NEXT. M8254 AND M8200-YC ERRORS MAY "LOOK" ALIKE AND DRLPA MAY NOT BE ABLE TO DISTINGUISH BETWEEN THEM. ARBITRATION ERRORS WILL NOT BE DETECTED BY THIS DIAGNOSTIC.

LEVEL THREE DIAGNOSTICS AID IN DETERMINING IF THE ERROR WAS IN FACT ON THE OPTION THE DRLPA SPECIFIED. THE USER MAY "LOOP" ON THE ERROR. WITHIN LEVEL THREE, THERE ARE TWO GROUPS OF DIAGNOSTICS. THE FIRST GROUP REQUIRES NO "EXTRA" WORK BY THE USER IN ORDER TO RUN. GROUP "A" DIAGNOSTICS DO NOT CHECK ARBITRATION, AND REQUIRE EXTRA TIME FOR EXECUTION. THE SECOND GROUP (GROUP "B") REQUIRES THAT THE USER RECONFIGURE THE PDP-11 SYSTEM. THIS RECONFIGURATION INVOLVES CABLING THE UNIBUS TO tHE LPA'S I/O BUS.

THE DIAGNOSTIC FOR THE M8254 FALLS INTO THE GROUP "B" CATAGORY.

THE LPA11-KX DIAGNOSTIC KIT WILL INCLUDE:

OPTION	GROUP	DIAG. #	DIAG. TITLE
LPA11-KX	LEVEL 2	MD-11-DRLPA	LPA11-K SYSTEM DIAG.
M8254	"B"	MD-11-DRLPN	M8254 (JPBM) DIAG.
AA11-K	A	MD-11-DRLPB	AA11-K DIAG.
	B	MD-11-DZAAC	AA11-K DIAG.
AR11	A	MD-11-DRLPC	LPA/AR11 DIAG. #1
	A	MD-11-DRLPD	LPA/AR11 DIAG. #2
	A	MD-11-DRLPE	LPA/AR11 DIAG. #3
	B	MD-11-DZARA	AR11 DIAG. #1
	B	MD-11-DZARB	AR11 DIAG. #2
	B	MD-11-DZARC	AR11 DIAG. #3
DR11-K	A	MD-11-DRLPF	LPA/DR11-K DIAG.
	B	MD-11-DZDRG	DR11-K DIAG.
KW11-K	A	MD-11-DRLPG	LPA/KW11-K DIAG.
	B	MD-11-DZKWK	KW11-K DIAG.
LPS11	A	MD-11-DRLPH	LPA/LPS11 DIAG. #1
	A	MD-11-DRLPI	LPA/LPS11 DIAG. #2
	A	MD-11-DRLPJ	LPA/LPS11 DIAG. #3
	B	MD-11-DZLPC	LPS11 DIAG. #1
	B	MD-11-DZLPD	LPS11 DIAG. #2
	B	MD-11-DZLPI	LPS11 DIAG. #3
AD11-K	A	MD-11-DRLPK	LPA/AD11-K DIAG.
	B	MD-11-DZADL	AD11-K DIAG.
M8200-YC	B	MD-11-DZLPL	LPA/M8200-YC BASIC MICRO-CPU R/W TEST
	B	MD-11-DZLPM	LPA/M8200-YC JMP+ROM READ TEST

```
                                .TITLE  MD-11-DRLPN-A
                                ;*COPYRIGHT (C) 1978
                                ;*DIGITAL EQUIPMENT CORP.
                                ;*MAYNARD, MASS. 01754
                                ;*
                                ;*PROGRAM BY EDWARD C. BADGER
                                ;*
                                ;*THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC SYSMAC
                                ;*PACKAGE (MAINDEC-11-DZQAC-C2), SEPT 14, 1976.
                                ;*
000001                          $TN=1

                                .SBTTL  OPERATIONAL SWITCH SETTINGS
                                ;*
                                ;*      SWITCH                  USE
                                ;*      ------          --------------------
                                ;*        15            HALT ON ERROR
                                ;*        14            LOOP ON TEST
                                ;*        13            INHIBIT ERROR TYPEOUTS
                                ;*        11            INHIBIT ITERATIONS
                                ;*        10            BELL ON ERROR
                                ;*         8            LOOP ON TEST IN SWR<7:0>
                                .SBTTL  TRAP CATCHER

000000                                  .=0
                                ;*ALL UNUSED LOCATIONS FROM 4 - 776 CONTAIN A ".+2,HALT"
                                ;*SEQUENCE TO CATCH ILLEGAL TRAPS AND INTERRUPTS
                                ;*LOCATION 0 CONTAINS 0 TO CATCH IMPROPERLY LOADED VECTORS
000174                                  .=174
000174  000000                DISPREG:  .WORD  0              ;;SOFTWARE DISPLAY REGISTER
000176  000000                SWREG:    .WORD  0              ;;SOFTWARE SWITCH REGISTER

000200                                  .=200
000200  000137  001464                  JMP     START
000210                                  .=210
000210  000137  012632                  JMP     MOCRAM
000220                                  .=220
000220  000137  013070                  JMP     ODT

                                .SBTTL  BASIC DEFINITIONS

                                ;*INITIAL ADDRESS OF THE STACK POINTER *** 1100 ***
001100                          STACK=  1100
                                .EQUIV  EMT,ERROR       ;;BASIC DEFINITION OF ERROR CALL
                                .EQUIV  IOT,SCOPE       ;;BASIC DEFINITION OF SCOPE CALL

                                ;*MISCELLANEOUS DEFINITIONS
000011                          HT=     11              ;;CODE FOR HORIZONTAL TAB
000012                          LF=     12              ;;CODE FOR LINE FEED
000015                          CR=     15              ;;CODE FOR CARRIAGE RETURN
000200                          CRLF=   200             ;;CODE FOR CARRIAGE RETURN-LINE FEED
177776                          PS=     177776          ;;PROCESSOR STATUS WORD
                                .EQUIV  PS,PSW
```

```
                        
000000                  STKLMT= 177774          ;;STACK LIMIT REGISTER
000000                  PIRQ=   177772          ;;PROGRAM INTERRUPT REQUEST REGISTER
000000                  DSWR=   177570          ;;HARDWARE SWITCH REGISTER
000000                  DDISP=  177570          ;;HARDWARE DISPLAY REGISTER
                        
                        ;*GENERAL PURPOSE REGISTER DEFINITIONS
000000                  R0=     %0              ;;GENERAL REGISTER
000001                  R1=     %1              ;;GENERAL REGISTER
000002                  R2=     %2              ;;GENERAL REGISTER
000003                  R3=     %3              ;;GENERAL REGISTER
000004                  R4=     %4              ;;GENERAL REGISTER
000005                  R5=     %5              ;;GENERAL REGISTER
000006                  R6=     %6              ;;GENERAL REGISTER
000007                  R7=     %7              ;;GENERAL REGISTER
000006                  SP=     %6              ;;STACK POINTER
000007                  PC=     %7              ;;PROGRAM COUNTER
                        
                        ;*PRIORITY LEVEL DEFINITIONS
000000                  PR0=    0               ;;PRIORITY LEVEL 0
000040                  PR1=    40              ;;PRIORITY LEVEL 1
000100                  PR2=    100             ;;PRIORITY LEVEL 2
000140                  PR3=    140             ;;PRIORITY LEVEL 3
000200                  PR4=    200             ;;PRIORITY LEVEL 4
000240                  PR5=    240             ;;PRIORITY LEVEL 5
000300                  PR6=    300             ;;PRIORITY LEVEL 6
000340                  PR7=    340             ;;PRIORITY LEVEL 7
                        
                        ;*"SWITCH REGISTER" SWITCH DEFINITIONS
100000                  SW15=   100000
040000                  SW14=   40000
020000                  SW13=   20000
010000                  SW12=   10000
004000                  SW11=   4000
002000                  SW10=   2000
001000                  SW09=   1000
000400                  SW08=   400
000200                  SW07=   200
000100                  SW06=   100
000040                  SW05=   40
000020                  SW04=   20
000010                  SW03=   10
000004                  SW02=   4
000002                  SW01=   2
000001                  SW00=   1
                        .EQUIV  SW09,SW9
                        .EQUIV  SW08,SW8
                        .EQUIV  SW07,SW7
                        .EQUIV  SW06,SW6
                        .EQUIV  SW05,SW5
                        .EQUIV  SW04,SW4
                        .EQUIV  SW03,SW3
                        .EQUIV  SW02,SW2
                        .EQUIV  SW01,SW1
                        .EQUIV  SW00,SW0
```

```
                                ;*DATA BIT DEFINITIONS (BIT00 TO BIT15)
100000                          BIT15=  100000
040000                          BIT14=  40000
020000                          BIT13=  20000
010000                          BIT12=  10000
004000                          BIT11=  4000
002000                          BIT10=  2000
001000                          BIT09=  1000
000400                          BIT08=  400
000200                          BIT07=  200
000100                          BIT06=  100
000040                          BIT05=  40
000020                          BIT04=  20
000010                          BIT03=  10
000004                          BIT02=  4
000002                          BIT01=  2
000001                          BIT00=  1
                                .EQUIV  BIT09,BIT9
                                .EQUIV  BIT08,BIT8
                                .EQUIV  BIT07,BIT7
                                .EQUIV  BIT06,BIT6
                                .EQUIV  BIT05,BIT5
                                .EQUIV  BIT04,BIT4
                                .EQUIV  BIT03,BIT3
                                .EQUIV  BIT02,BIT2
                                .EQUIV  BIT01,BIT1
                                .EQUIV  BIT00,BIT0

                                ;*BASIC "CPU" TRAP VECTOR ADDRESSES
000004                          ERRVEC= 4               ;;TIME OUT AND OTHER ERRORS
000010                          RESVEC= 10              ;;RESERVED AND ILLEGAL INSTRUCTIONS
000014                          TBITVEC=14              ;;"T" BIT
000014                          TRTVEC= 14              ;;TRACE TRAP
000014                          BPTVEC= 14              ;;BREAKPOINT TRAP (BPT)
000020                          IOTVEC= 20              ;;INPUT/OUTPUT TRAP (IOT) **SCOPE**
000024                          PWRVEC= 24              ;;POWER FAIL
000030                          EMTVEC= 30              ;;EMULATOR TRAP (EMT) **ERROR**
000034                          TRAPVEC=34              ;;"TRAP" TRAP
000060                          TKVEC=  60              ;;TTY KEYBOARD VECTOR
000064                          TPVEC=  64              ;;TTY PRINTER VECTOR
000240                          PIRQVEC=240             ;;PROGRAM INTERRUPT REQUEST VECTOR

170460                                  ABASE=  170460
000300                                  AVECT1= 300
000300                                  APRIOR= 300
000001                                  $TN=1

                                .SBTTL  ACT11 HOOKS

                                ;;**************************************************************
                                ;HOOKS REQUIRED BY ACT11
000224                                  $SVPC=.                 ;SAVE PC
000046                                  .=46
```

```
                                        $ENDAD                  ;;1)SET LOC.46 TO ADDRESS OF $ENDAD IN .SEOp
                                        .=52
000052  000000                          .WORD   0               ;;2)SET LOC.52 TO ZERO
000224                                  .=$SVPC                 ;; RESTORE PC
001000                                  .=1000
                        .SBTTL  APT PARAMETER BLOCK

                        ;;**************************************************************
                        ;SET LOCATIONS 24 AND 44 AS REQUIRED FOR APT
                        ;;**************************************************************
001000                          .$X=.   ;;SAVE CURRENT LOCATION
000024                          .=24    ;;SET POWER FAIL TO pOINT TO START OF PROGRAM
000200                          200     ;;FOR APT START UP
000044                          .=44    ;;POINT TO APT INDIRECT ADDRESS PNTR.
001000                          $APTHDR ;;POINT TO APT HEADER BLOCK
001000                          .=.$X   ;;RESET LOCATION COUNTER
                        ;;**************************************************************
                        ;SETUP APT PARAMETER BLOCK AS DEFINED IN THE APT-POP11 DIAGNOSTIC
                        ;INTERFACE SPEC.

001000                  $APTHD:
001000  000000          $HIBTS: .WORD   0       ;;TWO HIGH BITS OF 18 BIT MAILBOX ADDR.
001002  001172          $MBADR: .WORD   $MAIL   ;;ADDRESS OF APT MAILBOX (BITS 0-15)
001004  000002          $TSTM:  .WORD   2       ;;RUN TIM OF LONGEST TESt
001006  000170          $PASTM: .WORD   120.    ;;RUN TIME IN SECS. OF 1ST PASS ON 1 UNIt (QUICK VERIFY)
001010  000170          $UNItM: .WORD   120.    ;;ADDITIONAL RUN TIME (SECS) OF A PASS FOR EACH ADDITIONAL UNIT
001012  000031                  .WORD   $ETEND-$MAIL/2 ;;LENGTH MAILBOX-ETABLE(WORDS)
```

```
                                .SBTTL  COMMON TAGS

                                ;;**********************************************************************
                                ;*THIS TABLE CONTAINS VARIOUS COMMON STORAGE LOCATIONS
                                ;*USED IN THE PROGRAM.

                        001100          .=1100
001100                  $CMTAG:                         ;;START OF COMMON TAGS
001100  000000                  .WORD   0
001102  000                     $TSTNM: .BYTE   0       ;;CONTAINS THE TEST NUMBER
001103  000                     $ERFLG: .BYTE   0       ;;CONTAINS ERROR FLAG
001104  000000                  $ICNT:  .WORD   0       ;;CONTAINS SUBTEST ITERATION COUNT
001106  000000                  $LPADR: .WORD   0       ;;CONTAINS SCOPE LOOP ADDRESS
001110  000000                  $LPERR: .WORD   0       ;;CONTAINS SCOPE RETURN FOR ERRORS
001112  000000                  $ERTTL: .WORD   0       ;;CONTAINS TOTAL ERRORS DETECTED
001114  000                     $ITEMB: .BYTE   0       ;;CONTAINS ITEM CONTROL BYTE
001115  001                     $ERMAX: .BYTE   1       ;;CONTAINS MAX. ERRORS PER TEST
001116  000000                  $ERRPC: .WORD   0       ;;CONTAINS PC OF LAST ERROR INSTRUCTION
001120  000000                  $GDADR: .WORD   0       ;;CONTAINS ADDRESS OF 'GOOD' DATA
001122  000000                  $BDADR: .WORD   0       ;;CONTAINS ADDRESS OF 'BAD' DATA
001124  000000                  $GDDAT: .WORD   0       ;;CONTAINS 'GOOD' DATA
001126  000000                  $BDDAT: .WORD   0       ;;CONTAINS 'BAD' DATA
001130  000000                          .WORD   0       ;;RESERVED--NOT TO BE USED
001132  000000                          .WORD   0
001134  000                     $AUTOB: .BYTE   0       ;;AUTOMATIC MODE INDICATOR
001135  000                     $INTAG: .BYTE   0       ;;INTERRUPT MODE INDICATOR
001136  000000                          .WORD   0
001140  177570                  SWR:    .WORD   DSWR    ;;ADDRESS OF SWITCH REGISTER
001142  177570                  DISPLAY: .WORD  DDISP   ;;ADDRESS OF DISPLAY REGISTER
001144  177560                  $TKS:   177560          ;;TTY KBD STATUS
001146  177562                  $TKB:   177562          ;;TTY KBD BUFFER
001150  177564                  $TPS:   177564          ;;TTY PRINTER STATUS REG. ADDRESS
001152  177566                  $TPB:   177566          ;;TTY PRINTER BUFFER REG. ADDRESS
001154  000                     $NULL:  .BYTE   0       ;;CONTAINS NULL CHARACTER FOR FILLS
001155  002                     $FILLS: .BYTE   2       ;;CONTAINS # OF FILLER CHARACTERS REQUIRED
001156  012                     $FILLC: .BYTE   12      ;;INSERT FILL CHARS. AFTER A "LINE FEED"
001157  000                     $TPFLG: .BYTE   0       ;;"TERMINAL AVAILABLE" FLAG (BIT<07>=0=YES)
001160  000000                  $TIMES: 0               ;;MAX. NUMBER OF ITERATIONS
001162  177607  000377          $BELL:  .ASCIZ  <207><377><377> ;;CODE FOR BELL
001166  077                     $QUES:  .ASCII  /?/     ;;QUESTION MARK
001167  015                     $CRLF:  .ASCII  <15>    ;;CARRIAGE RETURN
001170  000012                  $LF:    .ASCIZ  <12>    ;;LINE FEED
                                ;;**********************************************************************
                                .SBTTL  APT MAILBOX-ETABLE

                                ;;**********************************************************************
                                .EVEN
001172                          $MAIL:                  ;;APT MAILBOX
001172  000000                  $MSGTY: .WORD   AMSGTY   ;;MESSAGE TYPE CODE
001174  000000                  $FATAL: .WORD   AFATAL   ;;FATAL ERROR NUMBER
001176  000000                  $TESTN: .WORD   ATESTN   ;;TEST NUMBER
001200  000000                  $PASS:  .WORD   APASS    ;;PASS COUNT
001202  000000                  $DEVCT: .WORD   ADEVCT   ;;DEVICE COUNT
001204  000000                  $UNIT:  .WORD   AUNIT    ;;I/O UNIT NUMBER
```

```
                                $MSGAD: .WORD   AMSGAD  ;;MESSAGE ADDRESS
                                $MSGLG: .WORD   AMSGLG  ;;MESSAGE LENGTH
                                $ETABLE:                ;;APT ENVIRONMENT TABLE
                                $ENv:   .BYTE   AENV    ;;ENVIRONMENT BYTE
                                $ENvM:  .BYTE   AENVM   ;;ENVIRONMENT MODE BITS
                                $SWREG: .WORD   ASWREG  ;;APT SWITCH REGISTER
                                $USWR:  .WORD   AUSWR   ;;USER SWITCHES
                                $CPUOP: .WORD   ACPUOP  ;;CPU TYPE,OPTIONS
                                ;*                      BITS 15-11=CPU TYPE
                                ;*                              11/04=01,11/05=02,11/20=03,11/40=04,11/45=05
                                ;*                              11/70=06,PDQ=07,Q=10
                                ;*                      BIT 10=REAL TIME CLOCK
                                ;*                      BIT  9=FLOATING POINT PROCESSOR
                                ;*                      BIT  8=MEMORY MANAGEMENT
                                $MAMS1: .BYTE   AMAMS1  ;;HIGH ADDRESS,M.S. BYTE
                                $MTYP1: .BYTE   AMTYP1  ;;MEM. TYPE,BLK#1
                                ;*                      MEM.TYPE BYTE   --  (HIGH BYTE)
                                ;*                              900 NSEC CORE=001
                                ;*                              300 NSEC BIPOLAR=002
                                ;*                              500 NSEC MOS=003
                                $MADR1: .WORD   AMADR1  ;;HIGH ADDRESS,BLK#1
                                ;*                        MEM.LAST ADDR.=3 BYTES,THIS WORD AND LOW OF "TYPE" ABOVE
                                $MAMS2: .BYTE   AMAMS2  ;;HIGH ADDRESS,M.S. BYTE
                                $MTYP2: .BYTE   AMTYP2  ;;MEM.TYPE,BLK#2
                                $MADR2: .WORD   AMADR2  ;;MEM.LAST ADDRESS,BLK#2
                                $MAMS3: .BYTE   AMAMS3  ;;HIGH ADDRESS,M.S.BYTE
                                $MTYP3: .BYTE   AMTYP3  ;;MEM.TYPE,BLK#3
                                $MADR3: .WORD   AMADR3  ;;MEM.LAST ADDRESS,BLK#3
                                $MAMS4: .BYTE   AMAMS4  ;;HIGH ADDRESS,M.S.BYTE
                                $MTYP4: .BYTE   AMTYP4  ;;MEM.TYPE,BLK#4
                                $MADR4: .WORD   AMADR4  ;;MEM.LAST ADDRESS,BLK#4
                                $VECT1: .WORD   AVECT1  ;;INTERRUPT VECTOR#1,BUS PRIORITY#1
                                $VECt2: .WORD   AVECT2  ;;INTERRUPT VECTOR#2BUS PRIORITY#2
                                $BASE:  .WORD   ABASE   ;;BASE ADDRESS OF EQUIPMENT UNDER TEST
                                $DEVM:  .WORD   ADEVM   ;;DEVICE MAP
                                $CDW1:  .WORd   ACDW1   ;;CONTROLLER DESCRIPTION WORD#1
                                $ETEND:
                                .MEXIT
```

```
                                .SBTTL  ERROR POINTER TABLE

                                ;*THIS TABLE CONTAINS THE INFORMATION FOR EACH ERROR THAT CAN OCCUR.
                                ;*THE INFORMATION IS OBTAINED BY USING THE INDEX NUMBER FOUND IN
                                ;*LOCATION $ITEMB. THIS NUMBER INDICATES WHICH ITEM IN THE TABLE IS PERTINENT.
                                ;*NOTE1:        IF $ITEMB IS 0 THE ONLY PERTINENT DATA IS ($ERRPC).
                                ;*NOTE2:        EACH ITEM IN THE TABLE CONTAINS 4 POINTERS EXPLAINED AS FOLLOWS:

                                ;*      EM              ;;POINTS TO THE ERROR MESSAGE
                                ;*      DH              ;;POINTS TO THE DATA HEADER
                                ;*      DT              ;;POINTS TO THE DATA
                                ;*      DF              ;;POINTS TO THE DATA FORMAT

001254                          $ERRTB:

                                        ;ITEM   1

001254  016507                          EM1                     ;UBSR ERROR
001256  017102                          DH1                     ;ERRPC   GDDAT   BAD DATA
001260  017250                          DT1                     ;$ERRPC,$GDDAT,$BDDAT
001262  017310                          DF0                     ;ALL NUMBERS ARE IN OCTAL FORM.

                                        ;ITEM   2

001264  016523                          EM2                     ;IOSR ERROR
001266  017102                          DH1                     ;ERRPC   GDDAT   BAD DATA
001270  017250                          DT1                     ;$ERRPC,$GDDAT,$BDDAT
001272  017310                          DF0                     ;ALL NUMBERS ARE IN OCTAL FORM.

                                        ;ITEM   3

001274  016537                          EM3                     ;SIDE 1 (IO TO UB) FAST PATH DATA ERROR
001276  017102                          DH1                     ;ERRPC   GDDAT   BAD DATA
001300  017250                          DT1                     ;$ERRPC,$GDDAT,$BDDAT
001302  017310                          DF0                     ;ALL NUMBERS ARE IN OCTAL FORM.

                                        ;ITEM   4

001304  016607                          EM4                     ;SIDE 2 (UB TO IO) FAST PATH DATA ERROR
001306  017102                          DH1                     ;ERRPC   GDDAT   BAD DATA
001310  017250                          DT1                     ;$ERRPC,$GDDAT,$BDDAT
001312  017310                          DF0                     ;ALL NUMBERS ARE IN OCTAL FORM.

                                        ;ITEM   5

001314  016657                          EM5                     ;SIDE 1 (IO TO UB) SILO DATA ERROR
001316  017102                          DH1                     ;ERRPC   GDDAT   BAD DATA
001320  017250                          DT1                     ;$ERRPC,$GDDAT,$BDDAT
001322  017310                          DF0                     ;ALL NUMBERS ARE IN OCTAL FORM.

                                        ;ITEM   6

001324  016722                          EM6                     ;SIDE 2 (UB TO IO) SILO DATA ERROR
```

```
                                        DH1                     ;ERRPC   GDDAT   BAD DATA
                                        DT1                     ;$ERRPC,$GDDAT,$BDDAT
                                        DF0                     ;ALL NUMBERS ARE IN OCTAL FORM.

                                        ;ITEM   7

                                        EM7                     ;SIDE 1 INPO DATA ERROR
                                        DH7                     ;ERRPC   INP# #  GDDAT   BDDAT
                                        DT7                     ;$ERRPC,INNU,$GDDAT,$BDDAT
                                        DF0                     ;ALL NUMBERS ARE IN OCTAL FORM.

                                        ;ITEM   10

                                        EM10                    ;SIDE 2 INPO DATA ERROR
                                        DH7                     ;ERRPC   INPO #  GDDAT   BDDAT
                                        DT7                     ;$ERRPC,INNU,$GDDAT,$BDDAT
                                        DF0                     ;ALL NUMBERS ARE IN OCTAL FORM.

                                        ;ITEM   11

                                        EM11                    ;MICRO-P DETECTED IPBM ERROR
                                        DH11                    ;TEST    ERRPC   KMCADR  CSR
                                        DT11                    ;$TSTNM,$ERRPC,DLAD,$BDDAT
                                        DF0                     ;ALL NUMBERS ARE IN OCTAL FORM.


001364  000010          VAR1:   10              ;VARIENCE BETWEEN KMC 1 AND M8200-YC
001366  000001          MCNT:   1               ;#OF M8254'S TO BE TESTED
001370  000020          VAR2:   20              ;VARIENCE IN ADDRS BETWEEN TEST STATIONS
001372  000001          NCNT:   1               ;CURRENT TEST STATION

                                                ;NOTE: TEST STATION CONSISTS OF A
                                                ;      KMC-11, M8254, AND AN M8200-YC


                        ;MAINTANCE M8200-YC ADDRESSES
001374  170470  KMMCSR: .WORD   ABASE+10        ;>PATCH         <;M8200-YC BASE ADDRESS
001376  170474  KMMADR: .WORD   ABASE+14        ;>NO            <;M8200-YC CRAM ADDRESS
001400  170476  KMMDBR: .WORD   ABASE+16        ;>PATCHES       <;M8200-YC CRAM DATA
001402  170470  MBSEL0: .WORD   ABASE+10        ;>HERE          <;BSEL0
001404  170471  MBSEL1: .WORD   ABASE+11        ;>NO            <;BSEL1
001406  170472  MBSEL2: .WORD   ABASE+12        ;>PATCHES       <;BSEL2
001410  170473  MBSEL3: .WORD   ABASE+13        ;>HERE          <;BSEL3
001412  170474  MBSEL4: .WORD   ABASE+14        ;>NO            <;BSEL4
001414  170475  MBSEL5: .WORD   ABASE+15        ;>PATCHES       <;BSEL5
001416  170476  MBSEL6: .WORD   ABASE+16        ;>HERE          <;BSEL6
001420  170477  MBSEL7: .WORD   ABASE+17        ;>NO NO         <;BSEL7

001422  177546  KWADR:  .WORD   177546          ;ADDR OF CLOCK.


                        ;1ST KMC-11 ADDRESS
001424  170460  KMCSR:  .WORD   ABASE            ;>PATCH         <;BASE ADDRESS OF KMC-11
```

```
                                KMADR:  .WORD   ABASE+4         ;>ADDRESS       <;CRAM ADDR. REG BITS0:9
                                KMDBR:  .WORD   ABASE+6         ;>"$BASE"       <;CRAM DATA REG
                                BSEL0:  .WORD   ABASE           ;>IF ADDR.      <;BSEL0
                                BSEL1:  .WORD   ABASE+1         ;>DIFFERENT     <;BSEL1
                                BSEL2:  .WORD   ABASE+2         ;>              <;BSEL2
                                BSEL3:  .WORD   ABASE+3         ;>NO            <;BSEL3
                                BSEL4:  .WORD   ABASE+4         ;>PATCHES       <;BSEL4
                                BSEL5:  .WORD   ABASE+5         ;>HERE          <;BSEL5
                                BSEL6:  .WORD   ABASE+6         ;>NO            <;BSEL6
                                BSEL7:  .WORD   ABASE+7         ;>PATCHES       <;BSEL7

                                CKVECT: .WORD   100             ;VECTOR ADDRESS OF CLOCK.
                                CKVCT2: .WORD   102
                                ERCNT:  .WORD   0               ;TOTAL ERROR COUNT DURING RUN.
                                INNU:   .WORD   0
                                KLAD:   .WORD   0               ;ADDR. OF FAILING KMC FOR CERTAIN TESTS.


001464                          START:
                                .SBTTL  INITIALIZE THE COMMON TAGS
                                ;;CLEAR THE COMMON TAGS ($CMTAG) AREA
001464  012706  001100          MOV     #$CMTAG,R6      ;;FIRST LOCATION TO BE CLEARED
001470  005026                  CLR     (R6)+           ;;CLEAR MEMORY LOCATION
001472  022706  001140          CMP     #SWR,R6 ;;DONE?
001476  001374                  BNE     .-6             ;;LOOP BACK IF NO
001500  012706  001100          MOV     #STACK,SP       ;;SETUP THE STACK POINTER
                                ;;INITIALIZE A FEW VECTORS
001504  012737  014230  000020  MOV     #$SCOPE,@#IOTVEC ;;IOT VECTOR FOR SCOPE ROUTINE
001512  012737  000340  000022  MOV     #340,@#IOTVEC+2 ;;LEVEL 7
001520  012737  013726  000030  MOV     #$ERROR,@#EMTVEC ;;EMT VECTOR FOR ERROR ROUTINE
001526  012737  000340  000032  MOV     #340,@#EMTVEC+2 ;;LEVEL 7
001534  012737  016226  000034  MOV     #$TRAP,@#TRAPVEC ;;TRAP VECTOR FOR TRAP CALLS
001542  012737  000340  000036  MOV     #340,@#TRAPVEC+2;LEVEL 7
001550  012737  016050  000024  MOV     #$PWRDN,@#PWRVEC ;;POWER FAILURE VECTOR
001556  012737  000340  000026  MOV     #340,@#PWRVEC+2 ;;LEVEL 7
001564  005037  001160          CLR     $TIMES          ;;INITIALIZE NUMBER OF ITERATIONS
001570  012737  001570  001106  MOV     #.,$LPADR       ;;INITIALIZE THE LOOP ADDRESS FOR SCOPE
                                ;;SIZE FOR A HARDWARE SWITCH REGISTER. IF NOT FOUND OR IT IS
                                ;;EQUAL TO A "-1", SETUP FOR A SOFTWARE SWITCH REGISTER.
001576  013746  000004          MOV     @#ERRVEC,-(SP)  ;;SAVE ERROR VECTOR
001602  012737  001636  000004  MOV     #64$,@#ERRVEC   ;;SET UP ERROR VECTOR
001610  012737  177570  001140  MOV     #DSWR,SWR       ;;SETUP FOR A HARDWARE SWICH REGISTER
001616  012737  177570  001142  MOV     #DDISP,DISPLAY  ;;AND A HARDWARE DISPLAY REGISTER
001624  022777  177777  177306  CMP     #-1,@SWR        ;;TRY TO REFERENCE HARDWARE SWR
001632  001012                  BNE     66$             ;BRANCH IF NO TIMEOUT TRAP OCCURRED
                                                        ;;AND  THE HARDWARE SWR IS NOT = -1
001634  000403                  BR      65$             ;;BRANCH IF NO TIMEOUT
001636  012716  001644  64$:    MOV     #65$,(SP)       ;;SET UP FOR TRAP RETURN
001642  000002                  RTI
001644  012737  000176  001140  65$:    MOV     #SWREG,SWR      ;;POINT TO SOFTWARE SWR
001652  012737  000174  001142          MOV     #DISPREG,DISPLAY
001660  012637  000004          66$:    MOV     (SP)+,@#ERRVEC  ;;RESTORE ERROR VECTOR

001664  005037  001200          CLR     $PASS           ;;CLEAR PASS COUNT
```

```
                                                BITB    #APTSIZE,$ENVM  ;;TEST USER SIZE UNDER APT
                                                BEQ     67$             ;;YES,USE NON-APT SWITCH
                                                MOV     #$SWREG,SWR     ;;NO,USE APT SWITCH REGISTER
                                        67$:
                                        RSTART: CLR     ERCNT           ;CLEAR ERROR COUNT.
                                        RTNAD:  MOV     $BASE,R0        ;GET BASE ADDRESS.
                                                MOV     #1,LCNT
                                        LSTED:  MOV     #KMCSR,R1       ;STORAGE
                                                MOV     R0,(1)+         ;FIX ALL ADDS.
                                                ADD     #4,R0
                                                MOV     R0,(1)+
                                                ADD     #2,R0
                                                MOV     R0,(R1)+
                                                MOV     KMCSR,R0        ;NO FIX BSEL ADDRESS.
                                                MOV     #10,R2          ;DO ALL SEVEN.
                                        1$:     MOV     R0,(1)+
                                                ADD     #1,R0
                                                DEC     R2
                                                BNE     1$

                                                MOV     KMCSR,KMMCSR
                                                ADD     VAR1,KMMCSR
                                                MOV     KMMCSR,KMMADR   ;NOW FIX M8200-YC ADDRESS.
                                                MOV     KMMCSR,KMMDBR

                                                ADD     #4,KMMADR
                                                ADD     #6,KMMDBR
                                                MOV     KMMCSR,R0       ;NOW FIX BSEL ADDRESSES.
                                                MOV     #MBSEL0,R1
                                                MOV     #10,R2
                                        2$:     MOV     R0,(1)+
                                                ADD     #1,R0
                                                DEC     R2
                                                BNE     2$
                                                RESET

                                        .SBTTL  TYPE PROGRAM NAME
                                        ;;TYPE THE NAME OF THE PROGRAM IF FIRST PASS
                                                INC     #-1             ;;FIRST TIME?
                                                BNE     64$             ;;BRANCH IF NO
                                                TYPE    ,65$            ;;TYPE ASCIZ STRING
                                        .SBTTL  GET VALUE FOR SOFTWARE SWITCH REGISTER
                                                TST     @#42            ;;ARE WE RUNNING UNDER XXDP/ACT?
                                                BNE     66$             ;;BRANCH IF YES
                                                CMPB    $ENV,#1         ;;ARE WE RUNNING UNDER APT?
                                                BEQ     66$             ;;BRANCH IF YES
                                                CMP     SWR,#SWREG      ;;SOFTWARE SWITCH REG SELECTED?
                                                BNE     67$             ;;BRANCH IF NO
                                                GTSWR                   ;;GET SOFT-SWR SETTINGS
                                                BR      67$
                                        66$:    MOVB    #1,$AUTOB       ;;SET AUTO-MODE INDICATOR
                                        67$:
                                                BR      64$             ;;GET OVER THE ASCIZ
                                        ;;65$:  .ASCIZ  <CRLF>#MD-11-DRLPN-A#<CRLF>
```

```
                                64$:
002160  005227  177777                INC     #-1             ;IS THIS THE FIRST TIME THROUGH ?
002164  001005                      BNE     3$              ;NO-BRANCH
002166  005227  177777              INC     #-1
002172  001002                      BNE     3$
002174  104401  016310              TYPE    ,MESWCH
002200  004537  012246        3$:   JSR     R5,LOAD         ;LOAD UCODE INTO KMC.

                                ;;*****************************************************************
                                ;*TEST 1         *TEST THE INITIAL CONDITIONS OF THE IPBM UBSR
                                ;;*****************************************************************
002204  000240                  TST1:   NOP
002206  012737  000001  001160          MOV     #1,$TIMES       ;;DO 1 ITERATION
002214  012737  002244  001106          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS

002222  112737  000001  001102          MOVB    #1,$TSTNM       ;SET TO TEST #1.
002230  012737  002244  001106          MOV     #1$,$LPADR      ;LOOP AT 1$.
002236  012737  002244  001110          MOV     #1$,$LPERR      ;ERROR LOOP AT 1$.

002244                          1$:
                                                                ;/-MCMD-
002244  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
002250  001424                          .WORD   KMCSR
        000006                          .MD.=6
                                                                ;/READ FAST PATH REG.
002252  000006                          .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .
                                                                ;/-MCMD-
002254  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
002260  001424                          .WORD   KMCSR
        000001                          .MD.=1
                                                                ;/COMMAND=NOP.
002262  000001                          .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .

002264  117737  177154  001126          MOVB    @BSEL5,$BDDAT   ;READ CSR.
002272  105037  001127                  CLRB    $BDDAT+1
002276  012737  000052  001124          MOV     #52,$GDDAT      ;EXPECT BITS 5,3,1 SET, ALL
                                                                ;OTHER BITS CLEAR.
002304  023737  001124  001126          CMP     $GDDAT,$BDDAT   ;CSR OK AT INIT?
002312  001401                          BEQ     TST2            ;;

                                        ;**********>> ERROR <<**********

002314  104001                          ERROR   1               ;#1 KMC SIDE STATUS REG ERROR (UBSR)

                                ;;*****************************************************************
                                ;*TEST 2         *TEST THE INITIAL CONDITIONS OF THE IPBM IOSR
                                ;;*****************************************************************
002316  000004                  TST2:   SCOPE
002320  012737  000001  001160          MOV     #1,$TIMES       ;;DO 1 ITERATION

002326  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000001                          .MD.=1
```

```
                                                        ;/COMMAND=NOP.
002332  000001                                .WORD   .MD.
                                                        ;/RETURN HERE AFTER COMMAND .

002334  117737  177054  001126                MOVB    @MBSEL5,$BDDAT  ;READ IOSR. (IPBM TO SLAVE).
002342  105037  001127                        CLRB    $BDDAT+1
002346  012737  000056  001124                MOV     #56,$GDDAT      ;EXPECT BITS 5,3,2,1 SET, ALL OTHER
                                                        ;BITS CLEAR.
002354  023737  001124  001126                CMP     $GDDAT,$BDDAT   ;SR SIDE 2 (SLAVE) OK AT INIT?
002362  001401                                BEQ     TST3            ;;

002364  104002                                ERROR   2               ;#2 SIDE (IPBM TO SLAVE) STATUS
                                                        ;REGISTER ERROR IOSR.

                                            ;**********>> ERROR <<**********


                                    ;;**************************************************************
                                    ;*TEST 3         *TEST THAT INP 17 READS ALL ZEROS ON SIDE 1
                                    ;;**************************************************************
002366  000004                      TST3:   SCOPE

                                                        ;/-IN1367-
                                                        ;/-MCMD-
002370  004537  011656                      JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
002374  001424                              .WORD   KMCSR
        000020                              .MD.=20
                                                        ;/READ INP0 17 PUT IN BSEL 3
002376  000020                              .WORD   .MD.
                                                        ;/RETURN HERE AFTER COMMAND.
002400  012737  000017  001460              MOV     #17,INNU        ;/RECORD INP0 NUMBER.
002406  012737  000000  001124              MOV     #0,$GDDAT       ;/EXPECT ALL 0Z.
002414  005037  001126                      CLR     $BDDAT
002420  117737  177014  001126              MOVB    @BSEL3,$BDDAT ;/READ WHAT INP 17 WAS
002426  123737  001124  001126              CMPB    $GDDAT,$BDDAT   ;/WAS IT OK?
002434  001401                              BEQ     TST4            ;;

                                            ;**********>> ERROR <<**********

002436  104007                              ERROR   7               ;ERROR INP 17 SHOULD HAVE
                                                        ;BEEN ALL ZEROS
                                                        ;
                                                        ;NOTE:  INP 17 IS AN ADDR. ON THE
                                                        ;       CROM BUS. FOR ZEROS, WE WOULD
                                                        ;       SELECT A GROUNDED INPUT TO THE
                                                        ;       "745151"; FOR ONES, WE WOULD
                                                        ;       SELECT A +3 INPUT.
                                                        ;       IF ONLY ONE BIT WERE BAD, PROBABLY
                                                        ;       THE 745151 WAS BAD.  IF MORE THAN
                                                        ;       ONE BIT WAS BAD, MAYBE THE
                                                        ;       "CROM" SELECTION BIT(S) WERE
                                                        ;       BAD, THUS SELECTING A NEW ADDR.
```

```
                                        ;**********>> ERROR <<**********

                                ;;**************************************************************
                                ;*TEST 4         *TEST THAT INP 17 READS ALL ZEROS ON SIDE 2
                                ;;**************************************************************
002440  000004                  TST4:   SCOPE
                                                                ;/-IN1367-
002442  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000020                  .MD.=20
                                                                ;/READ INPO 17 PUT IN BSEL 3
002446  000020                  .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND .
002450  012737  000017  001460  MOV     #17,INNU        ;/RECORD INPO NUMBER.
002456  012737  000000  001124  MOV     #0,$GDDAT       ;/EXPECT ALL OZ.
002464  005037  001126          CLR     $BDDAT
002470  117737  176714  001126  MOVB    @MBSEL3,$BDDAT  ;/READ WHAT INP 17 WAS
002476  123737  001124  001126  CMPB    $GDDAT,$BDDAT   ;/WAS IT OK?
002504  001401                  BEQ     TST5            ;;

                                        ;**********>> ERROR <<**********

002506  104010                  ERROR   10              ;ERROR INP 17 SHOULD HAVE
                                                        ;BEEN ALL ZEROS
                                                        ;
                                                        ;NOTE:  INP 17 IS AN ADDR. ON THE
                                                        ;       CROM BUS. FOR ZEROS, WE WOULD
                                                        ;       SELECT A GROUNDED INPUT TO THE
                                                        ;       "745151"; FOR ONES, WE WOULD
                                                        ;       SELECT A +3 INPUT.
                                                        ;       IF ONLY ONE BIT WERE BAD, PROBABLY
                                                        ;       THE 745151 WAS BAD.  IF MORE THAN
                                                        ;       ONE BIT WAS BAD, MAYBE THE
                                                        ;       "CROM" SELECTION BIT(S) WERE
                                                        ;       BAD, THUS SELECTING A NEW ADDR.

                                        ;**********>> ERROR <<**********

                                ;;**************************************************************
                                ;*TEST 5         *TEST THAT INP 13 READS ALL ONES ON SIDE 1
                                ;;**************************************************************
002510  000004                  TST5:   SCOPE
                                                                ;/-IN1367-
                                                                ;/-MCMD-
002512  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
002516  001424                  .WORD   KMCSR
        000016                  .MD.=16
                                                                ;/READ INPO 13 PUT IN BSEL3
002520  000016                  .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND .
```

```
                                        MOV     #13,INNU        ;/RECORD INPO NUMBER.
                                        MOV     #377,$GDDAT     ;/EXPECT ALL OZ.
                                        CLR     $BDDAT
                                        MOVB    @BSEL3,$BDDAT ;/READ WHAT INP 13 WAS
                                        CMPB    $GDDAT,$BDDAT   ;/WAS IT OK?
                                        BEQ     TST6            ;;

                                ;**********>> ERROR <<**********

                                        ERROR   7               ;ERROR INP 13 SHOULD HAVE
                                                                ;BEEN ALL ONES
                                                                ;
                                                                ;NOTE:  INP 13 IS AN ADDR. ON THE
                                                                ;       CROM BUS. FOR ZEROS, WE WOULD
                                                                ;       SELECT A GROUNDED INPUT TO THE
                                                                ;       "745151"; FOR ONES, WE WOULD
                                                                ;       SELECT A +3 INPUT.
                                                                ;       IF ONLY ONE BIT WERE BAD, PROBABLY
                                                                ;       THE 745151 WAS BAD.  IF MORE THAN
                                                                ;       ONE BIT WAS BAD, MAYBE THE
                                                                ;       "CROM" SELECTION BIT(S) WERE
                                                                ;       BAD, THUS SELECTING A NEW ADDR.

                                ;**********>> ERROR <<**********


                        ;;**************************************************************
                        ;*TEST 6         *TEST THAT INP 16 READS ALL ONES ON SIDE 2
                        ;;**************************************************************
002562  000004          TST6:   SCOPE

                                                                ;/-IN1367-
002564  004537  012100          JSR     R5,KMSIM                ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000017                  .MD.=17
                                                                ;/READ INPO 16 PUT IN BSEL3
002570  000017                  .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND
002572  012737  000016  001460  MOV     #16,INNU                ;/RECORD INPO NUMBER.
002600  012737  000377  001124  MOV     #377,$GDDAT             ;/EXPECT ALL OZ.
002606  005037  001126          CLR     $BDDAT
002612  117737  176572  001126  MOVB    @MBSEL3,$BDDAT ;/READ WHAT INP 16 WAS
002620  123737  001124  001126  CMPB    $GDDAT,$BDDAT   ;/WAS IT OK?
002626  001401                  BEQ     TST7            ;;

                                ;**********>> ERROR <<**********

002630  104010                  ERROR   10              ;ERROR INP 16 SHOULD HAVE
                                                        ;BEEN ALL ONES
                                                        ;
                                                        ;NOTE:  INP 16 IS AN ADDR. ON THE
                                                        ;       CROM BUS. FOR ZEROS, WE WOULD
                                                        ;       SELECT A GROUNDED INPUT TO THE
                                                        ;       "745151"; FOR ONES, WE WOULD
                                                        ;       SELECT A +3 INPUT.
```

```
                                                        ;       IF ONLY ONE BIT WERE BAD, PROBABLY
                                                        ;       THE 745151 WAS BAD.  IF MORE THAN
                                                        ;       ONE BIT WAS BAD, MAYBE THE
                                                        ;       "CROM" SELECTION BIT(S) WERE
                                                        ;       BAD, THUS SELECTING A NEW ADDR.

                                ;**********,) ERROR ((**********

                                ;;*****************************************************************
                                ;*TEST 7         *TEST THAT DATA CAN BE SENT FROM SIDE 1 TO SIDE 2 VIA FAST PATH REG
                                ;;*****************************************************************
002632  000004                  TST7:   SCOPE

                                                        ;READ DATA SIDE 2
002634  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000006                  .MD.=6
                                                        ;/READ FAST PATH REG.
002640  000006                  .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND .

002642  112777  000377  176570          MOVB    #377,@BSEL3     ;SET DATA TO BE WRITTEN
                                                        ;ISSUE COMMAND TO WRITE IT.
                                                        ;/-MCMD-
002650  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
002654  001424                  .WORD   KMCSR
        000007                  .MD.=7
                                                        ;/WRITE FAST PATH REG.
002656  000007                  .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND .
                                                        ;ALLOW SETTLE TIME
                                                        ;/-MCMD-
002660  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
002664  001424                  .WORD   KMCSR
        000001                  .MD.=1
                                                        ;/COMMAND=NOP.
002666  000001                  .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND .

002670  117737  176550  001126          MOVB    @BSEL5,$BDDAT   ;READ SIDE #1 UBSR.
002676  105037  001127          CLRB    $BDDAT+1
002702  012737  000072  001124  MOV     #72,$GDDAT      ;NORMAL=52 EXPECT BIT4
                                                        ;TO BE SET.
002710  023737  001124  001126  CMP     $GDDAT,$BDDAT   ;UBSR SIDE 1 OK? (BIT4 SET.)
002716  001402                  BEQ     1$

                                ;**********>> ERROR <<**********

002720  104001                  ERROR   1               ;SIDE 1 CSR BIT4 SHOULD BE SET
                                                        ;DATA WRITTEN INTO FAST PATH REG. BUT
                                                        ;NOT READ ON SIDE 2.

                                ;**********>> ERROR <<**********
```

```
                                        BR      TST10           ;;

                                1$:
                                        JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
                                        .MD.=1
                                                                ;/COMMAND=NOP.
                                        .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .
                                        MOVB    @MBSEL5,$BDDAT  ;READ SIDE #2 IOSR
                                        MOV     #16,$GDDAT      ;NORMAL=56, EXPECT BITS
                                                                ;TO BE CLEAR.
                                        CMP     $GDDAT,$BDDAT   ;IS IT CLEAR?
                                        BEQ     2$              ;YES-NEXT CHECK.

                                        ;**********>> ERROR <<**********

                                        ERROR   2               ;BITS OF SIDE #2 IOSR NOT CLEAR WHEN
                                                                ;SIDE #1 MADE XFER VIA FAST PATH.

                                        ;**********>> ERROR <<**********

                                        BR      TST10           ;;
                                2$:                             ;READ FAST PATH SIDE 2.
                                        JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
                                        .MD.=6
                                                                ;/READ FAST PATH REG.
                                        .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .
                                        MOVB    @MBSEL3,$BDDAT  ;READ FAST PATH RESULT-ANY DATA
                                        BNE     3$              ;GET XFERRED? YES-NEXT CHECK.
                                        MOV     #377,$GDDAT     ;HAD EXPECTED 377, BUT WOULD HAVE
                                                                ;SETTLED FOR ANYTHING BUT ZERO.

                                        ;**********>> ERROR <<**********

                                        ERROR   3               ;NO DATA YET THROUGH FAST PATH-
                                                                ;SIDE 1 TO SIDE 2.

                                        ;**********>> ERROR <<**********

                                        BR      TST10           ;;

                                3$:
                                                                ;/-MCMD-
                                        JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
                                        .WORD   KMCSR
                                        .MD.=1
                                                                ;/COMMAND=NOP.
                                        .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .
                                        MOVB    @BSEL5,$BDDAT   ;READ SIDE 1 UBSR.
                                        MOV     #52,$GDDAT      ;EXPECT NORMAL UBSR SETTING.
                                        CMP     $GDDAT,$BDDAT   ;DID BIT4 CLEAR?
                                        BEQ     4$              ;YES-NEXT TEST.
```

```
                                        ;**********>> ERROR <<**********
  825  003046  104001                   ERROR   1               ;TESTING TO SEE THAT BIT4 WOULD CLEAR AFTER
  826                                                           ;SIDE 2 FAST PATH REG. WAS READ.

                                        ;**********>> ERROR <<**********
  830  003050  000416                   BR      TST10           ;;
  831
  832  003052                      4$:
  833  003052  004537  012100           JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
  834           000001                   .MD.=1
  835                                                           ;/COMMAND=NOP.
  836  003056  000001                   .WORD   .MD.
  837                                   ;/RETURN HERE AFTER COMMAND .
  838  003060  117737  176330  001126   MOVB    @MBSEL5,$BDDAT  ;READ SIDE 2 CSR.
  839  003066  012737  000056  001124   MOV     #56,$GDDAT      ;EXPECT BITS TO SET AFTER FAST
  840                                                           ;PATH REG WAS READ.
  841  003074  023737  001124  001126   CMP     $GDDAT,$BDDAT   ;DID BITS SET?
  842  003102  001401                   BEQ     TST10           ;;

                                        ;**********>> ERROR <<**********
  846  003104  104000                   ERROR                   ;TESTING THAT SIDE 2 IOSR BITS
  847                                                           ;SETS AFTER A FAST PATH REG WAS READ

                                        ;**********>> ERROR <<**********

  851
  852                             ;;*****************************************************************
  853                             ;*TEST 10       *TEST THAT DATA CAN BE SENT FROM SIDE 2 TO SIDE 1 VIA FAST PATH REG
  854                             ;;*****************************************************************
  855  003106  000004             TST10:  SCOPE
  856
  857                                                           ;/-MCMD-
  858  003110  004537  011656           JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
  859  003114  001424                   .WORD   KMCSR
  860           000006                   .MD.=6
  861                                                           ;/READ FAST PATH REG.
  862  003116  000006                   .WORD   .MD.
  863                                   ;/RETURN HERE AFTER COMMAND .
  864
  865  003120  112777  000377  176262   MOVB    #377,@MBSEL3    ;SET DATA TO BE WRITTEN
  866                                                           ;ISSUE COMMAND TO WRITE IT.
  867  003126  004537  012100           JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
  868           000007                   .MD.=7
  869                                                           ;/WRITE FAST PATH REG.
  870  003132  000007                   .WORD   .MD.
  871                                   ;/RETURN HERE AFTER COMMAND .
  872                                                           ;ALLOW SETTLE TIME
  873  003134  004537  012100           JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
  874           000001                   .MD.=1
  875                                                           ;/COMMAND=NOP.
```

```
                                        .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .

003142  117737  176246  001126         MOVB    @MBSEL5,$BDDAT  ;READ SIDE #2 IOSR.
003150  012737  000076  001124         MOV     #76,$GDDAT      ;NORMAL=56, EXPECT BIT 4
                                                               ;TO BE SET.
003156  023737  001126  001124         CMP     $BDDAT,$GDDAT   ;IOSR SIDE 2 OK? (BIT4 SET).
003164  001402                         BEQ     1$

                                        ;**********>> ERROR <<**********

003166  104002                         ERROR   2               ;SIDE 2 IOSR BIT4 SHOULD BE SET
                                                               ;DATA WRITTEN INTO FAST PATH REG.
                                                               ;BUT NOT READ ON SIDE 1.

                                        ;**********>> ERROR <<**********

003170  000463                         BR      TST11           ;;

003172  117737  176246  001126  1$:    MOVB    @BSEL5,$BDDAT   ;READ SIDE #1 UBSR
003200  012737  000012  001124         MOV     #12,$GDDAT      ;NORMAL=51,EXPECT BITS
                                                               ;TO BE CLEAR.
003206  023737  001124  001126         CMP     $GDDAT,$BDDAT   ;IS IT CLEAR?
003214  001402                         BEQ     2$              ;YES-NEXT CHECK.

                                        ;**********>> ERROR <<**********

003216  104001                         ERROR   1               ;BITS OF SIDE 1 UBSR NOT CLEAR WHEN
                                                               ;SIDE 2 MADE XFER VIA FAST PATH.

                                        ;**********>> ERROR <<**********

003220  000447                         BR      TST11           ;;
                                                               ;READ FAST PATH SIDE 1.

003222                          2$:
                                                               ;/-MCMD-
003222  004537  011656                 JSR     R5,ISSUEC       ;/ISSUE COMMAND TO kMC #1.
003226  001424                         .WORD   KMCSR
        000006                         .MD.=6
                                                               ;/READ FAST PATH REG.
003230  000006                         .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .
003232  117737  176202  001126         MOVB    @BSEL3,$BDDAT   ;READ FAST PATH. ANY DATA GET
003240  001005                         BNE     3$              ;XFERRED? YES-NEXT CHECK.
003242  012737  000377  001124         MOV     #377,$GDDAT     ;HAD EXPECTED 377, BUT WOULD HAVE
                                                               ;SETTLED FOR ANYTHING BUT ZERO.

                                        ;**********>> ERROR <<**********

003250  104004                         ERROR   4               ;NO DATA GOT THROUGH FAST PATH
                                                               ;SIDE 2 TO SIDE 1.

                                        ;**********>> ERROR <<**********
```

```
                                                BR      TST11           ;;
                                3$:
                                                JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
                                                .MD.=1
                                                                        ;/COMMAND=NOP.
                                                .WORD   .MD.
                                                ;/RETURN HERE AFTER COMMAND .
                                                MOVB    @MBSEL5,$BDDAT  ;READ SIDE 2 IOSR.
                                                MOV     #56,$GDDAT      ;EXPECT NORMAL IOSR SETTING
                                                CMP     $GDDAT,$BDDAT   ;DID BIT4 CLEAR?
                                                BEQ     4$              ;YES-NEXT CHECK.

                                                ;**********>> ERROR <<**********

                                                ERROR   2               ;TESTING TO SEE IF BIT4 WOULD CLEAR AFTER
                                                                        ;SIDE 1 FAST PATH REG. WAS READ.

                                                ;**********>> ERROR <<**********

                                                BR      TST11           ;;
                                4$:             MOVB    @BSEL5,$BDDAT   ;READ SIDE 1 UBSR.
                                                MOV     #52,$GDDAT      ;EXPECT BITS TO SET AFTER FAST PATH
                                                                        ;REG. WAS READ.
                                                CMP     $GDDAT,$BDDAT   ;DID BITS SET?
                                                BEQ     TST11           ;;

                                                ;**********>> ERROR <<**********

                                                ERROR   1               ;TESTING THAT SIDE 1 UBSR BITS
                                                                        ;SETS AFTER FAST PATH REG WAS READ.

                                                ;**********>> ERROR <<**********


                                ;;*****************************************************************
                                ;*TEST 11        *TEST THAT PATTERN 1 CAN BE SENT FROM SIDE 1 TO SIDE 2 VIA FAST PATH REG
                                                ;*
                                                ;*IN THIS TEST WE ARE GOING TO XFER DATA FROM SIDE 1
                                                ;*TO SIDE 2 AND CHECK THE RESULTS. WE KNOW FROM A
                                                ;*PREVIOUS TEST THAT SOME DATA CAN GET THROUGH.
                                                ;*
                                ;;*****************************************************************
                                TST11:  SCOPE
                                                                        ;/-DXFRF-
                                                                        ;/-MCMD-
                                                JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
                                                .WORD   KMCSR
                                                .MD.=1
                                                                        ;/COMMAND=NOP.
```

```
 984  003350  000001                          .WORD   .MD.
 985                                          ;/RETURN HERE AFTER COMMAND .
 986
 987  003352  012737  000001  001124          MOV     #1,$GDDAT       ;/RECORD XFERR PATTERN
 988  003360  113777  001124  176052          MOVB    $GDDAT,@BSEL3 ;/WRITE PATTERN TO U CODE.
 989                                                                  ;/-MCMD-
 990  003366  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
 991  003372  001424                          .WORD   KMCSR
 992          000007                          .MD.=7
 993                                                                  ;/WRITE FAST PATH REG.
 994  003374  000007                          .WORD   .MD.
 995                                          ;/RETURN HERE AFTER COMMAND .
 996  003376  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
 997          000006                          .MD.=6
 998                                                                  ;/READ FAST PATH REG.
 999  003402  000006                          .WORD   .MD.
1000                                          ;/RETURN HERE AFTER COMMAND .
1001
1002  003404  117737  176000  001126          MOVB    @MBSEL3,$BDDAT ;/READ SIDE #2
1003  003412  023737  001124  001126          CMP     $GDDAT,$BDDAT   ;/DATA SENT=DATA RECEIVED?
1004  003420  001401                          BEQ     1$

                                             ;**********>> ERROR <<**********

1008  003422  104004                          ERROR   4               ;/IN PROPER XFER OF PATTERN 1 FROM
1009                                                                  ;/SIDE 1 TO SIDE 2

                                             ;**********>> ERROR <<**********

1013  003424  005037  001124          1$:     CLR     $GDDAT          ;/NOW XFER A ZERO PATTERN
1014  003430  105077  176004                  CLRB    @BSEL3
1015                                                                  ;/-MCMD-
1016  003434  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
1017  003440  001424                          .WORD   KMCSR
1018          000007                          .MD.=7
1019                                                                  ;/WRITE FAST PATH REG.
1020  003442  000007                          .WORD   .MD.
1021                                          ;/RETURN HERE AFTER COMMAND .
1022  003444  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
1023          000006                          .MD.=6
1024                                                                  ;/READ FAST PATH REG.
1025  003450  000006                          .WORD   .MD.
1026                                          ;/RETURN HERE AFTER COMMAND .
1027
1028  003452  117737  175732  001126          MOVB    @MBSEL3,$BDDAT ;/READ PATTERN ERROR IF NON-ZERO
1029  003460  001401                          BEQ     TST12           ;;

                                             ;**********>> ERROR <<**********

1033  003462  104004                          ERROR   4               ;/FAILED TO XFER ZERO PATTERN AFTER

                                             ;**********>> ERROR <<**********

1037
```

```
                                ;;*****************************************************************
                                ;*TEST 12        *TEST THAT PATTERN 2 CAN BE SENT FROM SIDE 1 TO SIDE 2 VIA FAST PATH REG
                                ;*
                                ;*IN THIS TEST WE ARE GOING TO XFER DATA FROM SIDE 1
                                ;*TO SIDE 2 AND CHECK THE RESULTS. WE KNOW FROM A
                                ;*PREVIOUS TEST THAT SOME DATA CAN GET THROUGH.
                                ;*
                                ;;*****************************************************************
003464  000004        TST12:  SCOPE
                                                        ;/-DXFRF-
                                                        ;/-MCMD-
003466  004537  011656          JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
003472  001424                  .WORD   KMCSR
        000001                  .MD.=1
                                                        ;/COMMAND=NOP.
003474  000001                  .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND .

003476  012737  000002  001124  MOV     #2,$GDDAT       ;/RECORD XFERR PATTERN
003504  113777  001124  175726  MOVB    $GDDAT,@BSEL3 ;/WRITE PATTERN TO U CODE.
                                                        ;/-MCMD-
003512  004537  011656          JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
003516  001424                  .WORD   KMCSR
        000007                  .MD.=7
                                                        ;/WRITE FAST PATH REG.
003520  000007                  .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND .
003522  004537  012100          JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000006                  .MD.=6
                                                        ;/READ FAST PATH REG.
003526  000006                  .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND .

003530  117737  175654  001126  MOVB    @MBSEL3,$BDDAT ;/READ SIDE #2
003536  023737  001124  001126  CMP     $GDDAT,$BDDAT   ;/DATA SENT=DATA RECEIVED?
003544  001401                  BEQ     1$

                                ;**********>> ERROR <<**********

003546  104004                  ERROR   4               ;/IN PROPER XFER OF PATTERN 2 FROM
                                                        ;/SIDE 1 TO SIDE 2

                                ;**********>> ERROR <<**********

003550  005037  001124  1$:     CLR     $GDDAT          ;/NOW XFER A ZERO PATTERN
003554  105077  175660          CLRB    @BSEL3
                                                        ;/-MCMD-
003560  004537  011656          JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
003564  001424                  .WORD   KMCSR
        000007                  .MD.=7
                                                        ;/WRITE FAST PATH REG.
003566  000007                  .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND .
003570  004537  012100          JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR  LIST FOR.
```

```
1092            000006                          .MD.=6
1093                                                            ;/READ FAST PATH REG.
1094  003574    000006                          .WORD   .MD.
1095                                            ;/RETURN HERE AFTER COMMAND .
1096
1097  003576    117737  175606  001126          MOVB    @MBSEL3,$BDDAT ;/READ PATTERN ERROR IF NON-ZERO
1098  003604    001401                          BEQ     TST13           ;;

                                                ;**********>> ERROR <<**********

1102  003606    104004                          ERROR   4               ;/FAILED TO XFER ZERO PATTERN AFTER

                                                ;**********>> ERROR <<**********

1106
1107                                    ;;**************************************************************
1108                                    ;*TEST 13        *TEST THAT PATTERN 4 CAN BE SENT FROM SIDE 1 TO SIDE 2 VIA FAST PATH REG
1109                                            ;*
1110                                            ;*IN THIS TEST WE ARE GOING TO XFER DATA FROM SIDE 1
1111                                            ;*TO SIDE 2 AND CHECK THE RESULTS. WE KNOW FROM A
1112                                            ;*PREVIOUS TEST THAT SOME DATA CAN GET THROUGH.
1113                                            ;*
1114                                    ;;**************************************************************
1115  003610    000004                  TST13:  SCOPE
1116                                                            ;/-DXFRF-
1117                                                            ;/-MCMD-
1118  003612    004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
1119  003616    001424                          .WORD   KMCSR
1120            000001                          .MD.=1
1121                                                            ;/COMMAND=NOP.
1122  003620    000001                          .WORD   .MD.
1123                                            ;/RETURN HERE AFTER COMMAND .
1124
1125  003622    012737  000004  001124          MOV     #4,$GDDAT       ;/RECORD XFERR PATTERN
1126  003630    113777  001124  175602          MOVB    $GDDAT,@BSEL3 ;/WRITE PATTERN TO U CODE.
1127                                                            ;/-MCMD-
1128  003636    004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
1129  003642    001424                          .WORD   KMCSR
1130            000007                          .MD.=7
1131                                                            ;/WRITE FAST PATH REG.
1132  003644    000007                          .WORD   .MD.
1133                                            ;/RETURN HERE AFTER COMMAND .
1134  003646    004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
1135            000006                          .MD.=6
1136                                                            ;/READ FAST PATH REG.
1137  003652    000006                          .WORD   .MD.
1138                                            ;/RETURN HERE AFTER COMMAND .
1139
1140  003654    117737  175530  001126          MOVB    @MBSEL3,$BDDAT ;/READ SIDE #2
1141  003662    023737  001124  001126          CMP     $GDDAT,$BDDAT   ;/DATA SENT=DATA RECEIVED?
1142  003670    001401                          BEQ     1$

                                                ;**********>> ERROR <<**********
```

```
1146  003672  104004                          ERROR   4               ;/IN PROPER XFER OF PATTERN 4 FROM
1147                                                                  ;/SIDE 1 TO SIDE 2

                                              ;**********>> ERROR <<**********

1151  003674  005037  001124          1$:     CLR     $GDDAT          ;/NOW XFER A ZERO PATTERN
1152  003700  105077  175534                  CLRB    @BSEL3
1153                                                                  ;/-MCMD-
1154  003704  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
1155  003710  001424                          .WORD   KMCSR
1156          000007                          .MD.=7
1157                                                                  ;/WRITE FAST PATH REG.
1158  003712  000007                          .WORD   .MD.
1159                                          ;/RETURN HERE AFTER COMMAND .
1160  003714  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
1161          000006                          .MD.=6
1162                                                                  ;/READ FAST PATH REG.
1163  003720  000006                          .WORD   .MD.
1164                                          ;/RETURN HERE AFTER COMMAND .
1165
1166  003722  117737  175462  001126          MOVB    @MBSEL3,$BDDAT ;/READ PATTERN ERROR IF NON-ZERO
1167  003730  001401                          BEQ     TST14           ;;

                                              ;**********>> ERROR <<**********

1171  003732  104004                          ERROR   4               ;/FAILED TO XFER ZERO PATTERN AFTER

                                              ;**********>> ERROR <<**********

1175
1176                                  ;;*****************************************************************
1177                                  ;*TEST 14        *TEST THAT PATTERN 10 CAN BE SENT FROM SIDE 1 TO SIDE 2 VIA FAST PATH RE
1178                                          ;*
1179                                          ;*IN THIS TEST WE ARE GOING TO XFER DATA FROM SIDE 1
1180                                          ;*TO SIDE 2 AND CHECK THE RESULTS. WE KNOW FROM A
1181                                          ;*PREVIOUS TEST THAT SOME DATA CAN GET THROUGH.
1182                                          ;*
1183                                  ;;*****************************************************************
1184  003734  000004                  TST14:  SCOPE
1185                                                                  ;/-DXFRF-
1186                                                                  ;/-MCMD-
1187  003736  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
1188  003742  001424                          .WORD   KMCSR
1189          000001                          .MD.=1
1190                                                                  ;/COMMAND=NOP.
1191  003744  000001                          .WORD   .MD.
1192                                          ;/RETURN HERE AFTER COMMAND .
1193
1194  003746  012737  000010  001124          MOV     #10,$GDDAT      ;/RECORD XFERR PATTERN
1195  003754  113777  001124  175456          MOVB    $GDDAT,@BSEL3 ;/WRITE PATTERN TO U CODE.
1196                                                                  ;/-MCMD-
1197  003762  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
1198  003766  001424                          .WORD   KMCSR
1199          000007                          .MD =7
```

```
1200                                                    ;/WRITE FAST PATH REG.
1201  003770  000007                                    .WORD   .MD.
1202                                                    ;/RETURN HERE AFTER COMMAND .
1203  003772  004537  012100                            JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
1204          000006                                    .MD.=6
1205                                                    ;/READ FAST PATH REG.
1206  003776  000006                                    .WORD   .MD.
1207                                                    ;/RETURN HERE AFTER COMMAND .
1208
1209  004000  117737  175404  001126                    MOVB    @MBSEL3,$BDDAT  ;/READ SIDE #2
1210  004006  023737  001124  001126                    CMP     $GDDAT,$BDDAT   ;/DATA SENT=DATA RECEIVED?
1211  004014  001401                                    BEQ     1$

                                                        ;**********>> ERROR <<**********

1215  004016  104004                                    ERROR   4               ;/IN PROPER XFER OF PATTERN 10 FROM
1216                                                    ;/SIDE 1 TO SIDE 2

                                                        ;**********>> ERROR <<**********

1220  004020  005037  001124          1$:               CLR     $GDDAT          ;/NOW XFER A ZERO PATTERN
1221  004024  105077  175410                            CLRB    @BSEL3
1222                                                    ;/-MCMD-
1223  004030  004537  011656                            JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
1224  004034  001424                                    .WORD   KMCSR
1225          000007                                    .MD.=7
1226                                                    ;/WRITE FAST PATH REG.
1227  004036  000007                                    .WORD   .MD.
1228                                                    ;/RETURN HERE AFTER COMMAND .
1229  004040  004537  012100                            JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
1230          000006                                    .MD.=6
1231                                                    ;/READ FAST PATH REG.
1232  004044  000006                                    .WORD   .MD.
1233                                                    ;/RETURN HERE AFTER COMMAND .
1234
1235  004046  117737  175336  001126                    MOVB    @MBSEL3,$BDDAT  ;/READ PATTERN ERROR IF NON-ZERO
1236  004054  001401                                    BEQ     TST15           ;;

                                                        ;**********>> ERROR <<**********

1240  004056  104004                                    ERROR   4               ;/FAILED TO xFER ZERO PATTERN AFTER

                                                        ;**********>> ERROR <<**********

1244
1245                                            ;;**************************************************************
1246                                            ;*TEST 15        *TEST THAT PATTERN 20 CAN BE SENT FROM SIDE 1 TO SIDE 2 VIA FAST PATH RE
1247                                            ;*
1248                                            ;*IN THIS TEST WE ARE GOING TO XFER DATA FROM SIDE 1
1249                                            ;*TO SIDE 2 AND CHECK THE RESULTS. WE KNOW FROM A
1250                                            ;*PREVIOUS TEST THAT SOME DATA CAN GET THROUGH.
1251                                            ;*
1252                                            ;;**************************************************************
1253  004060  000004                            TST15:  SCOPE
```

```
                                                        ;/-DXFRF-
                                                        ;/-MCMD-
004062  004537  011656          JSR     R5,ISSUEC      ;/ISSUE COMMAND TO KMC #1.
004066  001424                  .WORD   KMCSR
        000001                  .MD.=1
                                                        ;/COMMAND=NOP.
004070  000001                  .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND .

004072  012737  000020  001124  MOV     #20,$GDDAT     ;/RECORD XFERR PATTERN
004100  113777  001124  175332  MOVB    $GDDAT,@BSEL3 ;/WRITE PATTERN TO U CODE.
                                                        ;/-MCMD-
004106  004537  011656          JSR     R5,ISSUEC      ;/ISSUE COMMAND TO KMC #1.
004112  001424                  .WORD   KMCSR
        000007                  .MD.=7
                                                        ;/WRITE FAST PATH REG.
004114  000007                  .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND .
004116  004537  012100          JSR     R5,KMSIM       ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000006                  .MD.=6
                                                        ;/READ FAST PATH REG.
004122  000006                  .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND .

004124  117737  175260  001126  MOVB    @MBSEL3,$BDDAT ;/READ SIDE #2
004132  023737  001124  001126  CMP     $GDDAT,$BDDAT  ;/DATA SENT=DATA RECEIVED?
004140  001401                  BEQ     1$

                                ;**********>> ERROR <<**********

004142  104004                  ERROR   4              ;/IN PROPER XFER OF PATTERN 20 FROM
                                                        ;/SIDE 1 TO SIDE 2

                                ;**********>> ERROR <<**********

004144  005037  001124  1$:     CLR     $GDDAT         ;/NOW XFER A ZERO PATTERN
004150  105077  175264          CLRB    @BSEL3
                                                        ;/-MCMD-
004154  004537  011656          JSR     R5,ISSUEC      ;/ISSUE COMMAND TO KMC #1.
004160  001424                  .WORD   KMCSR
        000007                  .MD.=7
                                                        ;/WRITE FAST PATH REG.
004162  000007                  .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND .
004164  004537  012100          JSR     R5,KMSIM       ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000006                  .MD.=6
                                                        ;/READ FAST PATH REG.
004170  000006                  .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND .

004172  117737  175212  001126  MOVB    @MBSEL3,$BDDAT ;/READ PATTERN ERROR IF NON-ZERO
004200  001401                  BEQ     TST16          ;;

                                ;**********>> ERROR <<**********
```

```
1309  004202  104004                        ERROR   4               ;/FAILED TO xFER ZERO PATTERN AFTER
                                            ;**********>> ERROR <<**********

1313
1314                                ;;*****************************************************************
1315                                ;*TEST 16        *TEST THAT PATTERN 40 CAN BE SENT FROM SIDE 1 TO xIDE 2 VIA FAST PATH RE
1316                                ;*
1317                                ;*IN THIS TEST WE ARE GOING TO XFER DATA FROM SIDE 1
1318                                ;*TO SIDE 2 AND CHECK THE RESULTS. WE KNOW FROM A
1319                                ;*PREVIOUS TEST THAT SOME DATA CAN GET THROUGH.
1320                                ;*
1321                                ;;*****************************************************************
1322  004204  000004                TST16:  SCOPE
1323                                                        ;/-DXFRF-
1324                                                        ;/-MCMD-
1325  004206  004537  011656                JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
1326  004212  001424                        .WORD   KMCSR
1327           000001                       .MD.=1
1328                                                        ;/COMMAND=NOP.
1329  004214  000001                        .WORD   .MD.
1330                                        ;/RETURN HERE AFTER COMMAND .
1331
1332  004216  012737  000040  001124        MOV     #40,$GDDAT      ;/RECORD XFERR PATTERN
1333  004224  113777  001124  175206        MOVB    $GDDAT,@BSEL3 ;/WRITE PATTERN TO u CODE.
1334                                                        ;/-MCMD-
1335  004232  004537  011656                JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
1336  004236  001424                        .WORD   KMCSR
1337           000007                       .MD.=7
1338                                                        ;/WRITE FAST PATH REG.
1339  004240  000007                        .WORD   .MD.
1340                                        ;/RETURN HERE AFTER COMMAND .
1341  004242  004537  012100                JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
1342           000006                       .MD.=6
1343                                                        ;/READ FAST PATH REG.
1344  004246  000006                        .WORD   .MD.
1345                                        ;/RETURN HERE AFTER COMMAND .
1346
1347  004250  117737  175134  001126        MOVB    @MBSEL3,$BDDAT ;/READ SIDE #2
1348  004256  023737  001124  001126        CMP     $GDDAT,$BDDAT   ;/DATA SENT=DATA RECEIVED?
1349  004264  001401                        BEQ     1$
                                            ;**********>> ERROR <<**********

1353  004266  104004                        ERROR   4               ;/IN PROPER XFER OF PATTERN 40 FROM
1354                                                        ;/SIDE 1 TO xIDE 2
                                            ;**********>> ERROR <<**********

1358  004270  005037  001124        1$:     CLR     $GDDAT          ;/NOW XFER A ZERO PATTERN
1359  004274  105077  175140                CLRB    @BSEL3
1360                                                        ;/-MCMD-
1361  004300  004537  011656                JSR     R5,ISSUEC       ;/ISSUE COMMAND TO kMC #1.
```

```
1362  004304  001424                        .WORD   KMCSR
1363          000007                        .MD.=7
1364                                                  ;/WRITE FAST PATH REG.
1365  004306  000007                        .WORD   .MD.
1366                                        ;/RETURN HERE AFTER COMMAND .
1367  004310  004537  012100                JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
1368          000006                        .MD.=6
1369                                                  ;/READ FAST PATH REG.
1370  004314  000006                        .WORD   .MD.
1371                                        ;/RETURN HERE AFTER COMMAND .
1372
1373  004316  117737  175066  001126        MOVB    @MBSEL3,$BDDAT ;/READ PATTERN ERROR IF NON-ZERO
1374  004324  001401                        BEQ     TST17           ;;

                                            ;**********>> ERROR <<**********

1378  004326  104004                        ERROR   4               ;/FAILED TO XFER ZERO PATTERN AFTER

                                            ;**********>> ERROR <<**********

1382
1383                                    ;;*****************************************************************
1384                                    ;*TEST 17        *TEST THAT PATTERN 100 CAN BE SENT FROM SIDE 1 TO SIDE 2 VIA FAST PATH R
1385                                            ;*
1386                                            ;*IN THIS TEST WE ARE GOING TO XFER DATA FROM SIDE 1
1387                                            ;*TO SIDE 2 AND CHECK THE RESULTS. WE KNOW FROM A
1388                                            ;*PREVIOUS TEST THAT SOME DATA CAN GET THROUGH.
1389                                            ;*
1390                                    ;;*****************************************************************
1391  004330  000004                    TST17:  SCOPE
1392                                                  ;/-DXFRF-
1393                                                  ;/-MCMD-
1394  004332  004537  011656                        JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
1395  004336  001424                        .WORD   KMCSR
1396          000001                        .MD.=1
1397                                                  ;/COMMAND=NOP.
1398  004340  000001                        .WORD   .MD.
1399                                        ;/RETURN HERE AFTER COMMAND .
1400
1401  004342  012737  000100  001124        MOV     #100,$GDDAT     ;/RECORD XFERR PATTERN
1402  004350  113777  001124  175062        MOVB    $GDDAT,@BSEL3 ;/WRITE PATTERN TO U CODE.
1403                                                  ;/-MCMD-
1404  004356  004537  011656                JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
1405  004362  001424                        .WORD   KMCSR
1406          000007                        .MD.=7
1407                                                  ;/WRITE FAST PATH REG.
1408  004364  000007                        .WORD   .MD.
1409                                        ;/RETURN HERE AFTER COMMAND .
1410  004366  004537  012100                JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
1411          000006                        .MD.=6
1412                                                  ;/READ FAST PATH REG.
1413  004372  000006                        .WORD   .MD.
1414                                        ;/RETURN HERE AFTER COMMAND .
1415
```

```
1416  004374  117737  175010  001126          MOVB    @MBSEL3,$BDDAT ;/READ SIDE #2
1417  004402  023737  001124  001126          CMP     $GDDAT,$BDDAT  ;/DATA SENT=DATA RECEIVED?
1418  004410  001401                          BEQ     1$

                                              ;**********>> ERROR <<**********

1422  004412  104004                          ERROR   4              ;/IN PROPER XFER OF PATTERN 100 FROM
1423                                                                 ;/SIDE 1 TO SIDE 2

                                              ;**********>> ERROR <<**********

1427  004414  005037  001124          1$:     CLR     $GDDAT         ;/NOW XFER A ZERO PATTERN
1428  004420  105077  175014                  CLRB    @BSEL3
1429                                                                 ;/-MCMD-
1430  004424  004537  011656                  JSR     R5,ISSUEC      ;/ISSUE COMMAND TO KMC #1.
1431  004430  001424                          .WORD   KMCSR
1432          000007                          .MD.=7
1433                                                                 ;/WRITE FAST PATH REG.
1434  004432  000007                          .WORD   .MD.
1435                                          ;/RETURN HERE AFTER COMMAND .
1436  004434  004537  012100                  JSR     R5,KMSIM       ;/DMC SIMULATE KMC INSTR. LIST FOR.
1437          000006                          .MD.=6
1438                                                                 ;/READ FAST PATH REG.
1439  004440  000006                          .WORD   .MD.
1440                                          ;/RETURN HERE AFTER COMMAND .
1441
1442  004442  117737  174742  001126          MOVB    @MBSEL3,$BDDAT ;/READ PATTERN ERROR IF NON-ZERO
1443  004450  001401                          BEQ     TST20          ;;

                                              ;**********>> ERROR <<**********

1447  004452  104004                          ERROR   4              ;/FAILED TO XFER ZERO PATTERN AFTER

                                              ;**********>> ERROR <<**********

1451
1452                                  ;;*****************************************************************
1453                                  ;*TEST 20       *TEST THAT PATTERN 200 CAN BE SENT FROM SIDE 1 TO SIDE 2 VIA FAST PATH R
1454                                          ;*
1455                                          ;*IN THIS TEST WE ARE GOING TO xFER DATA FROM SIDE 1
1456                                          ;*TO sIDE 2 AND CHECK THE RESULTS. WE KNOW FROM A
1457                                          ;*PREVIOUS TEST THAT SOME DATA CAN GET THROUGH.
1458                                          ;*
1459                                  ;;*****************************************************************
1460  004454  000004                  TST20:  SCOPE
1461                                                                 ;/-DXFRF-
1462                                                                 ;/-MCMD-
1463  004456  004537  011656                  JSR     R5,ISSUEC      ;/ISSUE COMMAND TO KMC #1.
1464  004462  001424                          .WORD   KMCSR
1465          000001                          .MD.=1
1466                                                                 ;/COMMAND=NOP.
1467  004464  000001                          .WORD   .MD.
1468                                          ;/RETURN HERE AFTER COMMAND .
1469
```

```
1470  004466  012737  000200  001124          MOV     #200,$GDDAT     ;/RECORD XFERR PATTERN
1471  004474  113777  001124  174736          MOVB    $GDDAT,@BSEL3 ;/WRITE PATTERN TO u CODE.
1472                                                                  ;/-MCMD-
1473  004502  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
1474  004506  001424                          .WORD   KMCSR
1475          000007                          .MD.=7
1476                                                                  ;/WRITE FAST PATH REG.
1477  004510  000007                          .WORD   .MD.
1478                                          ;/RETURN HERE AFTER COMMAND .
1479  004512  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
1480          000006                          .MD.=6
1481                                                                  ;/READ FAST PATH REG.
1482  004516  000006                          .WORD   .MD.
1483                                          ;/RETURN HERE AFTER COMMAND .
1484
1485  004520  117737  174664  001126          MOVB    @MBSEL3,$BDDAT ;/READ SIDE #2
1486  004526  023737  001124  001126          CMP     $GDDAT,$BDDAT   ;/DATA SENT=DATA RECEIVED?
1487  004534  001401                          BEQ     1$

                                              ;**********>> ERROR <<**********

1491  004536  104004                          ERROR   4               ;/IN PROPER XFER OF PATTERN 200 FROM
1492                                                                  ;/SIDE 1 TO SIDE 2

                                              ;**********>> ERROR <<**********

1496  004540  005037  001124          1$:     CLR     $GDDAT          ;/NOW XFER A ZERO PATTERN
1497  004544  105077  174670                  CLRB    @BSEL3
1498                                                                  ;/-MCMD-
1499  004550  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
1500  004554  001424                          .WORD   KMCSR
1501          000007                          .MD.=7
1502                                                                  ;/WRITE FAST PATH REG.
1503  004556  000007                          .WORD   .MD.
1504                                          ;/RETURN HERE AFTER COMMAND .
1505  004560  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
1506          000006                          .MD.=6
1507                                                                  ;/READ FAST PATH REG.
1508  004564  000006                          .WORD   .MD.
1509                                          ;/RETURN HERE AFTER COMMAND .
1510
1511  004566  117737  174616  001126          MOVB    @MBSEL3,$BDDAT ;/READ PATTERN ERROR IF NON-ZERO
1512  004574  001401                          BEQ     TST21           ;;

                                              ;**********>> ERROR <<**********

1516  004576  104004                          ERROR   4               ;/FAILED TO xFER ZERO PATTERN AFTER

                                              ;**********>> ERROR <<**********

1520
1521                                  ;;*****************************************************************
1522                                  ;*TEST 21        *TEST THAT PATTERN 1 CAN BE SENT FROM SIDE 2 TO SIDE 1 VIA FAST PATH REG
1523                                  ;*
```

```
                                        ;*IN THIS TEST WE ARE GOING TO XFER DATA FROM SIDE 2
                                        ;*TO SIDE 1 AND CHECK THE RESULTS. WE KNOW FROM A
                                        ;*PREVIOUS TEST THAT SOME DATA CAN GET THROUGH.
                                        ;*
                                ;;**************************************************************
004600  000004                 TST21:  SCOPE
                                                        ;/-DXFRF-
004602  004537  012100                 JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000001                          .MD.=1
                                                        ;/COMMAND=NOP.
004606  000001                 .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND .

004610  012737  000001  001124          MOV     #1,$GDDAT       ;/RECORD XFERR PATTERN
004616  113777  001124  174564          MOVB    $GDDAT,@MBSEL3  ;/WRITE PATTERN TO U CODE.
004624  004537  012100                 JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000007                          .MD.=7
                                                        ;/WRITE FAST PATH REG.
004630  000007                 .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND .
                                                        ;/-MCMD-
004632  004537  011656                 JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
004636  001424                 .WORD   KMCSR
        000006                          .MD.=6
                                                        ;/READ FAST PATH REG.
004640  000006                 .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND .

004642  117737  174572  001126          MOVB    @BSEL3,$BDDAT   ;/READ SIDE #1
004650  023737  001124  001126          CMP     $GDDAT,$BDDAT   ;/DATA SENT=DATA RECEIVED?
004656  001401                         BEQ     1$

                                ;**********>> ERROR <<**********

004660  104003                         ERROR   3               ;INPROPER XFER OF PATTERN 1 FROM
                                                                ;/SIDE 2 TO SIDE 1

                                ;**********>> ERROR <<**********

004662  005037  001124         1$:     CLR     $GDDAT          ;/NOW XFER A ZERO PATTERN
004666  105077  174516                 CLRB    @MBSEL3
004672  004537  012100                 JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000007                          .MD.=7
                                                        ;/WRITE FAST PATH REG.
004676  000007                 .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND .
                                                        ;/-MCMD-
004700  004537  011656                 JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
004704  001424                 .WORD   KMCSR
        000006                          .MD.=6
                                                        ;/READ FAST PATH REG.
004706  000006                 .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND .
```

```
                                        MOVB    @BSEL3,$BDDAT ;/READ PATTERN ERROR IF NON-ZERO
                                        BEQ     TST22         ;;

                                        ;**********)) ERROR ((**********

                                        ERROR   3             ;FAILED TO XFER ZERO PATTERN.

                                        ;**********)) ERROR ((**********


                                ;;**********************************************************************
                                ;*TEST 22        *TEST THAT PATTERN 2 CAN BE SENT FROM SIDE 2 TO SIDE 1 VIA FAST PATH REG
                                        ;*
                                        ;*IN THIS TEST WE ARE GOING TO XFER DATA FROM SIDE 2
                                        ;*TO SIDE 1 AND CHECK THE RESULTS. WE KNOW FROM A
                                        ;*PREVIOUS TEST THAT SOME DATA CAN GET THROUGH.
                                        ;*
                                ;;**********************************************************************
004722  000004                 TST22:  SCOPE
                                                              ;/-DXFRF-
004724  004537  012100                 JSR     R5,KMSIM      ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000001                         .MD.=1
                                                              ;/COMMAND=NOP.
004730  000001                         .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .

004732  012737  000002  001124         MOV     #2,$GDDAT     ;/RECORD XFERR PATTERN
004740  113777  001124  174442         MOVB    $GDDAT,@MBSEL3 ;/WRITE PATTERN TO U CODE.
004746  004537  012100                 JSR     R5,KMSIM      ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000007                         .MD.=7
                                                              ;/WRITE FAST PATH REG.
004752  000007                         .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .

                                                              ;/-MCMD-
004754  004537  011656                 JSR     R5,ISSUEC     ;/ISSUE COMMAND TO KMC #1.
004760  001424                         .WORD   KMCSR
        000006                         .MD.=6
                                                              ;/READ FAST PATH REG.
004762  000006                         .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .

004764  117737  174450  001126         MOVB    @BSEL3,$BDDAT ;/READ SIDE #1
004772  023737  001124  001126         CMP     $GDDAT,$BDDAT ;/DATA SENT=DATA RECEIVED?
005000  001401                         BEQ     1$

                                        ;**********)) ERROR ((**********

005002  104003                         ERROR   3             ;INPROPER XFER OF PATTERN 2 FROM
                                                              ;/SIDE 2 TO SIDE 1

                                        ;**********)) ERROR ((**********

005004  005037  001124         1$:     CLR     $GDDAT        ;/NOW XFER A ZERO PATTERN
005010  105077  174374                 CLRB    @MBSEL3
```

```
1632  005014  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
1633          000007                          .MD.=7
1634                                          ;/WRITE FAST PATH REG.
1635  005020  000007                          .WORD   .MD.
1636                                          ;/RETURN HERE AFTER COMMAND .
1637                                          ;/-MCMD-
1638  005022  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
1639  005026  001424                          .WORD   KMCSR
1640          000006                          .MD.=6
1641                                          ;/READ FAST PATH REG.
1642  005030  000006                          .WORD   .MD.
1643                                          ;/RETURN HERE AFTER COMMAND .
1644
1645  005032  117737  174402  001126          MOVB    @BSEL3,$BDDAT ;/READ PATTERN ERROR IF NON-ZERO
1646  005040  001401                          BEQ     TST23           ;;

                                             ;**********>> ERROR <<**********

1650  005042  104003                          ERROR   3               ;FAILED TO XFER ZERO PATTERN.

                                             ;**********>> ERROR <<**********


1654
1655                                    ;;*****************************************************************
1656                                    ;*TEST 23        *TEST THAT PATTERN 4 CAN BE SENT FROM SIDE 2 TO SIDE 1 VIA FAST PATH REG
1657                                    ;*
1658                                    ;*IN THIS TEST WE ARE GOING TO XFER DATA FROM SIDE 2
1659                                    ;*TO SIDE 1 AND CHECK THE RESULTS. WE KNOW FROM A
1660                                    ;*PREVIOUS TEST THAT SOME DATA CAN GET THROUGH.
1661                                    ;*
1662                                    ;;*****************************************************************
1663  005044  000004                    TST23:  SCOPE
1664                                          ;/-DXFRF-
1665  005046  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
1666          000001                          .MD.=1
1667                                          ;/COMMAND=NOP.
1668  005052  000001                          .WORD   .MD.
1669                                          ;/RETURN HERE AFTER COMMAND .
1670
1671  005054  012737  000004  001124          MOV     #4,$GDDAT       ;/RECORD XFERR PATTERN
1672  005062  113777  001124  174320          MOVB    $GDDAT,@MBSEL3 ;/WRITE PATTERN TO u CODE.
1673  005070  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
1674          000007                          .MD.=7
1675                                          ;/WRITE FAST PATH REG.
1676  005074  000007                          .WORD   .MD.
1677                                          ;/RETURN HERE AFTER COMMAND .
1678                                          ;/-MCMD-
1679  005076  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
1680  005102  001424                          .WORD   KMCSR
1681          000006                          .MD.=6
1682                                          ;/READ FAST PATH REG.
1683  005104  000006                          .WORD   .MD.
1684                                          ;/RETURN HERE AFTER COMMAND .
1685
```

```
1686  005106  117737  174326  001126          MOVB    @BSEL3,$BDDAT ;/READ SIDE #1
1687  005114  023737  001124  001126          CMP     $GDDAT,$BDDAT   ;/DATA SENT=DATA RECEIVED?
1688  005122  001401                          BEQ     1$

                                              ;**********>> ERROR <<**********

1692  005124  104003                          ERROR   3               ;INPROPER XFER OF PATTERN 4 FROM
1693                                                                  ;/SIDE 2 TO SIDE 1

                                              ;**********>> ERROR <<**********

1697  005126  005037  001124          1$:     CLR     $GDDAT          ;/NOW XFER A ZERO PATTERN
1698  005132  105077  174252                  CLRB    @MBSEL3
1699  005136  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
1700            000007                        .MD.=7
1701                                                                  ;/WRITE FAST PATH REG.
1702  005142  000007                          .WORD   .MD.
1703                                          ;/RETURN HERE AFTER COMMAND .
1704                                                                  ;/-MCMD-
1705  005144  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
1706  005150  001424                          .WORD   KMCSR
1707            000006                        .MD.=6
1708                                                                  ;/READ FAST PATH REG.
1709  005152  000006                          .WORD   .MD.
1710                                          ;/RETURN HERE AFTER COMMAND .
1711
1712  005154  117737  174260  001126          MOVB    @BSEL3,$BDDAT ;/READ PATTERN ERROR IF NON-ZERO
1713  005162  001401                          BEQ     TST24           ;;

                                              ;**********>> ERROR <<**********

1717  005164  104003                          ERROR   3               ;FAILED TO XFER ZERO PATTERN.

                                              ;**********>> ERROR <<**********

1721
1722                                  ;;*****************************************************************
1723                                  ;*TEST 24        *TEST THAT PATTERN 10 CAN BE SENT FROM SIDE 2 TO SIDE 1 VIA FAST PATH RE
1724                                  ;*
1725                                  ;*IN THIS TEST WE ARE GOING TO XFER DATA FROM SIDE 2
1726                                  ;*TO SIDE 1 AND CHECK THE RESULTS. WE KNOW FROM A
1727                                  ;*PREVIOUS TEST THAT SOME DATA CAN GET THROUGH.
1728                                  ;*
1729                                  ;;*****************************************************************
1730  005166  000004                  TST24:  SCOPE
1731                                                                  ;/-DXFRF-
1732  005170  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
1733            000001                        .MD.=1
1734                                                                  ;/COMMAND=NOP.
1735  005174  000001                          .WORD   .MD.
1736                                          ;/RETURN HERE AFTER COMMAND .
1737
1738  005176  012737  000010  001124          MOV     #10,$GDDAT      ;/RECORD XFERR PATTERN
1739  005204  113777  001124  174176          MOVB    $GDDAT,@MBSEL3 ;/WRITE PATTERN TO U CODE.
```

```
1740  005212  004537  012100          JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
1741          000007                  .MD.=7
1742                                  ;/WRITE FAST PATH REG.
1743  005216  000007                  .WORD   .MD.
1744                                  ;/RETURN HERE AFTER COMMAND .
1745                                  ;/-MCMD-
1746  005220  004537  011656          JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
1747  005224  001424                  .WORD   KMCSR
1748          000006                  .MD.=6
1749                                  ;/READ FAST PATH REG.
1750  005226  000006                  .WORD   .MD.
1751                                  ;/RETURN HERE AFTER COMMAND .
1752
1753  005230  117737  174204  001126  MOVB    @BSEL3,$BDDAT ;/READ SIDE #1
1754  005236  023737  001124  001126  CMP     $GDDAT,$BDDAT   ;/DATA SENT=DATA RECEIVED?
1755  005244  001401                  BEQ     1$

                                      ;**********>> ERROR <<**********

1759  005246  104003                  ERROR   3               ;INPROPER XFER OF PATTERN 10 FROM
1760                                  ;/SIDE 2 TO SIDE 1

                                      ;**********>> ERROR <<**********

1764  005250  005037  001124    1$:   CLR     $GDDAT          ;/NOW XFER A ZERO PATTERN
1765  005254  105077  174130          CLRB    @MBSEL3
1766  005260  004537  012100          JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
1767          000007                  .MD.=7
1768                                  ;/WRITE FAST PATH REG.
1769  005264  000007                  .WORD   .MD.
1770                                  ;/RETURN HERE AFTER COMMAND .
1771                                  ;/-MCMD-
1772  005266  004537  011656          JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
1773  005272  001424                  .WORD   KMCSR
1774          000006                  .MD.=6
1775                                  ;/READ FAST PATH REG.
1776  005274  000006                  .WORD   .MD.
1777                                  ;/RETURN HERE AFTER COMMAND .
1778
1779  005276  117737  174136  001126  MOVB    @BSEL3,$BDDAT ;/READ PATTERN ERROR IF NON-ZERO
1780  005304  001401                  BEQ     TST25           ;;

                                      ;**********>> ERROR <<**********

1784  005306  104003                  ERROR   3               ;FAILED TO XFER ZERO PATTERN.

                                      ;**********>> ERROR <<**********

1788
1789                            ;;**********************************************************************
1790                            ;*TEST 25        *TEST THAT PATTERN 20 CAN BE SENT FROM SIDE 2 TO SIDE 1 VIA FAST PATH RE
1791                                    ;*
1792                                    ;*IN THIS TEST WE ARE GOING TO XFER DATA FROM SIDE 2
1793                                    ;*TO SIDE 1 AND CHECK THE RESULTS. WE KNOW FROM A
```

```
                                        ;*PREVIOUS TEST THAT SOME DATA CAN GET THROUGH.
                                        ;*
                                ;;*****************************************************************
005310  000004                 TST25:  SCOPE
                                                        ;/-DXFRF-
005312  004537  012100                 JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000001                  .MD.=1
                                                        ;/COMMAND=NOP.
005316  000001                 .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND .

005320  012737  000020  001124          MOV     #20,$GDDAT      ;/RECORD XFERR PATTERN
005326  113777  001124  174054          MOVB    $GDDAT,@MBSEL3 ;/WRITE PATTERN TO U CODE.
005334  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000007                  .MD.=7
                                                        ;/WRITE FAST PATH REG.
005340  000007                 .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND .
                                                        ;/-MCMD-
005342  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
005346  001424                  .WORD   KMCSR
        000006                  .MD.=6
                                                        ;/READ FAST PATH REG.
005350  000006                 .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND .

005352  117737  174062  001126          MOVB    @BSEL3,$BDDAT ;/READ SIDE #1
005360  023737  001124  001126          CMP     $GDDAT,$BDDAT   ;/DATA SENT=DATA RECEIVED?
005366  001401                          BEQ     1$

                                ;**********>> ERROR <<**********

005370  104003                          ERROR   3               ;IMPROPER XFER OF PATTERN 20 FROM
                                                                ;/SIDE 2 TO SIDE 1

                                ;**********>> ERROR <<**********

005372  005037  001124          1$:     CLR     $GDDAT          ;/NOW XFER A ZERO PATTERN
005376  105077  174006                  CLRB    @MBSEL3
005402  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000007                  .MD.=7
                                                        ;/WRITE FAST PATH REG.
005406  000007                 .WORd   .MD.
                                ;/RETURN HERE AFTER COMMAND .
                                                        ;/-MCMD-
005410  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
005414  001424                  .WORD   KMCSR
        000006                  .MD.=6
                                                        ;/READ FAST PATH REG.
005416  000006                 .WORD   .MD.
                                ;/RETURN HERE AFTER COMMAND .

005420  117737  174014  001126          MOVB    @BSEL3,$BDDAT ;/READ PATTERN ERROR IF NON-ZERO
005426  001401                          BEQ     TST26           ;;
```

```
                                        ;**********>> ERROR <<**********

1851   005430  104003                   ERROR   3               ;FAILED TO XFER ZERO PATTERN.

                                        ;**********>> ERROR <<**********

1855
1856                                ;;*****************************************************************
1857                                ;*TEST 26        *TEST THAT PATTERN 40 CAN BE SENT FROM SIDE 2 TO SIDE 1 VIA FAST PATH RE
1858                                ;*
1859                                ;*IN THIS TEST WE ARE GOING TO XFER DATA FROM SIDE 2
1860                                ;*TO SIDE 1 AND CHECK THE RESULTS. WE KNOW FROM A
1861                                ;*PREVIOUS TEST THAT SOME DATA CAN GET THROUGH.
1862                                ;*
1863                                ;;*****************************************************************
1864   005432  000004               TST26:  SCOPE
1865                                                           ;/-DXFRF-
1866   005434  004537  012100               JSR     R5,KMSIM          ;/DMC SIMULATE KMC INSTR. LIST FOR.
1867           000001                       .MD.=1
1868                                                           ;/COMMAND=NOP.
1869   005440  000001                       .WORD   .MD.
1870                                        ;/RETURN HERE AFTER COMMAND .
1871
1872   005442  012737  000040  001124       MOV     #40,$GDDAT        ;/RECORD XFERR PATTERN
1873   005450  113777  001124  173732       MOVB    $GDDAT,@MBSEL3 ;/WRITE PATTERN TO U CODE.
1874   005456  004537  012100               JSR     R5,KMSIM          ;/DMC SIMULATE KMC INSTR. LIST FOR.
1875           000007                       .MD.=7
1876                                                           ;/WRITE FAST PATH REG.
1877   005462  000007                       .WORD   .MD.
1878                                        ;/RETURN HERE AFTER COMMAND .
1879                                                           ;/-MCMD-
1880   005464  004537  011656               JSR     R5,ISSUEC         ;/ISSUE COMMAND TO KMC #1.
1881   005470  001424                       .WORD   KMCSR
1882           000006                       .MD.=6
1883                                                           ;/READ FAST PATH REG.
1884   005472  000006                       .WORD   .MD.
1885                                        ;/RETURN HERE AFTER COMMAND .
1886
1887   005474  117737  173740  001126       MOVB    @BSEL3,$BDDAT ;/READ SIDE #1
1888   005502  023737  001124  001126       CMP     $GDDAT,$BDDAT     ;/DATA SENT=DATA RECEIVED?
1889   005510  001401                       BEQ     1$

                                        ;**********>> ERROR <<**********

1893   005512  104003                   ERROR   3               ;INPROPER XFER OF PATTERN 40 FROM
1894                                                           ;/SIDE 2 TO SIDE 1

                                        ;**********>> ERROR <<**********

1898   005514  005037  001124       1$:     CLR     $GDDAT            ;/NOW XFER A ZERO PATTERN
1899   005520  105077  173664               CLRB    @MBSEL3
1900   005524  004537  012100               JSR     R5,KMSIM          ;/DMC SIMULATE KMC INSTR. LIST FOR.
1901           000007                       .MD.=7
```

```
                                                        ;/WRITE FAST PATH REG.
005530  000007                          .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .
                                                        ;/-MCMD-
005532  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
005536  001424                          .WORD   KMCSR
        000006                          .MD.=6
                                                        ;/READ FAST PATH REG.
005540  000006                          .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .

005542  117737  173672  001126          MOVB    @BSEL3,$BDDAT ;/READ PATTERN ERROR IF NON-ZERO
005550  001401                          BEQ     TST27           ;;

                                        ;**********>> ERROR <<**********

005552  104003                          ERROR   3               ;FAILED TO xFER ZERO PATTERN.

                                        ;**********>> ERROR <<**********


                                ;;**************************************************************
                                ;*TEST 27        *TEST THAT PATTERN 100 CAN BE SENT FROM SIDE 2 TO SIDE 1 VIA FAST PATH R
                                        ;*
                                        ;*IN THIS TEST WE ARE GOING TO XFER DATA FROM SIDE 2
                                        ;*TO SIDE 1 AND CHECK THE RESULTS. WE KNOW FROM A
                                        ;*PREVIOUS TEST THAT SOME DATA CAN GET THROUGH.
                                        ;*
                                ;;**************************************************************
005554  000004                  TST27:  SCOPE
                                                        ;/-DXFRF-
005556  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000001                          .MD.=1
                                                        ;/COMMAND=NOP.
005562  000001                          .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .

005564  012737  000100  001124          MOV     #100,$GDDAT     ;/RECORD XFERR PATTERN
005572  113777  001124  173610          MOVB    $GDDAT,@MBSEL3 ;/WRITE PATTERN TO U CODE.
005600  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000007                          .MD.=7
                                                        ;/WRITE FAST PATH REG.
005604  000007                          .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .
                                                        ;/-MCMD-
005606  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
005612  001424                          .WORD   KMCSR
        000006                          .MD.=6
                                                        ;/READ FAST PATH REG.
005614  000006                          .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .

005616  117737  173616  001126          MOVB    @BSEL3,$BDDAT ;/READ SIDE #1
005624  023737  001124  001126          CMP     $GDDAT,$BDDAT   ;/DATA SENT=DATA RECEIVED?
```

```
1956  005632  001401                          BEQ     1$

                                              ;**********>> EPROR <<**********

1960  005634  104003                          ERROR   3               ;INPROPER XFER OF PATTERN 100 FROM
1961                                                                  ;/SIDE 2 TO SIDE 1

                                              ;**********>> ERROR <<**********

1965  005636  005037  001124          1$:     CLR     $GDDAT          ;/NOW XFER A ZERO PATTERN
1966  005642  105077  173542                  CLRB    @MBSEL3
1967  005646  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
1968          000007                          .MD.=7
1969                                                                  ;/WRITE FAST PATH REG.
1970  005652  000007                          .WORD   .MD.
1971                                          ;/RETURN HERE AFTER COMMAND .
1972                                                                  ;/-MCMD-
1973  005654  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
1974  005660  001424                          .WORD   KMCSR
1975          000006                          .MD.=6
1976                                                                  ;/READ FAST PATH REG.
1977  005662  000006                          .WORD   .MD.
1978                                          ;/RETURN HERE AFTER COMMAND .
1979
1980  005664  117737  173550  001126          MOVB    @BSEL3,$BDDAT ;/READ PATTERN ERROR IF NON-ZERO
1981  005672  001401                          BEQ     TST30           ;;

                                              ;**********>> ERROR <<**********

1985  005674  104003                          ERROR   3               ;FAILED TO XFER ZERO PATTERN.

                                              ;**********>> ERROR <<**********

1989
1990                                  ;;*****************************************************************
1991                                  ;*TEST 30        *TEST THAT PATTERN 200 CAN BE SENT FROM SIDE 2 TO SIDE 1 VIA FAST PATH R
1992                                  ;*
1993                                  ;*IN THIS TEST WE ARE GOING TO XFER DATA FROM SIDE 2
1994                                  ;*TO SIDE 1 AND CHECK THE RESULTS. WE KNOW FROM A
1995                                  ;*PREVIOUS TEST THAT SOME DATA CAN GET THROUGH.
1996                                  ;*
1997                                  ;;*****************************************************************
1998  005676  000004                  TST30:  SCOPE
1999                                                                  ;/-DXFRF-
2000  005700  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
2001          000001                          .MD.=1
2002                                                                  ;/COMMAND=NOP.
2003  005704  000001                          .WORD   .MD.
2004                                          ;/RETURN HERE AFTER COMMAND .
2005
2006  005706  012737  000200  001124          MOV     #200,$GDDAT     ;/RECORD XFERR PATTERN
2007  005714  113777  001124  173466          MOVB    $GDDAT,@MBSEL3 ;/WRITE PATTERN TO u CODE.
2008  005722  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
2009          000007                          .MD.=7
```

```
                                                        ;/WRITE FAST PATH REG.
005726  000007                          .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .
                                                        ;/-MCMD-
005730  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
005734  001424                          .WORD   KMCSR
        000006                          .MD.=6
                                                        ;/READ FAST PATH REG.
005736  000006                          .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .

005740  117737  173474  001126          MOVB    @BSEL3,$BDDAT ;/READ SIDE #1
005746  023737  001124  001126          CMP     $GDDAT,$BDDAT ;/DATA SENT=DATA RECEIVED?
005754  001401                          BEQ     1$

                                        ;**********>> ERROR <<**********

005756  104003                          ERROR   3               ;INPROPER XFER OF PATTERN 200 FROM
                                                                ;/SIDE 2 TO SIDE 1

                                        ;**********>> ERROR <<**********

005760  005037  001124          1$:     CLR     $GDDAT          ;/NOW XFER A ZERO PATTERN
005764  105077  173420                  CLRB    @MBSEL3
005770  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000007                          .MD.=7
                                                        ;/WRITE FAST PATH REG.
005774  000007                          .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .
                                                        ;/-MCMD-
005776  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
006002  001424                          .WORD   KMCSR
        000006                          .MD.=6
                                                        ;/READ FAST PATH REG.
006004  000006                          .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .

006006  117737  173426  001126          MOVB    @BSEL3,$BDDAT ;/READ PATTERN ERROR IF NON-ZERO
006014  001401                          BEQ     TST31           ;;

                                        ;**********>> ERROR <<**********

006016  104003                          ERROR   3               ;FAILED TO XFER ZERO PATTERN.

                                        ;**********>> ERROR <<**********


                                ;;**************************************************************
                                ;*TEST 31        *TEST THAT DATA CAN BE SENT FROM SIDE 1 TO SIDE 2 VIA SILO
                                ;;**************************************************************
006020  000004                  TST31:  SCOPE

006022  004737  012524                  JSR     PC,BINT         ;INIT. KMCS.
006026  112777  000377  173404          MOVB    #377,@BSEL3     ;DATA TO BE XFERRED.
```

```
                                                        ;/-MCMD-
006034  004537  011656                JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
006040  001424                        .WORD   KMCSR
        000005                        .MD.=5
                                                        ;/WRITE TO SILO.
006042  000005                        .WORD   .MD.
                                      ;/RETURN HERE AFTER COMMAND .
006044  004537  012100                JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000001                        .MD.=1
                                                        ;/COMMAND=NOP.
006050  000001                        .WORD   .MD.
                                      ;/RETURN HERE AFTER COMMAND .
006052  117737  173336  001126        MOVB    @MBSEL5,$BDDAT  ;READ SIDE 2 IOSR
006060  012737  000054  001124        MOV     #54,$GDDAT      ;EXPECT BIT1 TO BE CLEAR.
006066  023737  001126  001124        CMP     $BDDAT,$GDDAT   ;DID BIT1 CLEAR?
006074  001402                        BEQ     1$              ;YES - NEXT CHECK

                                      ;**********>> ERROR <<**********

006076  104002                        ERROR   2               ;BIT1 IOSR SIDE 2 FAILED
                                                        ;TO CLEAR (INDICATING SILO DATA
                                                        ;PRESENT) WHEN DATA WAS
                                                        ;WRITTEN INTO SIDE 1 SILO.

                                      ;**********>> ERROR <<**********

006100  000413                        BR      TST32           ;;

006102                          1$:
006102  004537  012100                JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000004                        .MD.=4
                                                        ;/READ SILO.
006106  000004                        .WORD   .MD.
                                      ;/RETURN HERE AFTER COMMAND
006110  117737  173274  001126        MOVB    @MBSEL3,$BDDAT  ;READ DATA, IF NON-ZERO - NO ERROR.
006116  001004                        BNE     TST32           ;;
006120  012737  000377  001124        MOV     #377,$GDDAT     ;HAD EXPECTED 377 BUT WOULD
                                                        ;HAVE SETTLED FOR ANYTHING TO
                                                        ;INDICATE SOME DATA GOT THROUGH

                                      ;**********>> ERROR <<**********

006126  104006                        ERROR   6               ;FAILED TO XFER DATA FROM SIDE 1
                                                        ;TO SIDE 2 VIA SILO (FIFO) REG.

                                      ;**********>> ERROR <<**********


                                ;;**************************************************************
                                ;*TEST 32        *TEST THAT DATA CAN BE SENT FROM SIDE 2 TO SIDE 1 VIA SILO
                                ;;**************************************************************
006130  000004                TST32:  SCOPE

006132  004737  012524                JSR     PC,BINT         ;INIT KMCS.
```

```
2118  006136  112777  000377  173244          MOVB    #377,@MBSEL3    ;DATA TO BE XFERRED.
2119  006144  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
2120          000005                          .MD.=5
2121                                          ;/WRITE TO SILO.
2122  006150  000005                          .WORD   .MD.
2123                                          ;/RETURN HERE AFTER COMMAND.
2124  006152  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
2125          000001                          .MD.=1
2126                                          ;/COMMAND=NOP.
2127  006156  000001                          .WORD   .MD.
2128                                          ;/RETURN HERE AFTER COMMAND.
2129  006160  117737  173260  001126          MOVB    @BSEL5,$BDDAT   ;READ SIDE 1 UBSR
2130  006166  012737  000050  001124          MOV     #50,$GDDAT      ;EXPECT BIT0 TO BE CLEAR.
2131  006174  023737  001124  001126          CMP     $GDDAT,$BDDAT   ;DID BIT0 CLEAR?
2132  006202  001402                          BEQ     1$

                                              ;**********>> ERROR <<**********

2136  006204  104001                          ERROR   1               ;BIT 1 UBSR SIDE 1 FAILED
2137                                                                  ;TO CLEAR (INDICATION SILO DATA
2138                                                                  ;PRESENT) WHEN DATA WAS
2139                                                                  ;WRITTEN INTO SIDE 2 SILO

                                              ;**********>> ERROR <<**********

2143  006206  000414                          BR      TST33           ;;
2144  006210                          1$:
2145                                                                  ;/-MCMD-
2146  006210  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
2147  006214  001424                          .WORD   KMCSR
2148          000004                          .MD.=4
2149                                                                  ;/READ SILO.
2150  006216  000004                          .WORD   .MD.
2151                                          ;/RETURN HERE AFTER COMMAND.
2152  006220  117737  173214  001126          MOVB    @BSEL3,$BDDAT   ;READ DATA.
2153  006226  001004                          BNE     TST33           ;;
2154
2155  006230  012737  000377  001124          MOV     #377,$GDDAT     ;HAD EXPECTED 377 BUT WOULD
2156                                                                  ;HAVE SETTLED FOR ANYTHING TO
2157                                                                  ;INDICATE SOME DATA GOT THROUGH.

                                              ;**********>> ERROR <<**********

2161  006236  104005                          ERROR   5               ;FAILED TO XFER DATA FROM SIDE 2
2162                                                                  ;TO SIDE 1 VIA SILO (FIFO) REG
2163
2164
2165                                  ;;**************************************************************
2166                                  ;*TEST 33        *TEST THAT DATA PATTERN 0 CAN BE XFERRED VIA SILO FROM SIDE 1 TO SIDE 2
2167                                  ;;**************************************************************
2168  006240  000004                  TST33:  SCOPE
2169                                                                  ;/-SIDA-
2170  006242  012737  000000  001124          MOV     #0,$GDDAT       ;/RECORD XFER 0
2171  006250  113777  001124  173162          MOVB    $GDDAT,@BSEL3 ;/DATA TO XFERR.
```

```
                                                        ;/-MCMD-
006256  004537  011656                JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
006262  001424                        .WORD   KMCSR
        000005                        .MD.=5
                                                        ;/WRITE TO SILO.
006264  000005                        .WORD   .MD.
                                      ;/RETURN HERE AFTER COMMAND .
006266  004537  012100                JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000004                        .MD.=4
                                                        ;/READ SILO.
006272  000004                        .WORD   .MD.
                                      ;/RETURN HERE AFTER COMMAND .

006274  117737  173110  001126        MOVB    @MBSEL3,$BDDAT ;/READ FROM REG.
006302  123737  001124  001126        CMPB    $GDDAT,$BDDAT   ;/DATA WRITTEN = DATA RECEIVED?
006310  001401                        BEQ     TST34           ;;

                                      ;**********>> ERROR <<**********

006312  104006                        ERROR   6               ;/SIDE 1 TO SIDE 2 DATA
                                                        ;/XFERR ERROR VIA SILO.

                                      ;**********>> ERROR <<**********


                              ;;*****************************************************************
                              ;*TEST 34        *TEST THAT DATA PATTERN 1 CAN BE XFERRED VIA SILO FROM SIDE 1 TO SIDE 2
                              ;;*****************************************************************
006314  000004                TST34:  SCOPE
                                                        ;/-SIDA-
006316  012737  000001  001124        MOV     #1,$GDDAT       ;/RECORD XFER 1
006324  113777  001124  173106        MOVB    $GDDAT,@BSEL3 ;/DATA TO XFERR.
                                                        ;/-MCMD-
006332  004537  011656                JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
006336  001424                        .WORD   KMCSR
        000005                        .MD.=5
                                                        ;/WRITE TO SILO.
006340  000005                        .WORD   .MD.
                                      ;/RETURN HERE AFTER COMMAND .
006342  004537  012100                JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000004                        .MD.=4
                                                        ;/READ SILO.
006346  000004                        .WORD   .MD.
                                      ;/RETURN HERE AFTER COMMAND .

006350  117737  173034  001126        MOVB    @MBSEL3,$BDDAT ;/READ FROM REG.
006356  123737  001124  001126        CMPB    $GDDAT,$BDDAT   ;/DATA WRITTEN = DATA RECEIVED?
006364  001401                        BEQ     TST35           ;;

                                      ;**********>> ERROR <<**********

006366  104006                        ERROR   6               ;/SIDE 1 TO SIDE 2 DATA
```

```
                                                        ;/XFERR ERROR VIA SILO.

                                        ;**********>> ERROR <<**********

                                ;;**********************************************************************
                                ;*TEST 35        *TEST THAT DATA PATTERN 2 CAN BE XFERRED VIA SILO FROM SIDE 1 TO SIDE 2
                                ;;**********************************************************************
006370  000004                  TST35:  SCOPE
                                                        ;/-SIDA-
006372  012737  000002  001124          MOV     #2,$GDDAT       ;/RECORD XFER 2
006400  113777  001124  173032          MOVB    $GDDAT,@BSEL3 ;/DATA TO XFERR.
                                                        ;/-MCMD-
006406  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
006412  001424                          .WORD   KMCSR
        000005                          .MD.=5
                                                        ;/WRITE TO SILO.
006414  000005                          .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .
006416  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000004                          .MD.=4
                                                        ;/READ SILO.
006422  000004                          .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .

006424  117737  172760  001126          MOVB    @MBSEL3,$BDDAT ;/READ FROM REG.
006432  123737  001124  001126          CMPB    $GDDAT,$BDDAT   ;/DATA WRITTEN = DATA RECEIVED?
006440  001401                          BEQ     TST36           ;;


                                        ;**********>> ERROR <<**********

006442  104006                          ERROR   6               ;/SIDE 1 TO SIDE 2 DATA
                                                        ;/XFERR ERROR VIA SILO.

                                        ;**********>> ERROR <<**********

                                ;;**********************************************************************
                                ;*TEST 36        *TEST THAT DATA PATTERN 4 CAN BE XFERRED VIA SILO FROM SIDE 1 TO SIDE 2
                                ;;**********************************************************************
006444  000004                  TST36:  SCOPE
                                                        ;/-SIDA-
006446  012737  000004  001124          MOV     #4,$GDDAT       ;/RECORD XFER 4
006454  113777  001124  172756          MOVB    $GDDAT,@BSEL3 ;/DATA TO XFERR.
                                                        ;/-MCMD-
006462  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
006466  001424                          .WORD   KMCSR
        000005                          .MD.=5
                                                        ;/WRITE TO SILO.
006470  000005                          .WORD   .MD
                                        ;/RETURN HERE AFTER COMMAND .
006472  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000004                          .MD.=4
```

```
2280                                                    ;/READ SILO.
2281  006476  000004                  .WORD   .MD.
2282                                  ;/RETURN HERE AFTER COMMAND .
2283
2284  006500  117737  172704  001126  MOVB    @MBSEL3,$BDDAT ;/READ FROM REG.
2285  006506  123737  001124  001126  CMPB    $GDDAT,$BDDAT  ;/DATA WRITTEN = DATA RECEIVED?
2286  006514  001401                  BEQ     TST37          ;;
2287

                                      ;**********>> ERROR <<**********

2291  006516  104006                  ERROR   6              ;/SIDE 1 TO SIDE 2 DATA
2292                                                         ;/XFERR ERROR VIA SILO.

                                      ;**********>> ERROR <<**********


2296
2297                                ;;**********************************************************************
2298                                ;*TEST 37        *TEST THAT DATA PATTERN 10 CAN BE XFERRED VIA SILO FROM SIDE 1 TO SIDE 2
2299                                ;;**********************************************************************
2300  006520  000004                TST37:  SCOPE
2301                                                        ;/-SIDA-
2302  006522  012737  000010  001124  MOV     #10,$GDDAT    ;/RECORD XFER 10
2303  006530  113777  001124  172702  MOVB    $GDDAT,@BSEL3 ;/DATA TO XFERR.
2304                                                        ;/-MCMD-
2305  006536  004537  011656          JSR     R5,ISSUEC     ;/ISSUE COMMAND TO KMC #1.
2306  006542  001424                  .WORD   KMCSR
2307          000005                  .MD.=5
2308                                                        ;/WRITE TO SILO.
2309  006544  000005                  .WORD   .MD.
2310                                  ;/RETURN HERE AFTER COMMAND .
2311  006546  004537  012100          JSR     R5,KMSIM      ;/DMC SIMULATE KMC INSTR. LIST FOR.
2312          000004                  .MD.=4
2313                                                        ;/READ SILO.
2314  006552  000004                  .WORD   .MD.
2315                                  ;/RETURN HERE AFTER COMMAND .
2316
2317  006554  117737  172630  001126  MOVB    @MBSEL3,$BDDAT ;/READ FROM REG.
2318  006562  123737  001124  001126  CMPB    $GDDAT,$BDDAT  ;/DATA WRITTEN = DATA RECEIVED?
2319  006570  001401                  BEQ     TST40          ;;
2320

                                      ;**********>> ERROR <<**********

2324  006572  104006                  ERROR   6              ;/SIDE 1 TO SIDE 2 DATA
2325                                                         ;/XFERR ERROR VIA SILO.

                                      ;**********>> ERROR <<**********


2329
2330                                ;;**********************************************************************
2331                                ;*TEST 40        *TEST THAT DATA PATTERN 20 CAN BE XFERRED VIA SILO FROM SIDE 1 TO SIDE 2
2332                                ;;**********************************************************************
2333  006574  000004                TST40:  SCOPE
```

```
2334
2335  006576  012737  000020  001124          MOV     #20,$GDDAT      ;/-SIDA-
2336  006604  113777  001124  172626          MOVB    $GDDAT,@BSEL3 ;/DATA TO XFER.
2337                                                                  ;/-MCMD-
2338  006612  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
2339  006616  001424                          .WORD   KMCSR
2340          000005                          .MD.=5
2341                                                                  ;/WRITE TO SILO.
2342  006620  000005                          .WORD   .MD.
2343                                          ;/RETURN HERE AFTER COMMAND .
2344  006622  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
2345          000004                          .MD.=4
2346                                                                  ;/READ SILO.
2347  006626  000004                          .WORD   .MD.
2348                                          ;/RETURN HERE AFTER COMMAND .
2349
2350  006630  117737  172554  001126          MOVB    @MBSEL3,$BDDAT ;/READ FROM REG.
2351  006636  123737  001124  001126          CMPB    $GDDAT,$BDDAT   ;/DATA WRITTEN = DATA RECEIVED?
2352  006644  001401                          BEQ     TST41           ;;
2353

                                          ;**********>> ERROR <<**********

2357  006646  104006                          ERROR   6               ;/SIDE 1 TO SIDE 2 DATA
2358                                                                  ;/XFERR ERROR VIA SILO.

                                          ;**********>> ERROR <<**********

2362
2363                                  ;;*****************************************************************
2364                                  ;*TEST 41       *TEST THAT DATA PATTERN 40 CAN BE XFERRED VIA SILO FROM SIDE 1 TO SIDE 2
2365                                  ;;*****************************************************************
2366  006650  000004                  TST41:  SCOPE
2367                                                                  ;/-SIDA-
2368  006652  012737  000040  001124          MOV     #40,$GDDAT      ;/RECORD XFER 40
2369  006660  113777  001124  172552          MOVB    $GDDAT,@BSEL3 ;/DATA TO XFERR.
2370                                                                  ;/-MCMD-
2371  006666  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
2372  006672  001424                          .WORD   KMCSR
2373          000005                          .MD.=5
2374                                                                  ;/WRITE TO SILO.
2375  006674  000005                          .WORD   .MD.
2376                                          ;/RETURN HERE AFTER COMMAND .
2377  006676  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
2378          000004                          .MD.=4
2379                                                                  ;/READ SILO.
2380  006702  000004                          .WORD   .MD.
2381                                          ;/RETURN HERE AFTER COMMAND .
2382
2383  006704  117737  172500  001126          MOVB    @MBSEL3,$BDDAT ;/READ FROM REG.
2384  006712  123737  001124  001126          CMPB    $GDDAT,$BDDAT   ;/DATA WRITTEN = DATA RECEIVED?
2385  006720  001401                          BEQ     TST42           ;;
2386
```

```
                                        ;**********>> ERROR <<**********
2390  006722  104006                    ERROR   6               ;/SIDE 1 TO SIDE 2 DATA
2391                                                            ;/XFERR ERROR VIA SILO.

                                        ;**********>> ERROR <<**********

2395
2396                                ;;**************************************************************
2397                                ;*TEST 42       *TEST THAT DATA PATTERN 100 CAN BE XFERRED VIA SILO FROM SIDE 1 TO SIDE
2398                                ;;**************************************************************
2399  006724  000004                TST42:  SCOPE
2400                                                            ;/-SIDA-
2401  006726  012737  000100  001124        MOV     #100,$GDDAT     ;/RECORD XFER 100
2402  006734  113777  001124  172476        MOVB    $GDDAT,@BSEL3 ;/DATA TO XFERR.
2403                                                            ;/-MCMD-
2404  006742  004537  011656                JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
2405  006746  001424                        .WORD   KMCSR
2406          000005                        .MD.=5
2407                                                            ;/WRITE TO SILO.
2408  006750  000005                        .WORD   .MD.
2409                                        ;/RETURN HERE AFTER COMMAND .
2410  006752  004537  012100                JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
2411          000004                        .MD.=4
2412                                                            ;/READ SILO.
2413  006756  000004                        .WORD   .MD.
2414                                        ;/RETURN HERE AFTER COMMAND .
2415
2416  006760  117737  172424  001126        MOVB    @#BSEL3,$BDDAT ;/READ FROM REG.
2417  006766  123737  001124  001126        CMPB    $GDDAT,$BDDAT   ;/DATA WRITTEN = DATA RECEIVED?
2418  006774  001401                        BEQ     TST43           ;;
2419

                                        ;**********>> ERROR <<**********
2423  006776  104006                    ERROR   6               ;/SIDE 1 TO SIDE 2 DATA
2424                                                            ;/XFERR ERROR VIA SILO.

                                        ;**********>> ERROR <<**********

2428
2429                                ;;**************************************************************
2430                                ;*TEST 43       *TEST THAT DATA PATTERN 200 CAN BE XFERRED VIA SILO FROM SIDE 1 TO SIDE
2431                                ;;**************************************************************
2432  007000  000004                TST43:  SCOPE
2433                                                            ;/-SIDA-
2434  007002  012737  000200  001124        MOV     #200,$GDDAT     ;/RECORD XFER 200
2435  007010  113777  001124  172422        MOVB    $GDDAT,@BSEL3 ;/DATA TO XFERR.
2436                                                            ;/-MCMD-
2437  007016  004537  011656                JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
2438  007022  001424                        .WORD   KMCSR
2439          000005                        .MD.=5
2440                                                            ;/WRITE TO SILO.
2441  007024  000005                        .WORD   .MD.
```

```
                                        ;/RETURN HERE AFTER COMMAND .
007026  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000004                          .MD.=4
                                        ;/READ SILO.
007032  000004                          .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .

007034  117737  172350  001126          MOVB    @MBSEL3,$BDDAT ;/READ FROM REG.
007042  123737  001124  001126          CMPB    $GDDAT,$BDDAT   ;/DATA WRITTEN = DATA RECEIVED?
007050  001401                          BEQ     TST44           ;;

                                        ;**********>> ERROR <<**********

007052  104006                          ERROR   6               ;/SIDE 1 TO SIDE 2 DATA
                                                                ;/XFERR ERROR VIA SILO.

                                        ;**********>> ERROR <<**********


                                ;;**************************************************************
                                ;*TEST 44        *TEST THAT DATA PATTERN 0 CAN BE XFERRED VIA SILO FROM SIDE 2 TO SIDE 1
                                ;;**************************************************************
007054  000004                  TST44:  SCOPE
                                                                ;/-SIDA-
007056  012737  000000  001124          MOV     #0,$GDDAT       ;/RECORD XFER 0
007064  113777  001124  172316          MOVB    $GDDAT,@MBSEL3 ;/DATA TO XFERR.
007072  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000005                          .MD.=5
                                                                ;/WRITE TO SILO.
007076  000005                          .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .
                                                                ;/-MCMD-
007100  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
007104  001424                          .WORD   KMCSR
        000004                          .MD.=4
                                                                ;/READ SILO.
007106  000004                          .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .

007110  117737  172324  001126          MOVB    @BSEL3,$BDDAT ;/READ FROM REG.
007116  123737  001124  001126          CMPB    $GDDAT,$BDDAT   ;/DATA WRITTEN = DATA RECEIVED?
007124  001401                          BEQ     TST45           ;;

                                        ;**********>> ERROR <<**********

007126  104005                          ERROR   5               ;/SIDE 2 TO SIDE 1 DATA
                                                                ;/XFERR ERROR VIA SILO.

                                        ;**********>> ERROR <<**********


                                ;;**************************************************************
```

```
                                        ;*TEST 45       *TEST THAT DATA PATTERN 1 CAN BE XFERRED VIA SILO FROM SIDE 2 TO SIDE 1
                                        ;;*****************************************************************
007130  000004                          TST45:  SCOPE
                                                                        ;/-SIDA-
007132  012737  000001  001124                  MOV     #1,$GDDAT       ;/RECORD XFER 1
007140  113777  001124  172242                  MOVB    $GDDAT,@MBSEL3  ;/DATA TO XFERR.
007146  004537  012100                          JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000005                                  .MD.=5
                                                                        ;/WRITE TO SILO.
007152  000005                                  .WORD   .MD.
                                                ;/RETURN HERE AFTER COMMAND .
                                                                        ;/-MCMD-
007154  004537  011656                          JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
007160  001424                                  .WORD   KMCSR
        000004                                  .MD.=4
                                                                        ;/READ SILO.
007162  000004                                  .WORD   .MD.
                                                ;/RETURN HERE AFTER COMMAND .

007164  117737  172250  001126                  MOVB    @BSEL3,$BDDAT   ;/READ FROM REG.
007172  123737  001124  001126                  CMPB    $GDDAT,$BDDAT   ;/DATA WRITTEN = DATA RECEIVED?
007200  001401                                  BEQ     TST46           ;;

                                                ;**********>> ERROR <<**********

007202  104005                                  ERROR   5               ;/SIDE 2 TO SIDE 1 DATA
                                                                        ;/XFERR ERROR VIA SILO.

                                                ;**********>> ERROR <<**********


                                        ;;*****************************************************************
                                        ;*TEST 46       *TEST THAT DATA PATTERN 2 CAN BE XFERRED VIA SILO FROM SIDE 2 TO SIDE 1
                                        ;;*****************************************************************
007204  000004                          TST46:  SCOPE
                                                                        ;/-SIDA-
007206  012737  000002  001124                  MOV     #2,$GDDAT       ;/RECORD XFER 2
007214  113777  001124  172166                  MOVB    $GDDAT,@MBSEL3  ;/DATA TO XFERR.
007222  004537  012100                          JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000005                                  .MD.=5
                                                                        ;/WRITE TO SILO.
007226  000005                                  .WORD   .MD.
                                                ;/RETURN HERE AFTER COMMAND .
                                                                        ;/-MCMD-
007230  004537  011656                          JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
007234  001424                                  .WORD   KMCSR
        000004                                  .MD.=4
                                                                        ;/READ SILO.
007236  000004                                  .WORD   .MD.
                                                ;/RETURN HERE AFTER COMMAND .

007240  117737  172174  001126                  MOVB    @BSEL3,$BDDAT   ;/READ FROM REG.
007246  123737  001124  001126                  CMPB    $GDDAT,$BDDAT   ;/DATA WRITTEN = DATA RECEIVED?
007254  001401                                  BEQ     TST47           ;;
```

```
                                        ;**********>> ERROR <<**********

2553  007256  104005                    ERROR   5               ;/SIDE 2 TO SIDE 1 DATA
2554                                                            ;/XFERR ERROR VIA SILO.

                                        ;**********,> ERROR <<**********

2558
2559                                ;;**************************************************************
2560                                ;*TEST 47        *TEST THAT DATA PATTERN 4 CAN BE XFERRED VIA SILO FROM SIDE 2 TO SIDE 1
2561                                ;;**************************************************************
2562  007260  000004                TST47:  SCOPE
2563                                                            ;/-SIDA-
2564  007262  012737  000004  001124        MOV     #4,$GDDAT       ;/RECORD XFER 4
2565  007270  113777  001124  172112        MOVB    $GDDAT,@MBSEL3 ;/DATA TO XFERR.
2566  007276  004537  012100                JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
2567          000005                        .MD.=5
2568                                                            ;/WRITE TO SILO.
2569  007302  000005                        .WORD   .MD.
2570                                        ;/RETURN HERE AFTER COMMAND .
2571                                                            ;/-MCMD-
2572  007304  004537  011656                JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
2573  007310  001424                        .WORD   KMCSR
2574          000004                        .MD.=4
2575                                                            ;/READ SILO.
2576  007312  000004                        .WORD   .MD.
2577                                        ;/RETURN HERE AFTER COMMAND .
2578
2579  007314  117737  172120  001126        MOVB    @BSEL3,$BDDAT ;/READ FROM REG.
2580  007322  123737  001124  001126        CMPB    $GDDAT,$BDDAT   ;/DATA WRITTEN = DATA RECEIVED?
2581  007330  001401                        BEQ     TST50           ;;

                                        ;**********>> ERROR <<**********

2585  007332  104005                    ERROR   5               ;/SIDE 2 TO SIDE 1 DATA
2586                                                            ;/XFERR ERROR VIA SILO.

                                        ;**********>> ERROR <<**********

2590
2591                                ;;**************************************************************
2592                                ;*TEST 50        *TEST THAT DATA PATTERN 10 CAN BE XFERRED VIA SILO FROM SIDE 2 TO SIDE 1
2593                                ;;**************************************************************
2594  007334  000004                TST50:  SCOPE
2595                                                            ;/-SIDA-
2596  007336  012737  000010  001124        MOV     #10,$GDDAT      ;/RECORD XFER 10
2597  007344  113777  001124  172036        MOVB    $GDDAT,@MBSEL3 ;/DATA TO XFERR.
2598  007352  004537  012100                JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
2599          000005                        .MD.=5
2600                                                            ;/WRITE TO SILO.
2601  007356  000005                        .WORD   .MD.
2602                                        ;/RETURN HERE AFTER COMMAND .
2603                                                            ;/-MCMD-
```

```
2604  007360  004537  011656          JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
2605  007364  001424                  .WORD   KMCSR
2606          000004                  .MD.=4
2607                                                          ;/READ SILO.
2608  007366  000004                  .WORD   .MD.
2609                                  ;/RETURN HERE AFTER COMMAND .
2610
2611  007370  117737  172044  001126  MOVB    @BSEL3,$BDDAT ;/READ FROM REG.
2612  007376  123737  001124  001126  CMPB    $GDDAT,$BDDAT   ;/DATA WRITTEN = DATA RECEIVED?
2613  007404  001401                  BEQ     TST51           ;;

                                      ;**********>> ERROR <<**********

2617  007406  104005                  ERROR   5               ;/SIDE 2 TO SIDE 1 DATA
2618                                                          ;/XFERR ERROR VIA SILO.

                                      ;**********>> ERROR <<**********


2622
2623                            ;;****************************************************************
2624                            ;*TEST 51        *TEST THAT DATA PATTERN 20 CAN BE XFERRED VIA SILO FROM SIDE 2 TO SIDE 1
2625                            ;;****************************************************************
2626  007410  000004            TST51:  SCOPE
2627                                                          ;/-SIDA-
2628  007412  012737  000020  001124  MOV     #20,$GDDAT      ;/RECORD XFER 20
2629  007420  113777  001124  171762  MOVB    $GDDAT,@MBSEL3  ;/DATA TO XFERR.
2630  007426  004537  012100          JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
2631          000005                  .MD.=5
2632                                                          ;/WRITE TO SILO.
2633  007432  000005                  .WORD   .MD.
2634                                  ;/RETURN HERE AFTER COMMAND .
2635                                                          ;/-MCMD-
2636  007434  004537  011656          JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
2637  007440  001424                  .WORD   KMCSR
2638          000004                  .MD.=4
2639                                                          ;/READ SILO.
2640  007442  000004                  .WORD   .MD.
2641                                  ;/RETURN HERE AFTER COMMAND .
2642
2643  007444  117737  171770  001126  MOVB    @BSEL3,$BDDAT ;/READ FROM REG.
2644  007452  123737  001124  001126  CMPB    $GDDAT,$BDDAT   ;/DATA WRITTEN = DATA RECEIVED?
2645  007460  001401                  BEQ     TST52           ;;

                                      ;**********>> ERROR <<**********

2649  007462  104005                  ERROR   5               ;/SIDE 2 TO SIDE 1 DATA
2650                                                          ;/XFERR ERROR VIA SILO.

                                      ;**********>> ERROR <<**********


2654
2655                            ;;****************************************************************
2656                            ;*TEST 52        *TEST THAT DATA PATTERN 40 CAN BE XFERRED VIA SILO FROM SIDE 2 TO SIDE 1
2657                            ;;****************************************************************
```

```
                                TST52:  SCOPE
                                                                ;/-SIDA-
007466  012737  000040  001124            MOV     #40,$GDDAT      ;/RECORD XFER 40
007474  113777  001124  171706            MOVB    $GDDAT,@MBSEL3 ;/DATA TO XFERR.
007502  004537  012100                    JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000005                          .MD.=5
                                                                ;/WRITE TO SILO.
007506  000005                          .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .
                                                                ;/-MCMD-
007510  004537  011656                    JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
007514  001424                          .WORD   KMCSR
        000004                          .MD.=4
                                                                ;/READ SILO.
007516  000004                          .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .

007520  117737  171714  001126            MOVB    @BSEL3,$BDDAT ;/READ FROM REG.
007526  123737  001124  001126            CMPB    $GDDAT,$BDDAT   ;/DATA WRITTEN = DATA RECEIVED?
007534  001401                            BEQ     TST53           ;;

                                        ;**********>> ERROR <<**********

007536  104005                          ERROR   5               ;/SIDE 2 TO SIDE 1 DATA
                                                                ;/XFERR ERROR VIA SILO.

                                        ;**********>> ERROR <<**********


                                ;;*****************************************************************
                                ;*TEST 53        *TEST THAT DATA PATTERN 100 CAN BE XFERRED VIA SILO FROM SIDE 2 TO SIDE
                                ;;*****************************************************************
007540  000004                  TST53:  SCOPE
                                                                ;/-SIDA-
007542  012737  000100  001124            MOV     #100,$GDDAT     ;/RECORD XFER 100
007550  113777  001124  171632            MOVB    $GDDAT,@MBSEL3 ;/DATA TO XFERR.
007556  004537  012100                    JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000005                          .MD.=5
                                                                ;/WRITE TO SILO.
007562  000005                          .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .
                                                                ;/-MCMD-
007564  004537  011656                    JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
007570  001424                          .WORD   KMCSR
        000004                          .MD.=4
                                                                ;/READ SILO.
007572  000004                          .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .

007574  117737  171640  001126            MOVB    @BSEL3,$BDDAT ;/READ FROM REG.
007602  123737  001124  001126            CMPB    $GDDAT,$BDDAT   ;/DATA WRITTEN = DATA RECEIVED?
007610  001401                            BEQ     TST54           ;;

                                        ;**********>> ERROR <<**********
```

```
                                        ERROR   5               ;/SIDE 2 TO SIDE 1 DATA
                                                                ;/XFERR ERROR VIA SILO.

                                        ;**********>> ERROR <<**********


                                ;;**************************************************************
                                ;*TEST 54        *TEST THAT DATA PATTERN 200 CAN BE XFERRED VIA SILO FROM SIDE 2 TO SIDE
                                ;;**************************************************************
007614  000004                TST54:  SCOPE
                                                                ;/-SIDA-
007616  012737  000200  001124        MOV     #200,$GDDAT     ;/RECORD XFER 200
007624  113777  001124  171556        MOVB    $GDDAT,@MBSEL3 ;/DATA TO XFERR.
007632  004537  012100                JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000005                        .MD.=5
                                                                ;/WRITE TO SILO.
007636  000005                        .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .
                                                                ;/-MCMD-
007640  004537  011656                JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
007644  001424                        .WORD   KMCSR
        000004                        .MD.=4
                                                                ;/READ SILO.
007646  000004                        .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .

007650  117737  171564  001126        MOVB    @BSEL3,$BDDAT ;/READ FROM REG.
007656  123737  001124  001126        CMPB    $GDDAT,$BDDAT   ;/DATA WRITTEN = DATA RECEIVED?
007664  001401                        BEQ     TST55           ;;

                                        ;**********>> ERROR <<**********

007666  104005                        ERROR   5               ;/SIDE 2 TO SIDE 1 DATA
                                                                ;/XFERR ERROR VIA SILO.

                                        ;**********>> ERROR <<**********


                                ;;**************************************************************
                                ;*TEST 55        *TEST THAT 7/8 FLAG SETS IN SIDE 1 WHEN 56 WORDS WRITTEN IN SILO
                                ;;**************************************************************
007670  000004                TST55:  SCOPE
007672  012737  000010  001160        MOV     #10,$TIMES      ;;DO 10 ITERATIONS
                                                                ;/-S78F-

007700  012700  000067                MOV     #55.,R0         ;SET TO DO 56 TIMES

007704                          1$:
                                                                ;/-MCMD-
007704  004537  011656                JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
007710  001424                        .WORD   KMCSR
```

```
2766            000001                          .MD.=1
2767                                                        ;/COMMAND=NOP.
2768  007712    000001                          .WORD   .MD.
2769                                            ;/RETURN HERE AFTER COMMAND .
2770  007714    132777  000001  171522          BITB    #BIT0,@BSEL5    ;/FIFO OUTPUT READY?
2771  007722    001370                          BNE     1$
2772                                                        ;/-MCMD-
2773  007724    004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
2774  007730    001424                          .WORD   KMCSR
2775            000005                          .MD.=5
2776                                                        ;/WRITE TO SILO.
2777  007732    000005                          .WORD   .MD.
2778                                            ;/RETURN HERE AFTER COMMAND .
2779  007734    005300                          DEC     R0
2780  007736    001362                          BNE     1$              ;/DONE 55 TIMES?
2781
2782  007740    012737  000050  001124          MOV     #50,$GDDAT      ;/EXP'D IOSR
2783                                                        ;/-MCMD-
2784  007746    004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
2785  007752    001424                          .WORD   KMCSR
2786            000001                          .MD.=1
2787                                                        ;/COMMAND=NOP.
2788  007754    000001                          .WORD   .MD.
2789                                            ;/RETURN HERE AFTER COMMAND .
2790  007756    117737  171462  001126          MOVB    @BSEL5,$BDDAT   ;/READ SR.
2791  007764    132777  000200  171452          BITB    #BIT7,@BSEL5 ;/DID 7/8 FLAG SET?
2792  007772    001404                          BEQ     2$              ;/NO - GOOD NEED 1 MORE CHARACTER

                                                ;**********>> ERROR <<**********

2796  007774    104001                          ERROR   1               ;/ERROR 7/8 FLAG SET IN SIDE 1
2797                                                        ;/SET WHEN ONLY 55 WORDS WRITTEN

                                                ;**********>> ERROR <<**********

2801  007776    004737  012524                  JSR     PC,BINT
2802  010002    000452                          BR      TST56           ;;
2803
2804  010004                            2$:
2805                                                        ;/-MCMD-
2806  010004    004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
2807  010010    001424                          .WORD   KMCSR
2808            000005                          .MD.=5
2809                                                        ;/WRITE TO SILO.
2810  010012    000005                          .WORD   .MD.
2811                                            ;/RETURN HERE AFTER COMMAND .
2812
2813  010014    052737  000200  001124          BIS     #BIT7,$GDDAT    ;/EXP'D SR BIT 7 SET.
2814                                                        ;/-MCMD-
2815  010022    004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO kMC #1.
2816  010026    001424                          .WORD   KMCSR
2817            000001                          .MD.=1
2818                                                        ;/COMMAND=NOP.
2819  010030    000001                          .WORD   .MD.
```

```
                                        ;/RETURN HERE AFTER COMMAND .
010032  117737  171406  001126          MOVB    @BSEL5,$BDDAT   ;/READ SR.
010040  132777  000200  171376          BITB    #BIT7,@BSEL5 ;/DID 7/8 FLAG SET NOW?
010046  001004                          BNE     3$              ;/IF YES - GOOD.

                                        ;**********>> ERROR <<**********

010050  104001                          ERROR   1               ;/7/8 FLAG FAILED TO SET IN SIDE 1
                                                                ;/AFTER 56. WORDS WRITTEN

                                        ;**********>> ERROR <<**********

010052  004737  012524                  JSR     PC,BINT
010056  000424                          BR      TST56           ;;

010060                          3$:
010060  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000004                          .MD.=4
                                                                ;/READ SILO.
010064  000004                          .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .
                                                                ;/-MCMD-
010066  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
010072  001424                          .WORD   KMCSR
        000001                          .MD.=1
                                                                ;/COMMAND=NOP.
010074  000001                          .WORD   .MD.
                                        ;/RETURN HERE AFTER COMMAND .
010076  117737  171342  001126          MOVB    @BSEL5,$BDDAT   ;/READ CSR.
010104  042737  000200  001124          BIC     #BIT7,$GDDAT            ;/EXPECT BIT 7 CLEAR.
010112  132777  000200  171324          BITB    #BIT7,@BSEL5 ;/7/8 FULL FLAG SHOULD BE CLEAR.
010120  001401                          BEQ     4$              ;/IF CLEAR, GOOD.

                                        ;**********>> ERROR <<**********

010122  104001                          ERROR   1               ;/7/8 FLAG ON SIDE 1
                                                                ;/FAILED TO CLEAR 56 WORDS WRITTEN
                                                                ;/ONE WORD READ; COUNT = 55.

                                        ;**********>> ERROR <<**********

010124  004737  012524          4$:     JSR     PC,BINT

                                ;;**********************************************************************
                                ;*TEST 56        *TEST THAT 7/8 FLAG SETS IN SIDE 2 WHEN 56 WORDS WRITTEN IN SILO
                                ;;**********************************************************************
010130  000004                  TST56:  SCOPE
010132  012737  000010  001160          MOV     #10,$TIMES      ;;DO 10 ITERATIONS
                                                                ;/-S78F-

010140  012700  000067                  MOV     #55.,R0         ;SET TO DO 56 TIMES

010144                          1$:
010144  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
```

```
2874                000001                          .MD.=1
2875                                                ;/COMMAND=NOP.
2876  010150  000001                                .WORD   .MD.
2877                                                ;/RETURN HERE AFTER COMMAND .
2878  010152  132777  000001  171234                BITB    #BIT0,@MBSEL5   ;/FIFO OUTPUT READY?
2879  010160  001371                                BNE     1$
2880  010162  004537  012100                        JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
2881                000005                          .MD.=5
2882                                                ;/WRITE TO SILO.
2883  010166  000005                                .WORD   .MD.
2884                                                ;/RETURN HERE AFTER COMMAND .
2885  010170  005300                                DEC     R0
2886  010172  001364                                BNE     1$              ;/DONE 55 TIMES?
2887
2888  010174  012737  000054  001124                MOV     #54,$GDDAT      ;/EXP'D UBSR
2889  010202  004537  012100                        JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
2890                000001                          .MD.=1
2891                                                ;/COMMAND=NOP.
2892  010206  000001                                .WORD   .MD.
2893                                                ;/RETURN HERE AFTER COMMAND .
2894  010210  117737  171200  001126                MOVB    @MBSEL5,$BDDAT  ;/READ SR.
2895  010216  132777  000200  171170                BITB    #BIT7,@MBSEL5 ;/DID 7/8 FLAG SET?
2896  010224  001404                                BEQ     2$              ;/NO - GOOD NEED 1 MORE CHARACTER

                                                    ;**********>> ERROR <<**********

2900  010226  104002                                ERROR   2               ;/ERROR 7/8 FLAG SET IN SIDE 2
2901                                                                        ;/SET WHEN ONLY 55 WORDS WRITTEN

                                                    ;**********>> ERROR <<**********

2905  010230  004737  012524                        JSR     PC,BINT
2906  010234  000450                                BR      TST57           ;;
2907
2908  010236                          2$:
2909  010236  004537  012100                        JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
2910                000005                          .MD.=5
2911                                                ;/WRITE TO SILO.
2912  010242  000005                                .WORD   .MD.
2913                                                ;/RETURN HERE AFTER COMMAND .
2914
2915  010244  052737  000200  001124                BIS     #BIT7,$GDDAT    ;/EXP'D SR BIT 7 SET.
2916  010252  004537  012100                        JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
2917                000001                          .MD.=1
2918                                                ;/COMMAND=NOP.
2919  010256  000001                                .WORD   .MD.
2920                                                ;/RETURN HERE AFTER COMMAND .
2921  010260  117737  171130  001126                MOVB    @MBSEL5,$BDDAT  ;/READ SR.
2922  010266  132777  000200  171120                BITB    #BIT7,@MBSEL5 ;/DID 7/8 FLAG SET NOW?
2923  010274  001004                                BNE     3$              ;/IF YES - GOOD.

                                                    ;**********>> ERROR <<**********

2927  010276  104002                                ERROR   2               ;/7/8 FLAG FAILED TO SET IN SIDE 2
```

```
                                                        ;/AFTER 56. WORDS WRITTEN

                                                ;**********>> EPROR <<**********

010300  004737  012524                          JSR     PC,BINT
010304  000424                                  BR      TST57           ;;

010306                          3$:
                                                        ;/-MCMD-
010306  004537  011656                          JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
010312  001424                                  .WORD   KMCSR
        000004                                  .MD.=4
                                                        ;/READ SILO.
010314  000004                                  .WORD   .MD.
                                                ;/RETURN HERE AFTER COMMAND .
010316  004537  012100                          JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000001                                  .MD.=1
                                                        ;/COMMAND=NOP.
010322  000001                                  .WORD   .MD.
                                                ;/RETURN HERE AFTER COMMAND .
010324  117737  171064  001126                  MOVB    @MBSEL5,$BDDAT  ;/READ CSR.
010332  042737  000200  001124                  BIC     #BIT7,$GDDAT            ;/EXPECT BIT 7 CLEAR.
010340  132777  000200  171046                  BITB    #BIT7,@MBSEL5 ;/7/8 FULL FLAG SHOULD BE CLEAR.
010346  001401                                  BEQ     4$              ;/IF CLEAR, GOOD.

                                                ;**********>> ERROR <<**********

010350  104002                                  ERROR   2               ;/7/8 FLAG ON SIDE 2
                                                                        ;/FAILED TO CLEAR 56 WORDS WRITTEN
                                                                        ;/ONE WORD READ; COUNT = 55.

                                                ;**********>> ERROR <<**********

010352  004737  012524          4$:             JSR     PC,BINT


                                                ;;**********************************************************************
                                                ;*TEST 57        *TEST THAT SIDE 1 READ/WRITE ERROR FLAG SETS WHEN MORE THAN 64 WORDS WRI
                                                ;;**********************************************************************
010356  000004                                  TST57:  SCOPE
010360  012737  000010  001160                  MOV     #10,$TIMES      ;;DO 10 ITERATIONS

                                                        ;/-SOVFL-

010366  012700  000100                          MOV     #64.,R0         ;/SET TO DO 64 XFERRS.

010372                          1$:
                                                        ;/-MCMD-
010372  004537  011656                          JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
010376  001424                                  .WORD   KMCSR
        000001                                  .MD.=1
                                                        ;/COMMAND=NOP.
010400  000001                                  .WORD   .MD.
                                                ;/RETURN HERE AFTER COMMAND .
```

```
2982  010402  132777  000001  171034          BITB    #BIT0,@BSEL5    ;/FIFO READY?
2983  010410  001370                          BNE     1$
2984                                          ;/-MCMD-
2985  010412  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
2986  010416  001424                          .WORD   KMCSR
2987          000005                          .MD.=5
2988                                          ;/WRITE TO SILO.
2989  010420  000005                          .WORD   .MD.
2990                                          ;/RETURN HERE AFTER COMMAND .
2991  010422  005300                          DEC     R0              ;/DONE 64 TIMES?
2992  010424  001362                          BNE     1$              ;/NO - REPEAT
2993  010426  012737  000252  001124          MOV     #252,$GDDAT     ;/EXP'D IOSR.
2994
2995                                          ;/-MCMD-
2996  010434  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
2997  010440  001424                          .WORD   KMCSR
2998          000001                          .MD.=1
2999                                          ;/COMMAND=NOP.
3000  010442  000001                          .WORD   .MD.
3001                                          ;/RETURN HERE AFTER COMMAND .
3002  010444  132777  000100  170772          BITB    #BIT6,@BSEL5 ;/FIFO R/W ERROR SET?
3003  010452  001407                          BEQ     2$              ;/NO - GOOD
3004  010454  117737  170764  001126          MOVB    @BSEL5,$BDDAT   ;/RECORD SR.

                                              ;**********>> ERROR <<**********

3008  010462  104001                          ERROR   1               ;/FIFO R/W ERROR FLAG SET
3009                                                                  ;/IN SIDE 1 WHEN ONLY
3010                                                                  ;/64. WORDS WRITTEN

                                              ;**********>> ERROR <<**********

3014  010464  004737  012524                  JSR     PC,BINT
3015  010470  000457                          BR      TST60           ;;
3016
3017  010472                          2$:
3018                                          ;/-MCMD-
3019  010472  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
3020  010476  001424                          .WORD   KMCSR
3021          000005                          .MD.=5
3022                                          ;/WRITE TO SILO.
3023  010500  000005                          .WORD   .MD.
3024                                          ;/RETURN HERE AFTER COMMAND .
3025                                          ;/-MCMD-
3026  010502  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
3027  010506  001424                          .WORD   KMCSR
3028          000001                          .MD.=1
3029                                          ;/COMMAND=NOP.
3030  010510  000001                          .WORD   .MD.
3031                                          ;/RETURN HERE AFTER COMMAND .
3032  010512  052737  000100  001124          BIS     #BIT6,$GDDAT    ;/EXPECT BIT 6 TO SET.
3033  010520  117737  170720  001126          MOVB    @BSEL5,$BDDAT   ;/READ SR.
3034  010526  132777  000100  170710          BITB    #BIT6,@BSEL5 ;/FIFO OVFL SET?
3035  010534  001007                          BNE     3$              ;/YES - GOOD.
```

```
3036  010536  117737  170702  001126          MOVB    @BSEL5,$BDDAT   ;/RECORD SR

                                              ;**********>> EPROR <<**********

3040  010544  104001                          ERROR   1               ;/FIFO R/W ERROR FLAG FAILED TO SET
3041                                                                  ;/IN SIDE 1 WHEN 65.
3042                                                                  ;/WORDS WRITTEN.

                                              ;**********>> ERROR <<**********

3046  010546  004737  012524                  JSR     PC,BINT
3047  010552  000426                          BR      TST60           ;;
3048
3049  010554  004737  012524          3$:     JSR     PC,BINT         ;/NOW INITIALIZE.
3050                                                                  ;/-MCMD-
3051  010560  004537  011656                  JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
3052  010564  001424                          .WORD   KMCSR
3053          000001                          .MD.=1
3054                                                                  ;/COMMAND=NOP.
3055  010566  000001                          .WORD   .MD.
3056                                          ;/RETURN HERE AFTER COMMAND .
3057  010570  042737  000300  001124          BIC     #BIT6!BIT7,$GDDAT       ;/OVLF AND 7/8 SHOULD CLEAR.
3058  010576  052737  000002  001124          BIS     #BIT1,$GDDAT            ;/BIT 1 SHOULD SET.
3059  010604  117737  170634  001126          MOVB    @BSEL5,$BDDAT   ;/READ SR.
3060  010612  123737  001124  001126          CMPB    $GDDAT,$BDDAT           ;/EVERYTHING OK?
3061  010620  001401                          BEQ     4$              ;YES GET OUT.

                                              ;**********>> ERROR <<**********

3065  010622  104001                          ERROR   1               ;/FIFO R/W ERROR FLAG FAILED TO
3066                                                                  ;/CLEAR SIDE 1 WHEN
3067                                                                  ;/INITIALIZED.

                                              ;**********>> ERROR <<**********

3071
3072  010624  004737  012524          4$:     JSR     PC,BINT
3073
3074                                          ;;******************************************************************
3075                                          ;*TEST 60        *TEST THAT SIDE 2 READ/WRITE ERROR FLAG SETS WHEN MORE THAN 64 WORDS WRI
3076                                          ;;******************************************************************
3077  010630  000004                  TST60:  SCOPE
3078  010632  012737  000010  001160          MOV     #10,$TIMES      ;;DO 10 ITERATIONS
3079
3080                                                                  ;/-SOVFL-
3081
3082  010640  012700  000100                  MOV     #64.,R0         ;/SET TO DO 64 XFERRS.
3083
3084  010644                          1$:
3085  010644  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
3086          000001                          .MD.=1
3087                                                                  ;/COMMAND=NOP.
3088  010650  000001                          .WORD   .MD.
3089                                          ;/RETURN HERE AFTER COMMAND .
```

```
3090  010652  132777  000001  170534          BITB    #BIT0,@MBSEL5   ;/FIFO READY?
3091  010660  001371                          BNE     1$
3092  010662  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
3093          000005                          .MD.=5
3094                                          ;/WRITE TO SILO.
3095  010666  000005                          .WORD   .MD.
3096                                          ;/RETURN HERE AFTER COMMAND .
3097  010670  005300                          DEC     R0              ;/DONE 64 TIMES?
3098  010672  001364                          BNE     1$              ;/NO - REPEAT
3099  010674  012737  000256  001124          MOV     #256,$GDDAT     ;/EXP'D UBSR.
3100
3101  010702  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
3102          000001                          .MD.=1
3103                                          ;/COMMAND=NOP.
3104  010706  000001                          .WORD   .MD.
3105                                          ;/RETURN HERE AFTER COMMAND .
3106  010710  132777  000100  170476          BITB    #BIT6,@MBSEL5 ;/FIFO R/W ERROR SET?
3107  010716  001407                          BEQ     2$              ;/NO - GOOD
3108  010720  117737  170470  001126          MOVB    @MBSEL5,$BDDAT  ;/RECORD SR.

                                              ;**********>> ERROR <<**********

3112  010726  104002                          ERROR   2               ;/FIFO R/W ERROR FLAG SET
3113                                                                  ;/IN SIDE 2 WHEN ONLY
3114                                                                  ;/64. WORDS WRITTEN

                                              ;**********>> ERROR <<**********

3118  010730  004737  012524                  JSR     PC,BINT
3119  010734  000454                          BR      TST61           ;;
3120
3121  010736                          2$:
3122  010736  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
3123          000005                          .MD.=5
3124                                          ;/WRITE TO SILO.
3125  010742  000005                          .WORD   .MD.
3126                                          ;/RETURN HERE AFTER COMMAND .
3127  010744  004537  012100                  JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
3128          000001                          .MD.=1
3129                                          ;/COMMAND=NOP.
3130  010750  000001                          .WORD   .MD.
3131                                          ;/RETURN HERE AFTER COMMAND .
3132  010752  052737  000100  001124          BIS     #BIT6,$GDDAT    ;/EXPECT BIT 6 TO SET.
3133  010760  117737  170430  001126          MOVB    @MBSEL5,$BDDAT  ;/READ SR.
3134  010766  132777  000100  170420          BITB    #BIT6,@MBSEL5 ;/FIFO OVFL SET?
3135  010774  001007                          BNE     3$              ;/YES - GOOD.
3136  010776  117737  170412  001126          MOVB    @MBSEL5,$BDDAT  ;/RECORD SR

                                              ;**********>> ERROR <<**********

3140  011004  104002                          ERROR   2               ;/FIFO R/W ERROR FLAG FAILED TO SET
3141                                                                  ;/IN SIDE 2 WHEN 65.
3142                                                                  ;/WORDS WRITTEN.
```

```
                                        ;**********>> ERROR <<**********

3146  011006  004737  012524            JSR     PC,BINT
3147  011012  000425                    BR      TST61           ;;
3148
3149  011014  004737  012524    3$:     JSR     PC,BINT         ;/NOW INITIALIZE.
3150  011020  004537  012100            JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
3151          000001                    .MD.=1
3152                                                            ;/COMMAND=NOP.
3153  011024  000001                    .WORD   .MD.
3154                                    ;/RETURN HERE AFTER COMMAND .
3155  011026  042737  000300  001124    BIC     #BIT6!BIT7,$GDDAT       ;/OVLF AND 7/8 SHOULD CLEAR.
3156  011034  052737  000002  001124    BIS     #BIT1,$GDDAT            ;/BIT 1 SHOULD SET.
3157  011042  117737  170346  001126    MOVB    @MBSEL5,$BDDAT  ;/READ SR.
3158  011050  123737  001124  001126    CMPB    $GDDAT,$BDDAT           ;/EVERYTHING OK?
3159  011056  001401                    BEQ     4$              ;YES GET OUT.

                                        ;**********>> ERROR <<**********

3163  011060  104002                    ERROR   2               ;/FIFO R/W ERROR FLAG FAILED TO
3164                                                            ;/CLEAR SIDE 2 WHEN
3165                                                            ;/INITIALIZED.

                                        ;**********>> ERROR <<**********

3169
3170  011062  004737  012524    4$:     JSR     PC,BINT
3171
3172                                    ;;*****************************************************************
3173                                    ;*TEST 61        *TEST BURST MODE XFERR MASTER TO sLAVE
3174                                    ;;*****************************************************************
3175  011066  000004            TST61:  SCOPE
3176  011070  004737  012542            JSR     PC,FILBUF       ;FILL SEND BUFF WITH RANDOM NUMBERS
3177  011074                    10$:
3178                                                            ;/-MCMD-
3179  011074  004537  011656            JSR     R5,ISSUEC       ;/ISSUE COMMAND TO kMC #1.
3180  011100  001424                    .WORD   KMCSR
3181          000002                    .MD.=2
3182          000202                    .MD.=.MD.!200
3183                                                            ;/NPR READ FROM MEM WRITE SILO.
3184  011102  000202                    .WORD   .MD.
3185  011104  017322                    .WORD   SENBUF          ;/ADDRESS OF MEMORY TO/FRO DATA.
3186  011106  000036                    .WORD   30.             ;/BYTE COUNT FOR XFERR.
3187                                    ;/RETURN HERE AFTER COMMAND .
3188  011110  012700  017722            MOV     #RECBUF,R0
3189  011114  012701  000037            MOV     #31.,R1
3190  011120                    20$:
3191  011120  004537  012100            JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
3192          000004                    .MD.=4
3193                                                            ;/READ SILO.
3194  011124  000004                    .WORD   .MD.
3195                                    ;/RETURN HERE AFTER COMMAND .
3196  011126  117720  170256            MOVB    @MBSEL3,(0)+
3197  011132  004537  012100            JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
```

I06


```
        000004                                      .MD.=4
                                                                              ;/READ SILO.
011136  000004                                      .WORD   .MD.
                                                    ;/RETURN HERE AFTER COMMAND .
011140  117720  170244                              MOVB    @MBSEL3,(0)+
011144  005301                                      DEC     R1
011146  001364                                      BNE     20$
011150  004537  012100                              JSR     R5,KMSIM          ;/DMC SIMULATE KMC INSTR. LIST FOR.
        000001                                      .MD.=1
                                                                              ;/COMMAND=NOP.
011154  000001                                      .WORD   .MD.
                                                    ;/RETURN HERE AFTER COMMAND .
011156  005037  001126                              CLR     $BDDAT
011162  117737  170226  001126                      MOVB    @MBSEL5,$BDDAT    ;GET CSR DATA
011170  012737  000056  001124                      MOV     #56,$GDDAT        ;EXPECT 56
011176  123737  001124  001126                      CMPB    $GDDAT,$BDDAT     ;SR OK?
011204  001404                                      BEQ     1$                ;YES CONTINUE

                                                    ;**********>> ERROR <<**********

011206  104002                                      ERROR   2                 ;HIGH SPEED OPERATION OF THE
                                                                              ;SILO'S UP-DOWN COUNTER DIDN'T
                                                                              ;PRODUCE A NET ZERO RESULT
                                                                              ;THUS SETTING IOSR BIT 1
                                                                              ;

                                                    ;**********>> ERROR <<**********

011210  004737  012524                              JSR     PC,BINT
011214  000420                                      BR      TST62             ;;
011216  012700  017722                      1$:     MOV     #RECBUF,R0        ;POINT TO RECEIVED DATA
011222  012701  017322                              MOV     #SENBUF,R1        ;POINT TO GOOD DATA
011226  012702  000076                              MOV     #62.,R2           ;# OF DATA TO CHECK BYTES
011232  122021                              2$:     CMPB    (0)+,(1)+         ;DATA GOOd?
011234  001406                                      BEQ     3$
011236  114037  001126                              MOVB    -(0),$BDDAT       ;NO - PICK UP BAD DATA
011242  114137  001124                              MOVB    -(1),$GDDAT       ;NOW GOOD DATA

                                                    ;**********>> ERROR <<**********

011246  104006                                      ERROR   6                 ;BUST XFERR THROUGH SILO
                                                                              ;SIDE 1 TO SIDE 2 PRODUCED
                                                                              ;A DATA ERROR.

                                                    ;**********>> ERROR <<**********

011250  000402                                      BR      TST62             ;;
011252  005302                              3$:     DEC     R2                ;CHECK ALL DATA?
011254  001366                                      BNE     2$                ;NO - DO NEXT ONE.

                                            ;;*************************************************************
                                            ;*TEST 62        *TEST BURST MODE XFERR SIDE 2 TO SIDE 1
                                            ;;*************************************************************
011256  000004                              TST62:  SCOPE
```

```
3252  011260  004737  012542                    JSR     PC,FILBUF       ;FILL SEND BUFF WITH RANDOM NUMBERS
3253                                            ;/-MCMD-
3254  011264  004537  011656                    JSR     R5,ISSUEC       ;/ISSUE COMMAND TO KMC #1.
3255  011270  001424                            .WORD   KMCSR
3256          000003                            .MD.=3
3257                                            ;/READ SILO, NPR WRITE TO MEM.
3258          000603                            .MD.=.MD.!6GO
3259  011272  000603                            .WORD   .MD.
3260  011274  017722                            .WORD   RECBUF          ;/ADDRESS OF MEMORY TO/FRO DATA.
3261  011276  000036                            .WORD   30.             ;/BYTE COUNT FOR XFERR.
3262                                            ;/RETURN HERE AFTER COMMAND .
3263  011300  012700  017322          10$:      MOV     #SENBUF,R0      ;ADDR. OF DATA
3264  011304  012701  000076                    MOV     #62.,R1         ;#OF WORDS TO x FERR
3265  011310  112077  170074          20$:      MOVB    (0)+,@MBSEL3    ;XFER BYTE
3266  011314  004537  012100                    JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
3267          000005                            .MD.=5
3268                                            ;/WRITE TO SILO.
3269  011320  000005                            .WORD   .MD.
3270                                            ;/RETURN HERE AFTER COMMAND .
3271  011322  005301                            DEC     R1              ;ALL DON«?
3272  011324  001371                            BNE     20$             ;NO-CONTINUE
3273  011326  004537  012100                    JSR     R5,KMSIM        ;/DMC SIMULATE KMC INSTR. LIST FOR.
3274          000001                            .MD.=1
3275                                            ;/COMMAND=NOP.
3276  011332  000001                            .WORD   .MD.
3277                                            ;/RETURN HERE AFTER COMMAND .
3278  011334  005037  001126                    CLR     $BDDAT
3279  011340  117737  170100  001126            MOVB    @BSEL5,$BDDAT   ;GET UBSR DATA
3280  011346  012737  000052  001124            MOV     #52,$GDDAT      ;EXPECT 52
3281  011354  123737  001124  001126            CMPB    $GDDAT,$BDDAT   ;SR OK?
3282  011362  001404                            BEQ     1$              ;YES CONTINUE

                                                ;**********>> ERROR <<**********

3286  011364  104001                            ERROR   1               ;HIGH SPEED OPERATION OF THE
3287                                                                    ;SILO'S UP-DOWn COUNTER DIDN'T
3288                                                                    ;PRODUCE A NET ZERO RESULT
3289                                                                    ;THUS SETTING UBSR BIT 1
3290                                                                    ;

                                                ;**********>> ERROR <<**********

3294  011366  004737  012524                    JSR     PC,BINT
3295  011372  000420                            BR      TST63           ;;
3296  011374  012700  017722          1$:       MOV     #RECBUF,R0      ;POINT TO RLCEIVED DATA
3297  011400  012701  017322                    MOV     #SENBUF,R1      ;POINT TO GOOD DATA
3298  011404  012702  000076                    MOV     #62.,R2         ;# OF DATA TO CHECK BYTES
3299  011410  122021                  2$:       CMPB    (0)+,(1)+       ;DATA GOOD?
3300  011412  001406                            BEQ     3$
3301  011414  114037  001126                    MOVB    -(0),$BDDAT     ;NO - PICK UP BAD DATA
3302  011420  114137  001124                    MOVB    -(1),$GDDAT     ;NOW GOOD DATA

                                                ;**********>> ERROR <<**********
```

```
3306  011424  104005                          ERROR   5               ;BUST XFERR THROUGH SILO
3307                                                                  ;SIDE 2 TO SIDE 1 PRODUCED
3308                                                                  ;A DATA ERROR.

                                              ;**********>> ERROR <<**********

3312  011426  000402                          BR      TST63           ;;
3313  011430  005302                  3$:     DEC     R2              ;CHECK ALL DATA?
3314  011432  001366                          BNE     2$              ;NO - DO NEXT ONE.
3315
3316                                  ;;*****************************************************************
3317                                  ;*TEST 63            END OF TESTS
3318                                  ;;*****************************************************************
3319  011434  000004                  TST63:  SCOPE
3320
3321  011436  023737  001372  001366          CMP     NCNT,MCNT       ;DONE ALL?
3322  011444  001410                          BEQ     10$
3323  011446  005237  001372                  INC     NCNT            ;DO NEXT.
3324  011452  013700  001424                  MOV     KMCSR,R0
3325  011456  063700  001370                  ADD     VAR2,R0
3326  011462  000137  001724                  JMP     LSTED
3327  011466                          10$:
3328
3329                                  .SBTTL  END OF PASS ROUTINE
3330
3331                                  ;;*****************************************************************
3332                                  ;*INCREMENT THE PASS NUMBER ($PASS)
3333                                  ;*IF THERES A MONITOR GO TO IT
3334                                  ;*IF THERE ISN'T JUMP TO RTNAD
3335
3336  011466                          $EOP:
3337  011466  000240                          NOP
3338  011470  005037  001102                  CLR     $TSTNM          ;;ZERO THE TEST NUMBER
3339  011474  005037  001160                  CLR     $TIMES          ;;ZERO THE NUMBER OF ITERATIONS
3340  011500  005237  001200                  INC     $PASS           ;;INCREMENT THE PASS NUMBER
3341  011504  042737  100000  001200          BIC     #100000,$PASS   ;;DON'T ALLOW A NEG. NUMBER
3342  011512  005327                          DEC     (PC)+           ;;LOOP?
3343  011514  000001                  $EOPCT: .WORD   1
3344  011516  003053                          BGT     $DOAGN          ;;YES
3345  011520  012737                          MOV     (PC)+,@(PC)+    ;;RESTORE COUNTER
3346  011522  000001                  $ENDCT: .WORD   1
3347  011524  011514                          $EOPCT
3348
3349                                                                  ;/-ENDPAS-
3350  011526  104401  011534                  TYPE    ,65$            ;;TYPE ASCIZ STRING
3351  011532  000406                          BR      64$             ;;GET OVER THE ASCIZ
3352                                  ;;65$:  .ASCIZ  <200>#END PASS #
3353  011550                          64$:
3354  011550  013746  001200                  MOV     $PASS,-(SP)     ;;SAVE $PASS FOR TYPEOUT
3355                                                                  ;;TYPE PASS NUMBER.
3356  011554  104405                          TYPDS                   ;;GO TYPE--DECIMAL ASCII WITH SIGN
3357  011556  104401  011564                  TYPE    ,67$            ;;TYPE ASCIZ STRING
3358  011562  000411                          BR      66$             ;;GET OVER THE ASCIZ
3359                                  ;;67$:  .ASCIZ  # ; TOTAL ERRORS #
```

```
3360  011606                                  66$:
3361  011606  013746  001456                        MOV     ERCNT,-(SP)     ;;SAVE ERCNT FOR TYPEOUT
3362  011612  104405                              TYPDS                   ;;GO TYPE--DECIMAL ASCII WITH SIGN
3363
3364  011614  104401  011622                    TYPE    ,69$            ;;TYPE ASCIZ STRING
3365  011620  000402                            BR      68$             ;;GET OVER THE ASCIZ
3366                                        ;;69$:  .ASCIZ  / /
3367  011626                                  68$:
3368
3369  011626  013700  000042                  $GET42: MOV     @#42,R0         ;;GET MONITOR ADDRESS
3370  011632  001405                            BEQ     $DOAGN          ;;BRANCH IF NO MONITOR
3371  011634  000005                            RESET                   ;;CLEAR THE WORLD
3372  011636  004710                          $ENDAD: JSR     PC,(R0)         ;;GO TO MONITOR
3373  011640  000240                            NOP                     ;;SAVE ROOM
3374  011642  000240                            NOP                     ;;FOR
3375  011644  000240                            NOP                     ;;ACT11
3376  011646                                  $DOAGN:
3377  011646  000137                            JMP     @(PC)+          ;;RETURN
3378  011650  001712                          $RTNAD: .WORD   RTNAD
3379  011652     377      377      000       $ENULL: .BYTE   -1,-1,0         ;;NULL CHARACTER STRING
3380  011656                                        .EVEN
3381                                          ;*
3382                                          ;*COMMAND ROUTINE
3383                                          ;*THIS ROUTINE WILL ISSUE COMMANDS TO THE
3384                                          ;*SPECIFIED KMC-11 AND WAITE FOR COMMAND COMPLETION
3385                                          ;*UNLESS INHIBITED BY COMMAND CALL.
3386                                          ;*
3387                                          ;*CALL= JSR     R5,ISSUEC
3388                                          ;*      ARG1
3389                                          ;*      ARG2
3390                                          ;*      ARG3    (IF NEEDED)
3391                                          ;*      ARG4    (IF NEEDED)
3392                                          ;*      -) RETURNS HERE (-
3393                                          ;*ARG1  SPECIFIES THE ADDRESS OF THE ADDRESS OF THE KMC-11
3394                                          ;*ARG2  SPECIFIES THE COMMAND FOR THE KMC-11 FIREMWARE
3395                                          ;*      IN BITS 0-6
3396                                          ;*      IN BIT7 WE SPECIFY IF ARG3 AND 4 ARE USED
3397                                          ;*      IN BIT8 WE SPECIFY IF WE SHOULD WAIT FOR
3398                                          ;*      COMMAND COMPLETION BEFORE RETURNING
3399                                          ;*ARG3  SPECIFIES BSEL2+BSEL3 INFO (ADDRESS).
3400                                          ;*ARG4  SPECIFIES BSEL4 INFO. (BYTE COUNT).
3401                                          ;*
3402
3403  011656  010046                  ISSUEC: MOV     R0,-(SP)        ;SAVE R0
3404  011660  013500                          MOV     @(5)+,R0        ;PICK UP KMC ADDR.
3405  011662  105715                          TSTB    (5)             ;EXTENDED COMMAND?
3406  011664  100030                          BPL     1$              ;NO-AHEAD.
3407  011666  116560  000002  000002          MOVB    2(5),2(0)       ;SET BSEL2
3408  011674  116560  000003  000003          MOVB    3(5),3(0)       ;SET BSEL3
3409  011702  116560  000004  000004          MOVB    4(5),4(0)       ;SET BSEL4
3410  011710  142715  000200                  BICB    #200,(5)
3411  011714  111560  000000                  MOVB    (5),0(0)        ;SET COMMAND
3412  011720  152715  000200                  BISB    #200,(5)
3413  011724  062705  000006                  ADD     #6,R5           ;POINT PAST CALL AND ARGS.
```

```
3414  011730  012737  000000  012244          MOV     #0,,TIME        ;SET FOR INSTRUCTION TIME OUT.
3415  011736  105765  177773                  TSTB    -5(5)           ;IGNOR WAITING FOR DONE?
3416  011742  001040                          BNE     ISSEX           ;YES-EXIT.
3417  011744  000404                          BR      2$              ;NO-WAIT.
3418
3419  011746  112560  000000          1$:     MOVB    (5)+,0(0)       ;ISSUE COMMAND.
3420  011752  105725                          TSTB    (5)+            ;IGNOR WAITING FOR DONE?
3421  011754  001033                          BNE     ISSEX           ;YES-EXIT.
3422
3423  011756  105710          2$:             TSTB    (0)             ;KMC FINISHED COMMAND?
3424  011760  100433                          BMI     ERRIS           ;BIT7 SET IF ERROR.
3425  011762  005237  012244                  INC     TIME            ;HAS MICRO-PROC TAKEN TO MUCH TIME?
3426  011766  001373                          BNE     2$              ;NO-LOOP.
3427          011770          RBST=.
3428
3429  011770  104401  011776                  TYPE    ,65$            ;;TYPE ASCIZ STRING
3430  011774  000415                          BR      64$             ;;GET OVER THE ASCIZ
3431                          ;;65$:  .ASCIZ  <200>#MICRO-HUNG--RESTARTING.#
3432  012030                  64$:
3433  012030  012706  001100                  MOV     #STACK,SP       ;RESET STACK.
3434  012034  004737  012524                  JSR     PC,BINIT        ;INITIALIZE MICRO PROCESSORS.
3435  012040  000177  167042                  JMP     @$LPADR         ;RESTART SUB TEST.
3436
3437  012044  012600          ISSEX:  MOV     (SP)+,R0        ;RESTORE R0
3438  012046  000205                  RTS     R5              ;EXIT
3439
3440  012050  122710  000377          ERRIS:  CMPB    #377,(0)        ;IF CMD=377 THE KMC HAS FINISHED
3441  012054  001773                          BEQ     ISSEX           ;THE COMMAND
3442  012056  010037  001462                  MOV     R0,KLAD         ;STORE KMC ADDR.
3443  012062  116037  000005  001126          MOVB    5(0),$BDDAT     ;GET CSR
3444  012070  105037  001127                  CLRB    $BDDAT+1        ;UPPER BYTE UNUSED

                                ;**********>> ERROR <<**********

3448  012074  104011                  ERROR   11              ;MICRO PROCESSOR PASSED
3449                                                          ;BACK A DETECTED ERROR
3450                                                          ;SEE TEST WE WERE
3451                                                          ;DOInG AT TIME.

                                ;**********>> ERROR <<**********

3455
3456  012076  000762                  BR      ISSEX
3457
3458
3459
3460                            ;KMSIM  +THIS ROUTINE IS USED TO MAKE THE M8200-YC ACT LIKE A
3461                            ;        KMC-11 THE M8200-YC, EVEN THOUGH (P)ROM PROGRAM BLASTED,
3462                            ;        MAY EXECUTE SINGLE INSTRUCTIONS, ONE AT A TIME. WHEN WE
3463                            ;        WILL PASS A NUMBER THAT REPRESENTS THE SEQUENCE OF
3464                            ;        INTRUCTIONS WE WISH IT TO DO. WE THEN TAKE THIS NUMBER
3465                            ;        AND USE IT AS A GUIDE TO START EXECUTING THE CODE
3466                            ;        LOADING INTO THE KMC-11.
3467                            ;
```

```
3468                                                    ;       CALL=   JSR     R5,KMSIM
3469                                                    ;               .WORD   X       (COMMAND TO PERFORM)
3470                                                    ;               ;RETURNS HERE WHEN DONe
3471
3472  012100  010046                           KMSIM:  MOV     R0,-(SP)        ;SAVE R0
3473  012102  010146                                   MOV     R1,-(SP)        ;SAVE R1
3474  012104  012500                                   MOV     (5)+,   R0      ;PICK-UP COMMAND #.
3475  012106  042700  177700                           BIC     #177700,R0      ;STRIP ANY JUNK.
3476  012112  006300                                   ASL     R0              ;ADJUST POINTER.
3477  012114  062700  000000G                         ADD     #MRCODE,R0      ;ADDR. OF COMMAND LIST
3478  012120  005001                                   CLR     R1
3479  012122  111001                                   MOVB    (0),R1          ;POINTER TO INSTRUCTION LIST.
3480  012124  006301                                   ASL     R1              ;POINTER=POINTER TIMES 2
3481  012126  042701  177000                           BIC     #177000,R1
3482  012132  062701  000000G                         ADD     #MRCODE,R1      ;PLUS LIST
3483                                                                            ;POINTER TO LIST OF INSTRUCTIONS
3484                                                                            ;IS R1<-
3485  012136  012100                           1$:     MOV     (1)+,R0         ;GET INSTUCTION.
3486  012140  100403                                   BMI     2$              ;IF A BRANCH INSTRUCTION,EXIT
3487  012142  004737  012166                  3$:     JSR     PC,DOIT         ;IF NOT-MAKE DMC-EXECUTE IT.
3488
3489  012146  000773                                   BR      1$
3490  012150  032761  070000  177776          2$:     BIT     #070000,-2(1)   ;MAKE SURE IT WAS A BR INSTR.
3491  012156  001371                                   BNE     3$              ;IF A MOVE,GO DO IT.
3492
3493  012160  012601                                   MOV     (SP)+,R1        ;IT WAS A BR RESTORE R1
3494  012162  012600                                   MOV     (SP)+,R0        ;AND R0.
3495  012164  000205                                   RTS     R5              ;THEN EXIT.
3496
3497  012166  112777  0C0002  167210  DOIT:   MOVB    #BIT01,@MBSEL1          ;SET ROMI
3498  012174  000240                           NOP
3499  012176  010077  167214                           MOV     R0,@MBSEL6      ;LOAD INSTR.
3500  012202  000240                           NOP
3501  012204  152777  000003  167172                   BISB    #BIT1!BIT0,@MBSEL1      ;CLOCK INSTRUCTION
3502  012212  000240                           NOP
3503  012214  000240                           NOP
3504  012216  000240                           NOP
3505  012220  000240                           NOP
3506  012222  000240                           NOP
3507  012224  000240                           NOP
3508  012226  142777  000007  167150                   BICB    #BIT2!BIT1!BIT0,@MBSEL1 ;CLEAR ROM0,ROMI,SET
3509  012234  000207                                   RTS     PC
3510
3511                                                    ;TAKES CARE OF CLOCK INTERRUPTS.
3512  012236  005237  012244                  KWINT:  INC     TIME            ;UPDATE TIME.
3513  012242  000002                                   RTI                     ;EXIT
3514  012244  000000                           TIME:   .WORD   0               ;SET TO MINUS NUMBER BY USER.
3515                                                                            ;*
3516                                                                            ;*LOAD  THIS ROUTINE LOADS THE UCODE
3517                                                                            ;*      INTO THE KMC-11 UPROCESSOR.
3518                                                                            ;*      CALL= JSR R5,LOAD
3519                                                                            ;*
3520                                                                            ;*MAKE SURE JUMPER W1 IS REMOVED ON 8254 MODULE!!!
3521                                                                            ;*
```

```
 3522  012246  005004                    LOAD:   CLR     R4              ;CLEAR ERROR TIMER
 3523  012250  012700  000000G           3$:     MOV     #MRCODE,R0      ;GET ADDRESS OF UCODE
 3524                                                                    ;CLEAR CSRS.
```

```
3525  012254  005077  167144                CLR     @KMCSR
3526                                                          ;SET ADDR 0
3527  012260  005077  167142                CLR     @KMADR   ;IN BOTH KMC-11S
3528
3529  012264  052777  002000  167132  1$:   BIS     #2000,@KMCSR  ;SELECT CRAM.
3530
3531  012272  012077  167132                MOV     (0)+,@KMDBR   ;WRITE DATA
3532
3533  012276  052777  020000  167120        BIS     #20000,@KMCSR ;SET CRAM WRITE.
3534                                                          ;NOTE:  IF PROGRAM SEEMS TO STOP IN THIS AREA,
3535                                                          ;       MAKE SURE JUMPER W1 ON 8254
3536                                                          ;       MODULE IS REMOVED!!!
3537
3538  012304  005077  167114                CLR     @KMCSR   ;DISABLE CRAM
3539  012310  005277  167112                INC     @KMADR   ;IN UNIT
3540  012314  020027  000000G               CMP     R0,#UCODEE ;DONE ALL UCODE?
3541  012320  001361                        BNE     1$       ;NO - DO NEXT INSTR.
3542
3543                                                          ;NOW LETS CHECK TO MAKE SURE
3544  012322  005077  167100                CLR     @KMADR   ;UCODE GOT LOADED CORRECTLY.
3545  012326  012700  000000G               MOV     #MRCODE,R0
3546
3547  012332  052777  002000  167064  2$:   BIS     #2000,@KMCSR  ;SELECT CRAM.
3548  012340  013737  001426  001462        MOV     KMADR,KLAD
3549  012346  022077  167056                CMP     (0)+,@KMDBR   ;DATA OK?
3550  012352  001013                        BNE     LOADER
3551  012354  005077  167044                CLR     @KMCSR   ;CLEAR THE CSR
3552  012360  005277  167042                INC     @KMADR   ;CHANGE UCODE ADDR.
3553  012364  020027  000000G               CMP     R0,#UCODEE ;AT END?
3554  012370  001360                        BNE     2$
3555  012372  012777  100000  167024        MOV     #BIT15,@KMCSR ;SET RUN.
3556  012400  000205                        RTS     R5       ;RETURN.
3557
3558                                        ;COME HERE ON LOAD ERROR
3559
3560          012402            LOADER=.
3561  012402  105204                        INCB    R4               ;MAKE SURE WE DON'T TRY TOO MANY TIMES.
3562  012404  100321                        BPL     3$               ;LOOP BACK TRY AGAIN.
3563
3564  012406  104401  012414                TYPE    ,65$             ;;TYPE ASCIZ STRING
3565  012412  000415                        BR      64$              ;;GET OVER THE ASCIZ
3566                                ;;65$:  .ASCIZ  <200>!ERROR IN LOADING UCODE !
3567  012446                        ¿¿'$:
3568  012446  104401  012454                TYPE    ,67$             ;;TYPE ASCIZ STRING
3569  012452  000404                        BR      66$              ;;GET OVER THE ASCIZ
3570                                ;;67$:  .ASCIZ  <200>!GOOD= !
3571  012464                        ¿¿6$:
3572  012464  005740                        TST     -(0)
3573  012466                        10$:
3574  012466  011046                        MOV     (R0),-(SP)       ;;SAVE (R0) FOR TYPEOUT
3575  012470  104402                        TYPOC                    ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
3576  012472  104401  012500                TYPE    ,69$             ;;TYPE ASCIZ STRING
3577  012476  000404                        BR      68$              ;;GET OVER THE ASCIZ
3578                                ;;69$:  .ASCIZ  !  BAD= !
```

```
3579  012510                          68$:
3580  012510  017746  166714                MOV     @KMDBR,-(SP)    ;;SAVE @KMDBR FOR TYPEOUT
3581  012514  104402                      TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
3582  012516  000000                      HALT                    ;ERROR IN LOADING UCODE,RETRYS
3583                                                              ;HAVE FAILED. RUN KMC11 DIAGNOSTIC.
3584  012520  000137  012250              JMP     3$
3585
3586                                      ;*
3587                                      ;*THIS ROUTINE WILL ISSUE INITIALIZE TO
3588                                      ;*BOTH KMC11S.
3589                                      ;*CALL= JSR     PC,BINT
3590                                      ;*
3591  012524  000005          BINT:       RESET
3592  012526  012777  100000  166670      MOV     #BIT15,@KMCSR   ;START #1.
3593  012534  005077  166634              CLR     @KMMCSR         ;HALT #2.
3594  012540  000207                      RTS PC
3595                                      ;
3596                                      ;ROUTINE TO FILL SENBUF WITH RANDOM
3597                                      ;DATA
3598                                      ;
3599  012542  012700  017322      FILBUF: MOV     #SENBUF,R0      ;GET ADDRESS
3600
3601
3602  012546  004737  012600      1$:     JSR     PC,RAND         ;GET 2 RANDOM NUMBERS
3603  012552  013720  012626              MOV     RANA,(0)+
3604  012556  020027  017722              CMP     R0,#RECBUF      ;BUFFER FULL?
3605  012562  001405                      BEQ     FILEX
3606  012564  013720  012630              MOV     RANB,(0)+
3607  012570  020027  017722              CMP     R0,#RECBUF      ;BUFFER FULL?
3608  012574  001364                      BNE     1$
3609  012576  000207          FILEX:      RTS     PC
3610
3611  012600  063737  012626  012630  RAND:   ADD     RANA,RANB
3612  012606  005537  012626              ADC     RANA
3613  012612  063737  012630  012626      ADD     RANB,RANA
3614  012620  005537  012630              ADC     RANB
3615  012624  000207                      RTS     PC
3616
3617  012626  123456          RANA:       123456
3618  012630  071234          RANB:       071234
3619
3620                                      ;ROUTINE TO READ/MODIFY CRAM.
3621                                      ;L&S AT 210
3622
3623  012632                  MOCRAM:
3624  012632  104401  012640              TYPE    ,65$            ;;TYPE ASCIZ STRING
3625  012636  000406                      BR      64$             ;;GET OVER THE ASCIZ
3626                          ;;65$:      .ASCIZ  <200>#KMC ADR? #
3627  012654                  64$:
3628  012654  104412                      RDOCT
3629  012656  012600                      MOV     (SP)+,R0
3630  012660  052700  160000              BIS     #160000,R0
3631  012664                  1$:
3632  012664  104401  012672              TYPE    ,67$            ;;TYPE ASCIZ STRING
```

```
3633  012670  000407                        BR      66$                 ;;GET OVER THE ASCIZ
3634                                  ;;67$:  .ASCIZ  <200>#CRAM ADDR? #
3635  012710                          66$:
3636  012710  104412                        RDOCT
3637  012712  012601                        MOV     (SP)+,R1
3638  012714                          9$:
3639  012714  104401  012722                TYPE    ,69$                ;;TYPE ASCIZ STRING
3640  012720  000401                        BR      68$                 ;;GET OVER THE ASCIZ
3641                                  ;;69$:  .ASCIZ  <200>##
3642  012724                          68$:
3643  012724  010146                        MOV     R1,-(SP)            ;;SAVE R1 FOR TYPEOUT
3644  012726  104402                        TYPOC                       ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
3645  012730  104401  012736                TYPE    ,71$                ;;TYPE ASCIZ STRING
3646  012734  000402                        BR      70$                 ;;GET OVER THE ASCIZ
3647                                  ;;71$:  .ASCIZ  #/ #
3648  012742                          70$:
3649  012742  005010                        CLR     (0)
```

```
3650  012744  010160  000004                MOV     R1,4(0)         ;SET ADDR.
3651  012750  052710  002000                BIS     #2000,(0)       ;SELECT CRAM.
3652  012754  016002  000006                MOV     6(0),R2         ;READ CRAM.
3653  012760  010246                        MOV     R2,-(SP)        ;;SAVE R2 FOR TYPEOUT
3654  012762  104402                        TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
3655  012764  104401  012772                TYPE    ,73$            ;;TYPE ASCIZ STRING
3656  012770  000403                        BR      72$             ;;GET OVER THE ASCIZ
3657                                ;;73$:  .ASCIZ  # \C\ #
3658  013000                        72$:
3659  013000  105777  166140        10$:    TSTB    @$TKS
3660  013004  100375                        BPL     10$
3661  013006  117703  166134                MOVB    @$TKB,R3
3662  013012  042703  000200                BIC     #200,R3
3663  013016  120327  000012                CMPB    R3,#12
3664  013022  001002                        BNE     11$
3665  013024  005201                        INC     R1
3666  013026  000732                        BR      9$
3667  013030  120327  000015        11$:    CMPB    R3,#15
3668  013034  001713                        BEQ     1$
3669
3670  013036  104401  013044                TYPE    ,75$            ;;TYPE ASCIZ STRING
3671  013042  000402                        BR      74$             ;;GET OVER THE ASCIZ
3672                                ;;75$:  .ASCIZ  # / #
3673  013050                        74$:
3674  013050  104412                        RDOCT
3675  013052  012602                        MOV     (SP)+,R2        ;NEW DATA
3676  013054  001703                        BEQ     1$              ;=0,NO NEW DATA
3677  013056  010260  000006                MOV     R2,6(0)
3678  013062  052710  020000                BIS     #20000,(0)      ;CRAM WRITE.
3679  013066  000676                        BR      1$
3680
3681                                        ;ODT FOR USE ON 11/34
3682                                        ;CALL= L&S 220
3683  013070                        ODT:
3684  013070  104401  013076                TYPE    ,65$            ;;TYPE ASCIZ STRING
3685  013074  000404                        BR      64$             ;;GET OVER THE ASCIZ
3686                                ;;65$:  .ASCIZ  <200>#ADDR? #
3687  013106                        64$:
3688  013106  104412                        RDOCT
3689
3690  013110  012600                        MOV     (SP)+,R0
3691  013112                        1$:
3692  013112  104401  013120                TYPE    ,67$            ;;TYPE ASCIZ STRING
3693  013116  000401                        BR      66$             ;;GET OVER THE ASCIZ
3694                                ;;67$:  .ASCIZ  <200>##
3695  013122                        66$:
3696  013122  010046                        MOV     R0,-(SP)        ;;SAVE R0 FOR TYPEOUT
3697  013124  104402                        TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
3698  013126  104401  013134                TYPE    ,69$            ;;TYPE ASCIZ STRING
3699  013132  000402                        BR      68$             ;;GET OVER THE ASCIZ
3700                                ;;69$:  .ASCIZ  #/ #
3701  013140                        68$:
3702  013140  011046                        MOV     (0),-(SP)       ;;SAVE (0) FOR TYPEOUT
3703  013142  104402                        TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
```

```
3704  013144
3705  013144  104401  013152          5$:     TYPE    ,71$            ;;TYPE ASCIZ STRING
3706  013150  000402                          BR      70$             ;;GET OVER THE ASCIZ
3707                                  ;;71$:  .ASCIZ  #\?\#
3708  013156                          70$:
3709  013156  105777  165762          2$:     TSTB    @$TKS
3710  013162  100375                          BPL     2$
3711  013164  117701  165756                  MOVB    @$TKB,R1
3712  013170  042701  000200                  BIC     #200,R1
3713  013174  122701  000015                  CMPB    #15,R1
3714  013200  001733                          BEQ     ODT
3715  013202  122701  000012                  CMPB    #12,R1
3716  013206  001003                          BNE     3$
3717  013210  062700  000002                  ADD     #2,R0
3718  013214  000736                          BR      1$
3719  013216  122701  000033          3$:     CMPB    #33,R1
3720  013222  001003                          BNE     4$
3721  013224  162700  000002                  SUB     #2,R0
3722  013230  000730                          BR      1$
3723  013232                          4$:
3724  013232  104401  013240                  TYPE    ,73$            ;;TYPE ASCIZ STRING
3725  013236  000403                          BR      72$             ;;GET OVER THE ASCIZ
3726                                  ;;73$:  .ASCIZ  #NEW=#
3727  013246                          72$:
3728  013246  104412                          RDOCT
3729  013250  012610                          MOV     (SP)+,(0)
3730  013252  000734                          BR      5$
3731
3732                                  .SBTTL  BINARY TO OCTAL (ASCII) AND TYPE
3733
3734                                  ;;**********************************************************************
3735                                  ;*THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 6-DIGIT
3736                                  ;*OCTAL (ASCII) NUMBER AND TYPE IT.
3737                                  ;*$TYPOS---ENTER HERE TO SETUP SUPPRESS ZEROS AND NUMBER OF DIGITS TO TYPE
3738                                  ;*CALL:
3739                                  ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
3740                                  ;*      TYPOS                   ;;CALL FOR TYPEOUT
3741                                  ;*      .BYTE   N               ;;N=1 TO 6 FOR NUMBER OF DIGITS TO TYPE
3742                                  ;*      .BYTE   M               ;;M=1 OR 0
3743                                  ;*                                      ;;1=TYPE LEADING ZEROS
3744                                  ;*                                      ;;0=SUPPRESS LEADING ZEROS
3745                                  ;*
3746                                  ;*$TYPON----ENTER HERE TO TYPE OUT WITH THE SAME PARAMETERS AS THE LAST
3747                                  ;*$TYPOS OR $TYPOC
3748                                  ;*CALL:
3749                                  ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
3750                                  ;*      TYPON                   ;;CALL FOR TYPEOUT
3751                                  ;*
3752                                  ;*$TYPOC---ENTER HERE FOR TYPEOUT OF A 16 BIT NUMBER
3753                                  ;*CALL:
3754                                  ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
3755                                  ;*      TYPOC                   ;;CALL FOR TYPEOUT
3756
3757  013254  017646  000000          $TYPOS: MOV     @(SP),-(SP)     ;;PICKUP THE MODE
```

```
3758  013260  116637  000001  013477          MOVB    1(SP),$OFILL    ;;LOAD ZERO FILL SWITCH
3759  013266  112637  013501                  MOVB    (SP)+,$OMODE+1  ;;NUMBER OF DIGITS TO TYPE
3760  013272  062716  000002                  ADD     #2,(SP)         ;;ADJUST RETURN ADDRESS
3761  013276  000406                          BR      $TYPON
3762  013300  112737  000001  013477  $TYPOC: MOVB    #1,$OFILL       ;;SET THE ZERO FILL SWITCH
3763  013306  112737  000006  013501          MOVB    #6,$OMODE+1     ;;SET FOR SIX(6) DIGITS
3764  013314  112737  000005  013476  $TYpON: MOVB    #5,$OCNT        ;;SET THE ITERATION COUNT
3765  013322  010346                          MOV     R3,-(SP)        ;;SAVE R3
3766  013324  010446                          MOV     R4,-(SP)        ;;SAVE R4
3767  013326  010546                          MOV     R5,-(SP)        ;;SAVE R5
3768  013330  113704  013501                  MOVB    $OMODE+1,R4     ;;GET THE NUMBER OF DIGITS TO TYPE
3769  013334  005404                          NEG     R4
3770  013336  062704  000006                  ADD     #6,R4           ;;SUBTRACT IT FOR MAX. ALLOWED
3771  013342  110437  013500                  MOVB    R4,$OMODE       ;;SAVE IT FOR USE
3772  013346  113704  013477                  MOVB    $OFILL,R4       ;;GET THE ZERO FILL SWITCH
3773  013352  016605  000012                  MOV     12(SP),R5       ;;PICKUP THE INPUT NUMBER
3774  013356  005003                          CLR     R3              ;;CLEAR THE OUTPUT WORD
3775  013360  006105                  1$:     ROL     R5              ;;ROTATE MSB INTO "C"
3776  013362  000404                          BR      3$              ;;GO DO MSB
3777  013364  006105                  2$:     ROL     R5              ;;FORM THIS DIGIT
3778  013366  006105                          ROL     R5
3779  013370  006105                          ROL     R5
3780  013372  010503                          MOV     R5,R3
3781  013374  006103                  3$:     ROL     R3              ;;GET LSB OF THIS DIGIT
3782  013376  105337  013500                  DECB    $OMODE          ;;TYPE THIS DIGIT?
3783  013402  100016                          BPL     7$              ;;BR IF NO
3784  013404  042703  177770                  BIC     #177770,R3      ;;GET RID OF JUNK
3785  013410  001002                          BNE     4$              ;;TEST FOR 0
3786  013412  005704                          TST     R4              ;;SUPPRESS THIS 0?
3787  013414  001403                          BEQ     5$              ;;BR IF YES
3788  013416  005204                  4$:     INC     R4              ;;DON'T SUPPRESS ANYMORE 0'S
3789  013420  052703  000060                  BIS     #'0,R3          ;;MAKE THIS DIGIT ASCII
3790  013424  052703  000040          5$:     BIS     #' ,R3          ;;MAKE ASCII IF NOT ALREADY
3791  013430  110337  013474                  MOVB    R3,8$           ;;SAVE FOR TYPING
3792  013434  104401  013474                  TYPE    ,8$             ;;GO TYPE THIS DIGIT
3793  013440  105337  013476          7$:     DECB    $OCNT           ;;COUNT BY 1
3794  013444  003347                          BGT     2$              ;;BR IF MORE TO DO
3795  013446  002402                          BLT     6$              ;;BR IF DONE
3796  013450  005204                          INC     R4              ;;INSURE LAST DIGIT ISN'T A BLANK
3797  013452  000744                          BR      2$              ;;GO DO THE LAST DIGIT
3798  013454  012605                  6$:     MOV     (SP)+,R5        ;;RESTORE R5
3799  013456  012604                          MOV     (SP)+,R4        ;;RESTORE R4
3800  013460  012603                          MOV     (SP)+,R3        ;;RESTORE R3
3801  013462  016666  000002  000004          MOV     2(SP),4(SP)     ;;SET THE STACK FOR RETURNING
3802  013470  012616                          MOV     (SP)+,(SP)
3803  013472  000002                          RTI                     ;;RETURN
3804  013474     000                  8$:     .BYTE   0               ;;STORAGE FOR ASCII DIGIT
3805  013475     000                          .BYTE   0               ;;TERMINATOR FOR TYPE ROUTINE
3806  013476     000          $OCNT:  .BYTE   0               ;;OCTAL DIGIT COUNTER
3807  013477     000          $OFILL: .BYTE   0               ;;ZERO FILL SWITCH
3808  013500  000000          $OMODE: .WORD   0               ;;NUMBER OF DIGITS TO TYPE
3809                          .SBTTL  CONVERT BINARY TO DECIMAL AND TYPE ROUTINE
3810
3811                          ;;**************************************************************
```

```
                                        ;*THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 5-DIGIT
                                        ;*SIGNED DECIMAL (ASCII) NUMBER AND TYPE IT. DEPENDING ON WHETHER THE
                                        ;*NUMBER IS POSITIVE OR NEGATIVE A SPACE OR A MINUS SIGN WILL BE TYPED
                                        ;*BEFORE THE FIRST DIGIT OF THE NUMBER. LEADING ZEROS WILL ALWAYS BE
                                        ;*REPLACED WITH SPACES.
                                        ;*CALL:
                                        ;*      MOV     NUM,-(SP)       ;;PUT THE BINARY NUMBER ON THE STACK
                                        ;*      TYPDS                   ;;GO TO THE ROUTINE

013502                                  $TYPDS:
013502  010046                                  MOV     R0,-(SP)        ;;PUSH R0 ON STACK
013504  010146                                  MOV     R1,-(SP)        ;;PUSH R1 ON STACK
013506  010246                                  MOV     R2,-(SP)        ;;PUSH R2 ON STACK
013510  010346                                  MOV     R3,-(SP)        ;;PUSH R3 ON STACK
013512  010546                                  MOV     R5,-(SP)        ;;PUSH R5 ON STACK
013514  012746  020200                         MOV     #20200,-(SP)    ;;SET BLANK SWITCH AND SIGN
013520  016605  000020                         MOV     20(SP),R5       ;;GET THE INPUT NUMBER
013524  100004                                BPL     1$              ;;BR IF INPUT IS POS.
013526  005405                                NEG     R5              ;;MAKE THE BINARY NUMBER POS.
013530  112766  000055  000001                MOVB    #'-,1(SP)       ;;MAKE THE ASCII NUMBER NEG.
013536  005000                          1$:   CLR     R0              ;;ZERO THE CONSTANTS INDEX
013540  012703  013716                         MOV     #$DBLK,R3       ;;SETUP THE OUTPUT POINTER
013544  112723  000040                         MOVB    #' ,(R3)+       ;;SET THE FIRST CHARACTER TO A BLANK
013550  005002                          2$:   CLR     R2              ;;CLEAR THE BCD NUMBER
013552  016001  013706                         MOV     $DTB1(R0),R1    ;;GET THE CONSTANT
013556  160105                          3$:   SUB     R1,R5           ;;FORM THIS BCD DIGIT
013560  002402                                BLT     4$              ;;BR IF DONE
013562  005202                                INC     R2              ;;INCREASE THE BCD DIGIT BY 1
013564  000774                                BR      3$
013566  060105                          4$:   ADD     R1,R5           ;;ADD BACK THE CONSTANT
013570  005702                                TST     R2              ;;CHECK IF BCD DIGIT=0
013572  001002                                BNE     5$              ;;FALL THROUGH IF 0
013574  105716                                TSTB    (SP)            ;;STILL DOING LEADING 0'S?
013576  100407                                BMI     7$              ;;BR IF YES
013600  106316                          5$:   ASLB    (SP)            ;;MSD?
013602  103003                                BCC     6$              ;;BR IF NO
013604  116663  000001  177777                MOVB    1(SP),-1(R3)    ;;YES--SET THE SIGN
013612  052702  000060                   6$:  BIS     #'0,R2          ;;MAKE THE BCD DIGIT ASCII
013616  052702  000040                   7$:  BIS     #' ,R2          ;;MAKE IT A SPACE IF NOT ALREADY A DIGIT
013622  110223                                MOVB    R2,(R3)+        ;;PUT THIS CHARACTER IN THE OUTPUT BUFFER
013624  005720                                TST     (R0)+           ;;JUST INCREMENTING
013626  020027  000010                         CMP     R0,#10          ;;CHECK THE TABLE INDEX
013632  002746                                BLT     2$              ;;GO DO THE NEXT DIGIT
013634  003002                                BGT     8$              ;;GO TO EXIT
013636  010502                                MOV     R5,R2           ;;GET THE LSD
013640  000764                                BR      6$              ;;GO CHANGE TO ASCII
013642  105726                          8$:   TSTB    (SP)+           ;;WAS THE LSD THE FIRST NON-ZERO?
013644  100003                                BPL     9$              ;;BR IF NO
013646  116663  177777  177776                MOVB    -1(SP),-2(R3)   ;;YES--SET THE SIGN FOR TYPING
013654  105013                          9$:   CLRB    (R3)            ;;SET THE TERmINATOR
013656  012605                                MOV     (SP)+,R5        ;;POP STACK INTO R5
013660  012603                                MOV     (SP)+,R3        ;;POP STACK INTO R3
013662  012602                                MOV     (SP)+,R2        ;;POP STACK INTO R2
013664  012601                                MOV     (SP)+,R1        ;;POP STACK INTO R1
```

```
3866  013666  012600                          MOV     (SP)+,R0        ;;POP STACK INTO R0
3867  013670  104401  013716                  TYPE    ,$DBLK          ;;NOW TYPE THE NUMBER
3868  013674  016666  000002  000004          MOV     2(SP),4(SP)     ;;ADJUST THE STACK
3869  013702  012616                          MOV     (SP)+,(SP)
3870  013704  000002                          RTI                     ;;RETURN TO USER
3871  013706  023420                $DTBL:    10000.
3872  013710  001750                          1000.
3873  013712  000144                          100.
3874  013714  000012                          10.
3875  013716  000004                $DBLK:    .BLKW   4
3876                                 .SBTTL  ERROR HANDLER ROUTINE
3877
3878                                 ;;**********************************************************************
3879                                 ;*THIS ROUTINE WILL INCREMENT THE ERROR FLAG AND THE ERROR COUNT,
3880                                 ;*SAVE THE ERROR ITEM NUMBER AND THE ADDRESS OF THE ERROR CALL
3881                                 ;*AND GO TO $ERrTYP ON ERROR
3882                                 ;*THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
3883                                 ;*SW15=1          HALT ON ERROR
3884                                 ;*SW13=1          INHIBIT ERROR TYPEOUTS
3885                                 ;*SW10=1          BELL ON ERROR
3886                                 ;*CALL
3887                                 ;*      ERROR   N       ;;ERROR=EMT AND N=ERROR ITEM NUMBER
3888
3889  013726                         $ERROR:
3890  013726  104407                          CKSWR                   ;;TEST FOR CHANGE IN SOFT-SWR
3891  013730  105237  001103          7$:     INCB    $ERFLG          ;;SET THE ERROR FLAG
3892  013734  001775                          BEQ     7$              ;;DON'T LET THE FLAG GO TO ZERO
3893  013736  013777  001102  165176          MOV     $TSTNM,@DISPLAY ;;DISPLAY TEST NUMBER AND ERROR FLAG
3894  013744  032777  002000  165166          BIT     #BIT10,@SWR     ;;BELL ON ERROR?
3895  013752  001402                          BEQ     1$              ;;NO - SKIP
3896  013754  104401  001162                  TYPE    ,$BELL          ;;RING BELL
3897  013760  005237  001112          1$:     INC     $ERTTL          ;;COUNT THE NUMBER OF ERRORS
3898  013764  011637  001116                  MOV     (SP),$ERRPC     ;;GET ADDRESS OF ERROR INSTRUCTION
3899  013770  162737  000002  001116          SUB     #2,$ERRPC
3900  013776  117737  165114  001114          MOVB    @$ERRPC,$ITEMB  ;;STRIP AND SAVE THE ERROR ITEM CODE
3901  014004  032777  020000  165126          BIT     #BIT13,@SWR     ;;SKIP TYPEOUT IF SET
3902  014012  001004                          BNE     20$             ;;SKIP TYPEOUTS
3903  014014  004737  014074                  JSR     PC,$ERRTYP      ;;GO TO USER ERROR ROUTINE
3904  014020  104401  001167                  TYPE    ,$CRLF
3905  014024                         20$:
3906  014024  122737  000001  001212          CMPB    #APTENV,$ENv    ;;RUNNING IN APT MODE
3907  014032  001007                          BNE     2$              ;;NO,SKIP APT ERROR REPORT
3908  014034  113737  001114  014046          MOVB    $ITEMB,21$      ;;SET ITEM NUMBER AS ERROR NUMBER
3909  014042  004737  015620                  JSR     PC,$ATY4        ;;REPORT FATAL ERROR TO APT
3910  014046     000                 21$:     .BYTE   0
3911  014047     000                          .BYTE   0
3912  014050  000777                 22$:     BR      22$             ;;APT ERROR LOOP
3913  014052  005777  165062          2$:     TST     @SWR            ;;HALT ON ERROR
3914  014056  100002                          BPL     3$              ;;SKIP IF CONTINUE
3915  014060  000000                          HALT                    ;;HALT ON ERROR!
3916  014062  104407                          CKSWR                   ;;TEST FOR CHANGE IN SOFT-SWR
3917  014064                         3$:
3918  014064  005237  001456          10$:    INC     ERCNT   ;/UPDATE ERROR COUNT.
3919  014070  001775                          BEQ     10$     ;/DON'T LET IT HIT ZERO.
```

```
                        RTI
                .SBTTL  ERROR MESSAGE TYPEOUT ROUTINE

                ;;*****************************************************************
                ;*THIS ROUTINE USES THE "ITEM CONTROL BYTE" ($ITEMB) TO DETERMINE WHICH
                ;*ERROR IS TO BE REPORTED. IT THEN OBTAINS, FROM THE "ERROR TABLE" ($ERRTB),
                ;*AND REPORTS THE APPROPRIATE INFORMATION CONCERNING THE ERROR.

014074          $ERRTYP:
014074 104401 001167            TYPE    ,$CRLF          ;;"CARRIAGE RETURN" & "LINE FEED"
014100 010046                   MOV     RO,-(SP)        ;;SAVE RO
014102 005000                   CLR     RO              ;;PICKUP THE ITEM INDEX
014104 153700 001114            BISB    @#$ITEMB,RO
014110 001004                   BNE     1$              ;;IF ITEM NUMBER IS ZERO, JUST
                                                        ;;TYPE THE PC OF THE ERROR
014112 013746 001116            MOV     $ERRPC,-(SP)    ;;SAVE $ERRPC FOR TYPEOUT
                                                        ;;ERROR ADDRESS
014116 104402                   TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
014120 000426                   BR      6$              ;;GET OUT
014122 005300           1$:     DEC     RO              ;;ADJUST THE INDEX SO THAT IT WILL
014124 006300                   ASL     RO              ;;      WORK FOR THE ERROR TABLE
014126 006300                   ASL     RO
014130 006300                   ASL     RO
014132 062700 001254            ADD     #$ERRTB,RO      ;;FORM TABLE POINTER
014136 012037 014146            MOV     (RO)+,2$        ;;PICKUP "ERROR MESSAGE" POINTER
014142 001404                   BEQ     3$              ;;SKIP TYPEOUT IF NO POINTER
014144 104401                   TYPE                    ;;TYPE THE "ERROR MESSAGE"
014146 000000           2$:     .WORD   0               ;;"ERROR MESSAGE" POINTER GOES HERE
014150 104401 001167            TYPE    ,$CRLF          ;;"CARRIAGE RETURN" & "LINE FEED"
014154 012037 014164    3$:     MOV     @(RO)+,4$       ;;PICKUP "DATA HEADER" POINTER
014160 001404                   BEQ     5$              ;;SKIP TYPEOUT IF 0
014162 104401                   TYPE                    ;;TYPE THE "DATA HEADER"
014164 000000           4$:     .WORD   0               ;;"DATA HEADER" POINTER GOES HERE
014166 104401 001167            TYPE    ,$CRLF          ;;"CARRIAGE RETURN" & "LINE FEED"
014172 011000           5$:     MOV     @(RO),RO        ;;PICKUP "DATA TABLE" POINTER
014174 001004                   BNE     7$              ;;GO TYPE THE DATA
014176 012600           6$:     MOV     (SP)+,RO        ;;RESTORE RO
014200 104401 001167            TYPE    ,$CRLF          ;;"CARRIAGE RETURN" & "LINE FEED"
014204 000207                   RTS     PC              ;;RETURN
014206                  7$:
014206 013046                   MOV     @(RO)+,-(SP)    ;;SAVE @(RO)+ FOR TYPEOUT
014210 104402                   TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
014212 005710                   TST     (RO)            ;;IS THERE ANOTHER NUMBER?
014214 001770                   BEQ     6$              ;;BR IF NO
014216 104401 014224            TYPE    ,8$             ;;TYPE TWO(2) SPACES
014222 000771                   BR      7$              ;;LOOP
014224 020040    000    8$:     .ASCIZ  /  /            ;;TWO(2) SPACES
014230                          .EVEN
                .SBTTL  SCOPE HANDLER ROUTINE

                ;;*****************************************************************
                ;*THIS ROUTINE CONTROLS THE LOOPING OF SUBTESTS. IT WILL INCREMENT
                ;*AND LOAD THE TEST NUMBER($TSTNM) INTO THE DISPLAY REG.(DISPLAY<7:0>)
                ;*AND LOAD THE ERROR FLAG ($ERFLG) INTO DISPLAY<15:08>
```

```
                                        ;*THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
                                        ;*SW14=1        LOOP ON TEST
                                        ;*SW11=1        INHIBIT ITERATIONS
                                        ;*SW08=1        LOOP ON TEST IN SWR<7:0>
                                        ;*CALL
                                        ;*      SCOPE           ;;SCOPE=IOT

014230                                  $SCOPE:
014230  104407                                 CKSWR                   ;;TEST  FOR CHANGE IN SOFT-SWR
014232  104407                                 CKSWR
014234  032777  040000  164676  1$:     BIT     #BIT14,@SWR     ;;LOOP ON PRESENT TEST?
014242  001070                                 BNE     $OVER           ;;YES IF SW14=1
                                        ;*****START OF CODE FOR THE XOR TESTER*****
014244  000416                          $XTSTR: BR      6$              ;;IF RUNNING ON THE "XOR" TESTER CHANGE
                                                                        ;;THIS INSTRUCTION TO A "NOP" (NOP=240)
014246  013746  000004                          MOV     @#ERRVEC,-(SP)  ;;SAVE THE CONTENTS OF THE ERROR VECTOR
014252  012737  014272  000004                  MOV     #5$,@#ERRVEC    ;;SET FOR TIMEOUT
014260  005737  177060                          TST     @#177060        ;;TIME OUT ON XOR?
014264  012637  000004                          MOV     (SP)+,@#ERRVEC  ;;RESTORE THE ERROR VECTOR
014270  000446                                 BR      $SVLAD          ;;GO TO THE NEXT TEST
014272  022626                          5$:     CMP     (SP)+,(SP)+     ;;CLEAR THE STACK AFTER A TIME OUT
014274  012637  000004                          MOV     (SP)+,@#ERRVEC  ;;RESTORE THE ERROR VECTOR
014300  000451                                 BR      $OVER           ;;LOOP ON THE PRESENT TEST
014302                                  6$:;*****END OF CODE FOR THE XOR TESTER*****
014302  032777  000400  164630                  BIT     #BIT08,@SWR     ;;LOOP ON SPEC. TEST?
014310  001404                                 BEQ     2$              ;;BR IF NO
014312  127737  164622  001102                  CMPB    @SWR,$TSTNM     ;;ON THE RIGHT TEST?    SWR<7:0>
014320  001441                                 BEQ     $OVER           ;;BR IF YES
014322  105737  001103                  2$:     TSTB    $ERFLG          ;;HAS AN ERROR OCCURRED?
014326  001404                                 BEQ     3$              ;;BR IF NO
014330  105037  001103                  4$:     CLRB    $ERFLG          ;;ZERO THE ERROR FLAG
014334  005037  001160                          CLR     $TIMES          ;;CLEAR THE NUMBER OF ITERATIONS TO MAKE
014340  032777  004000  164572  3$:     BIT     #BIT11,@SWR     ;;INHIBIT ITERATIONS?
014346  001011                                 BNE     1$              ;;BR IF YES
014350  005737  001200                          TST     $PASS           ;;IF FIRST PASS OF PROGRAM
014354  001406                                 BEQ     1$              ;;      INHIBIT ITERATIONS
014356  005237  001104                          INC     $ICNT           ;;INCREMENT ITERATION COUNT
014362  023737  001160  001104                  CMP     $TIMES,$ICNT    ;;CHECK THE NUMBER OF ITERATIONS MADE
014370  002015                                 BGE     $OVER           ;;BR IF MORE ITERATION REQUIRED
014372  012737  000001  001104  1$:     MOV     #1,$ICNT        ;;REINITIALIZE THE ITERATION COUNTER
014400  013737  014440  001160                  MOV     $MXCNT,$TIMES   ;;SET NUMBER OF ITERATIONS TO DO
014406  105237  001102                  $SVLAD: INCB    $TSTNM          ;;COUNT TEST NUMBERS
014412  113737  001102  001176                  MOVB    $TSTNM,$TESTN   ;;SET TEST NUMBER IN APT MAILBOX
014420  011637  001106                          MOV     (SP),$LPADR     ;;SAVE SCOPE LOOP ADDRESS
014424  013777  001102  164510  $OVER:  MOV     $TSTNM,@DISPLAY ;;DISPLAY TEST NUMBER
014432  013716  001106                          MOV     $LPADR,(SP)     ;;FUDGE RETURN ADDRESS
014436  000002                                 RTI                     ;;FIXES PS
014440  001000                          $MXCNT: 512.                    ;;MAX. NUMBER OF ITERATIONS
                                        .SBTTL  TTY INPUT ROUTINE

                                        ;;**************************************************************

                                        .ENABL  LSB

                                        ;;**************************************************************
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```
4028                                    ;*SOFTWARE SWITCH REGISTER CHANGE ROUTINE.
4029                                    ;*ROUTINE IS ENTERED FROM THE TRAP HANDLER, AND WILL
4030                                    ;*SERVICE THE TEST FOR CHANGE IN SOFTWARE SWITCH REGISTER TRAP CALL
4031                                    ;*WHEN OPERATING IN TTY FLAG MODE.
4032  014442  022737  000176  001140  $CKSWR: CMP     #SWREG,SWR      ;;IS THE SOFT-SWR SELECTED?
4033  014450  001074                          BNE     15$             ;;BRANCH IF NO
4034  014452  105777  164466                  TSTB    @$TKS           ;;CHAR THERE?
4035  014456  100071                          BPL     15$             ;;IF NO, DON'T WAIT AROUND
4036  014460  117746  164462                  MOVB    @$TKB,-(SP)     ;;SAVE THE CHAR
4037  014464  042716  177600                  BIC     #^C177,(SP)     ;;STRIP-OFF THE ASCII
4038  014470  022726  000007                  CMP     #7,(SP)+        ;;IS IT A CONTROL G?
4039  014474  001062                          BNE     15$             ;;NO, RETURN TO USER
4040  014476  123727  001134  000001          CMPB    $AUTOB,#1       ;;ARE WE RUNNING IN AUTO-MODE?
4041  014504  001456                          BEQ     15$             ;;BRANCH IF YES
4042
4043  014506  104401  015167                  TYPE    ,$CNTLG         ;;ECHO THE CONTROL-G (^G)
4044  014512  104401  015174          $GTSWR: TYPE    ,$MSWR          ;;TYPE CURRENT CONTENTS
4045  014516  013746  000176                  MOV     $WREG,-(SP)     ;;SAVE SWREG FOR TYPEOUT
4046  014522  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
4047  014524  104401  015205                  TYPE    ,$MNEW          ;;PROMPT FOR NEW SWR
4048  014530  005046                  19$:    CLR     -(SP)           ;;CLEAR COUNTER
4049  014532  005046                          CLR     -(SP)           ;;THE NEW SWR
4050  014534  105777  164404          7$:     TSTB    @$TKS           ;;CHAR THERE?
4051  014540  100375                          BPL     7$              ;;IF NOT TRY AGAIN
4052
4053  014542  117746  164400                  MOVB    @$TKB,-(SP)     ;;PICK UP CHAR
4054  014546  042716  177600                  BIC     #^C177,(SP)     ;;MAKE IT 7-BIT ASCII
4055
4056
4057
4058  014552  021627  000025          9$:     CMP     (SP),#25        ;;IS IT A CONTROL-U?
4059  014556  001005                          BNE     10$             ;;BRANCH IF NOT
4060  014560  104401  015162                  TYPE    ,$CNTLU         ;;YES, ECHO CONTROL-U (^U)
4061  014564  062706  000006          20$:    ADD     #6,SP           ;;IGNORE PREVIOUS INPUT
4062  014570  000757                          BR      19$             ;;LET'S TRY IT AGAIN
4063
4064
4065  014572  021627  000015          10$:    CMP     (SP),#15        ;;IS IT A <CR>?
4066  014576  001022                          BNE     16$             ;;BRANCH IF NO
4067  014600  005766  000004                  TST     4(SP)           ;;YES, IS IT THE FIRST CHAR?
4068  014604  001403                          BEQ     11$             ;;BRANCH IF YES
4069  014606  016677  000002  164324          MOV     2(SP),@SWR      ;;SAVE NEW SWR
4070  014614  062706  000006          11$:    ADD     #6,SP           ;;CLEAR UP STACK
4071  014620  104401  001167          14$:    TYPE    ,$CRLF          ;;ECHO <CR> AND <LF>
4072  014624  123727  001135  000001          CMPB    $INTAG,#1       ;;RE-ENABLE TTY KBD INTERRUPTS?
4073  014632  001003                          BNE     15$             ;;BRANCH IF NOT
4074  014634  012777  000100  164302          MOV     #100,@$TKS      ;;RE-ENABLE TTY KBD INTERRUPTS
4075  014642  000002                  15$:    RTI                     ;;RETURN
4076  014644  004737  015532          16$:    JSR     PC,$TYPEC       ;;ECHO CHAR
4077  014650  021627  000060                  CMP     (SP),#60        ;;CHAR < 0?
4078  014654  002420                          BLT     18$             ;;BRANCH IF YES
4079  014656  021627  000067                  CMP     (SP),#67        ;;CHAR > 7?
4080  014662  003015                          BGT     18$             ;;BRANCH IF YES
4081  014664  042726  000060                  BIC     #60,(SP)+       ;;STRIP-OFF ASCII
```

```
 4082  014670  005766  000002                    TST     2(SP)           ;;IS THIS THE FIRST CHAR
 4083  014674  001403                            BEQ     17$             ;;BRANCH IF YES
 4084  014676  006316                            ASL     (SP)            ;;NO, SHIFT PRESENT
 4085  014700  006316                            ASL     (SP)            ;;   CHAR OVER TO MAKE
 4086  014702  006316                            ASL     (SP)            ;;   ROOM FOR NEW ONE.
 4087  014704  005266  000002          17$:      INC     2(SP)           ;;KEEP COUNT OF CHAR
 4088  014710  056616  177776                    BIS     -2(SP),(SP)     ;;SET IN NEW CHAR
 4089  014714  000707                            BR      7$              ;;GET THE NEXT ONE
 4090  014716  104401  001166          18$:      TYPE    ,$QUES          ;;TYPE ?<CR><LF>
 4091  014722  000720                            BR      20$             ;;SIMULATE CONTROL-U
 4092                                  .DSABL    LSB
 4093
 4094
 4095                                  ;;**************************************************************
 4096                                  ;*THIS ROUTINE WILL INPUT A SINGLE CHARACTER FROM THE TTY
 4097                                  ;*CALL:
 4098                                  ;*      RDCHR                   ;;INPUT A SINGLE CHARACTER FROM THE TTY
 4099                                  ;*      RETURN HERE             ;;CHARACTER IS ON THE STACK
 4100                                  ;*                              ;;WITH PARITY BIT STRIPPED OFF
 4101                                  ;
 4102
 4103  014724  011646                  $RDCHR: MOV     (SP),-(SP)      ;;PUSH DOWn THE PC
 4104  014726  016666  000004  000002          MOV     4(SP),2(SP)     ;;SAVE THE PS
 4105  014734  105777  164204          1$:     TSTB    @$TKS           ;;WAIT FOR
 4106  014740  100375                          BPL     1$              ;;A CHARACTER
 4107  014742  117766  164200  000004          MOVB    @$TKB,4(SP)     ;;READ THE TTY
 4108  014750  042766  177600  000004          BIC     #^C<177>,4(SP)  ;;GET RID OF JUNK IF ANY
 4109  014756  026627  000004  000023          CMP     4(SP),#23       ;;IS IT A CONTROL-S?
 4110  014764  001013                          BNE     3$              ;;BRANCH IF NO
 4111  014766  105777  164152          2$:     TSTB    @$TKS           ;;WAIT FOR A CHARACTER
 4112  014772  100375                          BPL     2$              ;;LOOP UNTIL ITS THERE
 4113  014774  117746  164146                  MOVB    @$TKB,-(SP)     ;;GET CHARACTER
 4114  015000  042716  177600                  BIC     #^C177,(SP)     ;;MAKE IT 7-BIT ASCII
 4115  015004  022627  000021                  CMP     (SP)+,#21       ;;IS IT A CONTROL-Q?
 4116  015010  001366                          BNE     2$              ;;IF NOT DISCARD IT
 4117  015012  000750                          BR      1$              ;;YES, RESUME
 4118  015014  026627  000004  000140  3$:     CMP     4(SP),#140      ;;IS IT UPPER CASE?
 4119  015022  002407                          BLT     4$              ;;BRANCH IF YES
 4120  015024  026627  000004  000175          CMP     4(SP),#175      ;;IS IT A SPECIAL CHAR?
 4121  015032  003003                          BGT     4$              ;;BRANCH IF YES
 4122  015034  042766  000040  000004          BIC     #40,4(SP)       ;;MAKE IT UPPER CASE
 4123  015042  000002                  4$:     RTI                     ;;GO BACK TO USER
 4124                                  ;;**************************************************************
 4125                                  ;*THIS ROUTINE WILL INPUT A STRING FROM THE TTY
 4126                                  ;*CALL:
 4127                                  ;*      RDLIN                   ;;INPUT A STRING FROM THE TTY
 4128                                  ;*      RETURN HERE             ;;ADDRESS OF FIRST CHARACTER WILL BE ON THE STACK
 4129                                  ;*                              ;;TERMINATOR WILL BE A BYTE OF ALL 0'S
 4130
 4131  015044  010346                  $RDLIN: MOV     R3,-(SP)        ;;SAVE R3
 4132  015046  012703  015152          1$:     MOV     #$TTYIN,R3      ;;GET ADDRESS
 4133  015052  022703  015162          2$:     CMP     #$TTYIN+8.,R3   ;;BUFFER FULL?
 4134  015056  101405                          BLOS    4$              ;;BR IF YES
 4135  015060  104410                          RDCHR                   ;;GO READ ONE CHARACTER FROM THE TTY
```

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 4136  015062  112613                          MOVB    (SP)+,(R3)      ;;GET CHARACTER
 4137  015064  122713  000177          10$:    CMPB    #177,(R3)       ;;IS IT A RUBOUT
 4138  015070  001003                          BNE     3$              ;;SKIP IF NOT
 4139  015072  104401  001166          4$:     TYPE    $QUES           ;;TYPE A '?'
 4140  015076  000763                          BR      1$              ;;CLEAR THE BUFFER AND LOOP
 4141  015100  111337  015150          3$:     MOVB    (R3),9$         ;;ECHO THE CHARACTER
 4142  015104  104401  015150                  TYPE    ,9$
 4143  015110  122723  000015                  CMPB    #15,(R3)+       ;;CHECK FOR RETURN
 4144  015114  001356                          BNE     2$              ;;LOOP IF NOT RETURN
 4145  015116  105063  177777                  CLRB    -1(R3)          ;;CLEAR RETURN (THE 15)
 4146  015122  104401  001170                  TYPE    $LF             ;;TYPE A LINE FEED
 4147  015126  012603                          MOV     (SP)+,R3        ;;RESTORE R3
 4148  015130  011646                          MOV     (SP),-(SP)      ;;ADJUST THE STACK AND PUT ADDRESS OF THE
 4149  015132  016666  000004  000002          MOV     4(SP),2(SP)     ;;      FIRST ASCII CHARACTER ON IT
 4150  015140  012766  015152  000004          MOV     #$TTYIN,4(SP)
 4151  015146  000002                          RTI                     ;;RETURN
 4152  015150     000                9$:     .BYTE   0               ;;STORAGE FOR ASCII CHAR. TO TYPE
 4153  015151     000                        .BYTE   0               ;;TERMINATOR
 4154  015152  000010             $TTYIN: .BLKB   8.              ;;RESERVE 8 BYTES FOR TTY INPUT
 4155  015162  052536  005015     000  $CNTLU: .ASCIZ  /↑U/<15><12>    ;;CONTROL "U"
 4156  015167     136  006507  000012  $CNTLG: .ASCIZ  /↑G/<15><12>    ;;CONTROL "G"
 4157  015174  005015  053523  020122  $MSWR:  .ASCIZ  <15><12>/SWR = /
 4158  015202  020075     000
 4159  015205     040  047040  053505  $MNEW:  .ASCIZ  /  NEW = /
 4160  015212  036440  000040
 4161
 4162                                  .SBTTL  READ AN OCTAL NUMBER FROM THE TTY
 4163
 4164                                  ;;**************************************************************
 4165                                  ;*THIS ROUTINE WILL READ AN OCTAL (ASCII) NUMBER FROM THE TTY AND
 4166                                  ;*CHANGE IT TO BINARY.
 4167                                  ;*CALL:
 4168                                  ;*      RDOCT                   ;;READ AN OCTAL NUMBER
 4169                                  ;*      RETURN HERE             ;;LOW ORDER BITS ARE ON TOP OF THE STACK
 4170                                  ;*                              ;;HIGH ORDER BITS ARE IN $HIOCT
 4171
 4172  015216  011646             $RDOCT: MOV     (SP),-(SP)      ;;PROVIDE SPACE FOR THE
 4173  015220  016666  000004  000002          MOV     4(SP),2(SP)     ;;INPUT NUMBER
 4174  015226  010046                          MOV     R0,-(SP)        ;;PUSH R0 ON STACK
 4175  015230  010146                          MOV     R1,-(SP)        ;;PUSH R1 ON STACK
 4176  015232  010246                          MOV     R2,-(SP)        ;;PUSH R2 ON STACK
 4177  015234  104411                  1$:     RDLIN                   ;;READ AN ASCIZ LINE
 4178  015236  012600                          MOV     (SP)+,R0        ;;GET ADDRESS OF 1ST CHARACTER
 4179  015240  005001                          CLR     R1              ;;CLEAR DATA WORD
 4180  015242  005002                          CLR     R2
 4181  015244  112046                  2$:     MOVB    (R0)+,-(SP)     ;;PICKUP THIS CHARACTER
 4182  015246  001412                          BEQ     3$              ;;IF ZERO GET OUT
 4183  015250  006301                          ASL     R1              ;;*2
 4184  015252  006102                          ROL     R2
 4185  015254  006301                          ASL     R1              ;;*4
 4186  015256  006102                          ROL     R2
 4187  015260  006301                          ASL     R1              ;;*8
 4188  015262  006102                          ROL     R2
 4189  015264  042716  177770                  BIC     #↑C7,(SP)       ;;STRIP THE ASCII JUNK
```

```
4190  015270  062601                          ADD     (SP)+,R1        ;;ADD IN THIS DIGIT
4191  015272  000764                          BR      2$              ;;LOOP
4192  015274  005726                  3$:     TST     (SP)+           ;;CLEAN TERMINATOR FROM STACK
4193  015276  010166  000012                  MOV     R1,12(SP)       ;;SAVE THE RESULT
4194  015302  010237  015316                  MOV     R2,$HIOCT
4195  015306  012602                          MOV     (SP)+,R2        ;;POP STACK INTO R2
4196  015310  012601                          MOV     (SP)+,R1        ;;POP STACK INTO R1
4197  015312  012600                          MOV     (SP)+,R0        ;;POP STACK INTO R0
4198  015314  000002                          RTI                     ;;RETURN
4199  015316  000000                  $HIOCT: .WORD   0               ;;HIGH ORDER BITS GO HERE
4200                                  .SBTTL  TYPE ROUTINE
4201
4202                                  ;;*****************************************************************
4203                                  ;*ROUTINE TO TYPE ASCIZ MESSAGE. MESSAGE MUST TERMINATE WITH A 0 BYTE.
4204                                  ;*THE ROUTINE WILL INSERT A NUMBER OF NULL CHARACTERS AFTER A LINE FEED.
4205                                  ;*NOTE1:        $NULL CONTAINS THE CHARACTER TO BE USED AS THE FILLER CHARACTER.
4206                                  ;*NOTE2:        $FILLS CONTAINS THE NUMBER OF FILLER CHARACTERS REQUIRED.
4207                                  ;*NOTE3:        $FILLC CONTAINS THE CHARACTER TO FILL AFTER.
4208                                  ;*
4209                                  ;*CALL:
4210                                  ;*1) USING A TRAP INSTRUCTION
4211                                  ;*      TYPE    ,MESADR         ;;MESADR IS FIRST ADDRESS OF AN ASCIZ STRING
4212                                  ;*OR
4213                                  ;*      TYPE
4214                                  ;*      MESADR
4215                                  ;*
4216
4217  015320  105737  001157          $TYPE:  TSTB    $TPFLG          ;;IS THERE A TERMINAL?
4218  015324  100002                          BPL     1$              ;;BR IF YES
4219  015326  000000                          HALT                    ;;HALT HERE IF NO TERMINAL
4220  015330  000430                          BR      3$              ;;LEAVE
4221  015332  010046                  1$:     MOV     R0,-(SP)        ;;SAVE R0
4222  015334  017600  000002                  MOV     @2(SP),R0       ;;GET ADDRESS OF ASCIZ STRING
4223  015340  122737  000001  001212          CMPB    #APTENV,$ENVM   ;;RUNNING IN APT MODE
4224  015346  001011                          BNE     62$             ;;NO,GO CHECK FOR APT CONSOLE
4225  015350  132737  000100  001213          BITB    #APTSPOOL,$ENVM ;;SPOOL MESSAGE TO APT
4226  015356  001405                          BEQ     62$             ;;NO,GO CHECK FOR CONSOLE
4227  015360  010037  015370                  MOV     R0,61$          ;;SETUP MESSAGE ADDRESS FOR APT
4228  015364  004737  015610                  JSR     PC,$ATY3        ;;SPOOL MESSAGE TO APT
4229  015370  000000          61$:    .WORD   0               ;;MESSAGE ADDRESS
4230  015372  132737  000040  001213  62$:    BITB    #APTCSUP,$ENVM  ;;APT CONSOLE SUPPRESSED
4231  015400  001003                          BNE     60$             ;;YES,SKIP TYPE OUT
4232  015402  112046                  2$:     MOVB    (R0)+,-(SP)     ;;PUSH CHARACTER TO BE TYPED ONTO STACK
4233  015404  001005                          BNE     4$              ;;BR IF IT ISN'T THE TERMINATOR
4234  015406  005726                          TST     (SP)+           ;;IF TERMINATOR POP IT OFF THE STACK
4235  015410  012600                  60$:    MOV     (SP)+,R0        ;;RESTORE R0
4236  015412  062716  000002          3$:     ADD     #2,(SP)         ;;ADJUST RETURN PC
4237  015416  000002                          RTI                     ;;RETURN
4238  015420  122716  000011          4$:     CMPB    #HT,(SP)        ;;BRANCH IF <HT>
4239  015424  001430                          BEQ     8$
4240  015426  122716  000200                  CMPB    #CRLF,(SP)      ;;BRANCH IF NOT <CRLF>
4241  015432  001006                          BNE     5$
4242  015434  005726                          TST     (SP)+           ;;POP  <CR><LF> EQUIV
4243  015436  104401                          TYPE                    ;;TYPE A CR AND LF
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 4244  015440  001167                          $CRLF
 4245  015442  105037  015576                  CLRB    $CHARCNT        ;;CLEAR CHARACTER COUNT
 4246  015446  000755                          BR      2$              ;;GET NEXT CHARACTER
 4247  015450  004737  015532          5$:     JSR     PC,$TYPEC       ;;GO TYPE THIS CHARACTER
 4248  015454  123726  001156          6$:     CMPB    $FILLC,(SP)+    ;;IS IT TIME FOR FILLER CHARS.?
 4249  015460  001350                          BNE     2$              ;;IF NO GO GET NEXT CHAR.
 4250  015462  013746  001154                  MOV     $NULL,-(SP)     ;;GET # OF FILLER CHARS. NEEDED
 4251                                                                  ;;AND THE NULL CHAR.
 4252  015466  105366  000001          7$:     DECB    1(SP)           ;;DOES A NULL NEED TO BE TYPED?
 4253  015472  002770                          BLT     6$              ;;BR IF NO--GO POP THE NULL OFF OF STACK
 4254  015474  004737  015532                  JSR     PC,$TYPEC       ;;GO TYPE A NULL
 4255  015500  105337  015576                  DECB    $CHARCNT        ;;DO NOT COUNT AS A COUNT
 4256  015504  000770                          BR      7$              ;;LOOP
 4257
 4258                                  ;HORIZONTAL TAB PROCESSOR
 4259
 4260  015506  112716  000040          8$:     MOVB    #' ,(SP)        ;;REPLACE TAB WITH SPACE
 4261  015512  004737  015532          9$:     JSR     PC,$TYPEC       ;;TYPE A SPACE
 4262  015516  132737  000007  015576          BITB    #7,$CHARCNT     ;;BRANCH IF NOT AT
 4263  015524  001372                          BNE     9$              ;;TAB STOP
 4264  015526  005726                          TST     (SP)+           ;;POP SPACE OFF STACK
 4265  015530  000724                          BR      2$              ;;GET NEXT CHARACTER
 4266  015532  105777  163412          $TYPEC: TSTB    @$TPS           ;;WAIT UNTIL PRINTER IS READY
 4267  015536  100375                          BPL     $TYPEC
 4268  015540  116677  000002  163404          MOVB    2(SP),@$TPB     ;;LOAD CHAR TO BE TYPED INTO DATA REG.
 4269  015546  122766  000015  000002          CMPB    #CR,2(SP)       ;;IS CHARACTER A CARRIAGE RETURN?
 4270  015554  001003                          BNE     1$              ;;BRANCH IF NO
 4271  015556  105037  015576                  CLRB    $CHARCNT        ;;YES--CLEAR CHARACTER COUNT
 4272  015562  000406                          BR      $TYPEX          ;;EXIT
 4273  015564  122766  000012  000002  1$:     CMPB    #LF,2(SP)       ;;IS CHARACTER A LINE FEED?
 4274  015572  001402                          BEQ     $TYPEX          ;;BRANCH IF YES
 4275  015574  105227                          INCB    (PC)+           ;;COUNT THE CHARACTER
 4276  015576  000000          $CHARCNT:.WORD  0                       ;;CHARACTER COUNT STORAGE
 4277  015600  000207          $TYPEX: RTS     PC
 4278
 4279                                  .SBTTL  APT COMMUNICATIONS ROUTINE
 4280
 4281                                  ;;**************************************************************************
 4282  015602  112737  000001  016046  $ATY1:  MOVB    #1,$FFLG        ;;TO REPORT FATAL ERROR
 4283  015610  112737  000001  016044  $ATY3:  MOVB    #1,$MFLG        ;;TO TYPE A MESSAGE
 4284  015616  000403                          BR      $ATYC
 4285  015620  112737  000001  016046  $ATY4:  MOVB    #1,$FFLG        ;;TO ONLY REPORT FATAL ERROR
 4286  015626                          $ATYC:
 4287  015626  010046                          MOV     R0,-(SP)        ;;PUSH R0 ON STACK
 4288  015630  010146                          MOV     R1,-(SP)        ;;PUSH R1 ON STACK
 4289  015632  105737  016044                  TSTB    $MFLG           ;;SHOULD TYPE A MESSAGE?
 4290  015636  001450                          BEQ     5$              ;;IF NOT:  BR
 4291  015640  122737  000001  001212          CMPB    #APTENV,$ENV    ;;OPERATING UNDER APT?
 4292  015646  001031                          BNE     3$              ;;IF NOT:  BR
 4293  015650  132737  000100  001213          BITB    #APTSPOOL,$ENVM ;;SHOULD SPOOL MESSAGES?
 4294  015656  001425                          BEQ     3$              ;;IF NOT:  BR
 4295  015660  017600  000004                  MOV     @4(SP),R0       ;;GET MESSAGE ADDR.
 4296  015664  062766  000002  000004          ADD     #2,4(SP)                ;;BUMP RETURN ADDR.
 4297  015672  005737  001172          1$:     TST     $MSGTYPE        ;;SEE IF DONE W/ LAST XMISSION?
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4298  015676  001375                          BNE     1$              ;;IF NOT:  WAIT
4299  015700  010037  001206                  MOV     R0,$MSGAD       ;;PUT ADDR IN MAILBOX
4300  015704  105720                  2$:     TSTB    (R0)+           ;;FIND END OF MESSAGE
4301  015706  001376                          BNE     2$
4302  015710  163700  001206                  SUB     $MSGAD,R0       ;;SUB START OF MESSAGE
4303  015714  006200                          ASR     R0              ;;GET MESSAGE LNGTH IN WORDS
4304  015716  010037  001210                  MOV     R0,$MSGLGT      ;;PUT LENGTH IN MAILBOX
4305  015722  012737  000004  001172          MOV     #4,$MSGTYPE     ;;TELL APT TO TAKE MSG.
4306  015730  000413                          BR      5$
4307  015732  017637  000004  015756  3$:     MOV     @4(SP),4$       ;;PUT MSG ADDR IN JSR LINKAGE
4308  015740  062766  000002  000004          ADD     #2,4(SP)                ;;BUMP RETURN ADDRESS
4309  015746  013746  177776                  MOV     177776,-(SP)    ;;PUSH 177776 ON STACK
4310  015752  004737  015320                  JSR     PC,$TYPE        ;;CALL TYPE MACRO
4311  015756  000000                  4$:     .WORD   0
4312  015760                          5$:
4313  015760  105737  016046          10$:    TSTB    $FFLG           ;;SHOULD REPORT FATAL ERROR?
4314  015764  001416                          BEQ     12$             ;;IF NOT:  BR
4315  015766  005737  001212                  TST     $ENV            ;;RUNNING UNDER APT?
4316  015772  001413                          BEQ     12$             ;;IF NOT:  BR
4317  015774  005737  001172          11$:    TST     $MSGTYPE        ;;FINISHED LAST MESSAGE?
4318  016000  001375                          BNE     11$             ;;IF NOT:  WAIT
4319  016002  017637  000004  001174          MOV     @4(SP),$FATAL   ;;GET ERROR #
4320  016010  062766  000002  000004          ADD     #2,4(SP)                ;;BUMP RETURN ADDR.
4321  016016  005237  001172                  INC     $MSGTYPE        ;;TELL APT TO TAKE ERROR
4322  016022  105037  016046          12$:    CLRB    $FFLG           ;;CLEAR FATAL FLAG
4323  016026  105037  016045                  CLRB    $LFLG           ;;CLEAR LOG FLAG
4324  016032  105037  016044                  CLRB    $MFLG           ;;CLEAR MESSAGE FLAG
4325  016036  012601                          MOV     (SP)+,R1        ;;POP STACK INTO R1
4326  016040  012600                          MOV     (SP)+,R0        ;;POP STACK INTO R0
4327  016042  000207                          RTS     PC              ;;RETURN
4328  016044     000          $MFLG:  .BYTE   0               ;;MESSG. FLAG
4329  016045     000          $LFLG:  .BYTE   0               ;;LOG FLAG
4330  016046     000          $FFLG:  .BYTE   0               ;;FATAL FLAG
4331          016050                  .EVEN
4332          000200          APTSIZE=200
4333          000001          APTENV=001
4334          000100          APTSPOOL=100
4335          000040          APTCSUP=040
4336                          .SBTTL  POWER DOWN AND UP ROUTINES
4337
4338                          ;;*****************************************************************
4339                          ;POWER DOWn ROUTINE
4340  016050  012737  016210  000024  $PWRDN: MOV     #$ILLUP,@#PWRVEC ;;SET FOR FAST UP
4341  016056  012737  000340  000026          MOV     #340,@#PWRVEC+2 ;;PRIO:7
4342  016064  010046                          MOV     R0,-(SP)        ;;PUSH R0 ON STACK
4343  016066  010146                          MOV     R1,-(SP)        ;;PUSH R1 ON STACK
4344  016070  010246                          MOV     R2,-(SP)        ;;PUSH R2 ON STACK
4345  016072  010346                          MOV     R3,-(SP)        ;;PUSH R3 ON STACK
4346  016074  010446                          MOV     R4,-(SP)        ;;PUSH R4 ON STACK
4347  016076  010546                          MOV     R5,-(SP)        ;;PUSH R5 ON STACK
4348  016100  017746  163034                  MOV     @SWR,-(SP)      ;;PUSH @SWR ON STACK
4349  016104  010637  016214                  MOV     SP,$SAVR6       ;;SAVE SP
4350  016110  012737  016122  000024          MOV     #$PWRUP,@#PWRVEC ;;SET UP VECTOR
4351  016116  000000                          HALT
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4352  016120  000776                          BR      .-2             ;;HANG UP
4353
4354                                  ;;*****************************************************************
4355                                  ;POWER UP ROUTINE
4356  016122  012737  016210  000024  $PWRUP: MOV     #$ILLUP,@#PWRVEC ;;SET FOR FAST DOWn
4357  016130  013706  016214          MOV     $SAVR6,SP       ;;GET SP
4358  016134  005037  016214          CLR     $SAVR6          ;;WAIT LOOP FOR THE TTY
4359  016140  005237  016214  1$:     INC     $SAVR6          ;;WAIT FOR THE INC
4360  016144  001375                  BNE     1$              ;;OF  WORD
4361  016146  012677  162766          MOV     (SP)+,@SWR      ;;POP STACK INTO @SWR
4362  016152  012605                  MOV     (SP)+,R5        ;;POP STACK INTO R5
4363  016154  012604                  MOV     (SP)+,R4        ;;POP STACK INTO R4
4364  016156  012603                  MOV     (SP)+,R3        ;;POP STACK INTO R3
4365  016160  012602                  MOV     (SP)+,R2        ;;POP STACK INTO R2
4366  016162  012601                  MOV     (SP)+,R1        ;;POP STACK INTO R1
4367  016164  012600                  MOV     (SP)+,R0        ;;POP STACK INTO R0
4368  016166  012737  016050  000024  MOV     #$PWRDN,@#PWRVEC ;;SET UP THE POWER DOWN VECTOR
4369  016174  012737  000340  000026  MOV     #340,@#PWRVEC+2 ;;PRIO:7
4370  016202  104401                  TYPE                    ;REPORT THE POWER FAILURE
4371  016204  016216          $PWRMG: .WORD   $POWER          ;;POWER FAIL MESSAGE POINTER
4372  016206  000002                  RTI
4373  016210  000000          $ILLUP: HALT                    ;;THE POWER UP SEQUENCE WAS STARTED
4374  016212  000776                  BR      .-2             ;; BEFORE THE POWER DOWN WAS COMPLETE
4375  016214  000000          $SAVR6: 0                       ;;PUT THE SP HERE
4376  016216  005015  047520  042527  $POWER: .ASCIZ  <15><12>"POWER"
4377  016224  000122
4378                                          .EVEN
4379                                  .SBTTL  TRAP DECoDER
4380
4381                                  ;;*****************************************************************
4382                                  ;*THIS ROUTINE WILL PICKUP THE LOWER BYTE OF THE "TRAP" INSTRUCTION
4383                                  ;*AND USE IT TO INDEX THROUGH THE TRAP TABLE FOR THE STARTING ADDRESS
4384                                  ;*OF THE DESIRED ROUTINE. THEN USING THE ADDRESS OBTAINED IT WILL
4385                                  ;*GO TO THAT ROUTINE.
4386
4387  016226  010046          $TRAP:  MOV     R0,-(SP)        ;;SAVE R0
4388  016230  016600  000002          MOV     2(SP),R0        ;;GET TRAP ADDRESS
4389  016234  005740                  TST     -(R0)           ;;BACKUP BY 2
4390  016236  111000                  MOVB    (R0),R0         ;;GET RIGHT BYTE OF TRAP
4391  016240  006300                  ASL     R0              ;;POSITION FOR INDEXING
4392  016242  016000  016262          MOV     $TRPAD(R0),R0   ;;INDEX TO TABLE
4393  016246  000200                  RTS     R0              ;;GO TO ROUTINE
4394
4395
4396                                  ;;THIS IS USE TO HANDLE THE "GETPRI" MACRO
4397
4398  016250  011646          $TRAP2: MOV     (SP),-(SP)      ;;MOVE THE PC DOWN
4399  016252  016666  000004  000002  MOV     4(SP),2(SP)     ;;MOVE THE PSW DOWN
4400  016260  000002                  RTI                     ;;RESTORE THE PSW
4401
4402                                  .SBTTL  TRAP TABLE
4403
4404                                  ;*THIS TABLE CONTAINS THE STARTING ADDRESSES OF THE ROUTINES CALLED
4405                                  ;*BY THE "TRAP" INSTRUCTION.
```

```
                                                ;       ROUTINE
                                                ;       -------
                                                $TRPAD: .WORD   $TRAP2
                                                        $TYPE   ;;CALL=TYPE     TRAP+1(104401)  TTY TYPEOUT ROUTINE
                                                        $TYPOC  ;;CALL=TYPOC    TRAP+2(104402)  TYPE OCTAL NUMBER (WITH LEADING ZEROS)
                                                        $TYPOS  ;;CALL=TYPOS    TRAP+3(104403)  TYPE OCTAL NUMBER (NO LEADING ZEROS)
                                                        $TYPON  ;;CALL=TYPON    TRAP+4(104404)  TYPE OCTAL NUMBER (AS PER LAST CALL)
                                                        $TYPDS  ;;CALL=TYPDS    TRAP+5(104405)  TYPE DECIMAL NUMBER (WITH SIGN)

                                                        $GTSWR  ;;CALL=GTSWR    TRAP+6(104406)  GET SOFT-SWR SETTING

                                                        $CKSWR  ;;CALL=CKSWR    TRAP+7(104407)  TEST FOR CHANGE IN SOFT-SWR
                                                        $RDCHR  ;;CALL=RDCHR    TRAP+10(104410) TTY TYPEIN CHARACTER ROUTINE
                                                        $RDLIN  ;;CALL=RDLIN    TRAP+11(104411) TTY TYPEIN STRING ROUTINE
                                                        $RDOCT  ;;CALL=RDOCT    TRAP+12(104412) READ AN OCTAL NUMBER FROM TTY
016310  020200  020040  020040  MESWCH: .ASCII  <200>#     NOTE:#
016316  047516  042524     072
016323     200  047506  020122          .ASCII  <200>#FOR THIS PROGRAM TO rUN PROPERLY, SWITCH#
016330  044124  051511  050040
016336  047522  051107  046501
016344  052040  020117  052522
016352  020116  051120  050117
016360  051105  054514  020054
016366  053523  052111  044103
016374  033600  020054  043117          .ASCII  <200>#7, OF THE VECTOR ADDRESS SWITCH PACK (E76),#
016402  052040  042510  053040
016410  041505  047524  020122
016416  042101  051104  051505
016424  020123  053523  052111
016432  044103  050040  041501
016440  020113  042450  033067
016446  026051
016450  046600  051525  020124          .ASCIZ  <200>#MUST BE ON. (M8200-YC BOARD)#<200>
016456  042502  047440  027116
016464  024040  034115  030062
016472  026460  041531  041040
016500  040517  042122  100051
016506     000
016507     200  041125  051123  EM1:    .ASCIZ  <200>#UBSR ERROR#
016514  042440  051122  051117
016522     000
016523     200  047511  051123  EM2:    .ASCIZ  <200>#IOSR ERROR#
016530  042440  051122  051117
016536     000
016537     200  044523  042504  EM3:    .ASCIZ  <200>#SIDE 1 (IO TO UB) FAST PATH DATA ERROR#
016544  030440  024040  047511
016552  052040  020117  041125
016560  020051  040506  052123
016566  050040  052101  020110
016574  040504  040524  042440
016602  051122  051117     000
016607     200  044523  042504  EM4:    .ASCIZ  <200>#SIDE 2 (UB TO IO) FAST PATH DATA ERROR#
```

```
 4460  016614  031040  024040  041125
 4461  016622  052040  020117  047511
 4462  016630  020051  040506  052123
 4463  016636  050040  052101  020110
 4464  016644  040504  040524  042440
 4465  016652  051122  051117     000
 4466  016657     200  044523  042504  EM5:    .ASCIZ  <200>#SIDE 1 (IO TO UB) SILO DATA ERROR#
 4467  016664  030440  024040  047511
 4468  016672  052040  020117  041125
 4469  016700  020051  044523  047514
 4470  016706  042040  052101  020101
 4471  016714  051105  047522  000122
 4472  016722  051600  042111  020105  EM6:    .ASCIZ  <200>#SIDE 2 (UB TO IO) SILO DATA ERROR#
 4473  016730  020062  052450  020102
 4474  016736  047524  044440  024517
 4475  016744  051440  046111  020117
 4476  016752  040504  040524  042440
 4477  016760  051122  051117     000
 4478  016765     200  044523  042504  EM7:    .ASCIZ  <200>#SIDE 1 INPO DATA ERROR#
 4479  016772  030440  044440  050116
 4480  017000  020060  040504  040524
 4481  017006  042440  051122  051117
 4482  017014     000
 4483  017015     200  044523  042504  EM10:   .ASCIZ  <200>#SIDE 2 INPO DATA ERROR#
 4484  017022  031040  044440  050116
 4485  017030  020060  040504  040524
 4486  017036  042440  051122  051117
 4487  017044     000
 4488  017045     200  044515  051103  EM11:   .ASCIZ  <200>#MICRO-P DETECTED IPBM ERROR#
 4489  017052  026517  020120  042504
 4490  017060  042524  052103  042105
 4491  017066  044440  041120  020115
 4492  017074  051105  047522  000122
 4493
 4494  017102  042600  051122  041520  DH1:    .ASCIZ  <200>#ERRPC   GDDAT   BDDAT   KMCADR#
 4495  017110  020040  043440  042104
 4496  017116  052101  020040  041040
 4497  017124  042104  052101  020040
 4498  017132  045440  041515  042101
 4499  017140  000122
 4500  017142  042600  051122  041520  DH7:    .ASCIZ  <200>#ERRPC   INPO #  GDDAT   BDDAT   KMCADR#
 4501  017150  020040  044440  050116
 4502  017156  020060  020043  043440
 4503  017164  042104  052101  020040
 4504  017172  041040  042104  052101
 4505  017200  020040  045440  041515
 4506  017206  042101  000122
 4507  017212  052200  051505  020124  DH11:   .ASCIZ  <200>#TEST    ERRPC   KMCADR  CSR#
 4508  017220  020040  042440  051122
 4509  017226  041520  020040  045440
 4510  017234  041515  042101  020122
 4511  017242  041440  051123     000
 4512
 4513          017250                  .EVEN
```

```
 4514
 4515  017250  001116  001124  001126  DT1:    .WORD   $ERRPC,$GDDAT,$BDDAT,KMCSR,0
 4516  017256  001424  000000
 4517  017262  001116  001460  001124  DT7:    .WORD   $ERRPC,INNU,$GDDAT,$BDDAT,KMCSR,0
 4518  017270  001126  001424  000000
 4519  017276  001102  001116  001462  DT11:   .WORD   $TSTNM,$ERRPC,KLAD,$BDDAT,0
 4520  017304  001126  000000
 4521
 4522  017310  000000  000000          DF0:    0,0
 4523
 4524  017314  017322                  SENA:   .WORD   SENBUF
 4525  017316  017722                  RECB:   .WORD   RECBUF
 4526  017320  020122                  RE2B:   .WORD   RE2BUF
 4527  017322  000200                  SENBUF: .BLKW   128.
 4528  017722  000100                  RECBUF: .BLKW   64.
 4529  020122  000100                  RE2BUF: .BLKW   64.
 4530          000001                  .END
```

```
                    3146    3149    3170    3226    3294    3434    3591#
BIT0   = 000001     136#    2770    2878    2982    3090    3501    3508
BIT00  = 000001     126#     136
BIT01  = 000002     125#     135    3497
BIT02  = 000004     124#     134
BIT03  = 000010     123#     133
BIT04  = 000020     122#     132
BIT05  = 000040     121#     131
BIT06  = 000100     120#     130
BIT07  = 000200     119#     129
BIT08  = 000400     118#     128    3998
BIT09  = 001000     117#     127
BIT1   = 000002     135#    3058    3156    3501    3508
BIT10  = 002000     116#    3894
BIT11  = 004000     115#    4006
BIT12  = 010000     114#
BIT13  = 020000     113#    3901
BIT14  = 040000     112#    3984
BIT15  = 100000     111#    3555    3592
BIT2   = 000004     134#    3508
BIT3   = 000010     133#
BIT4   = 000020     132#
BIT5   = 000040     131#
BIT6   = 000100     130#    3002    3032    3034    3057    3106    3132    3134    3155
BIT7   = 000200     129#    2791    2813    2822    2849    2850    2895    2915    2922    2949    2950    3057    3155
BIT8   = 000400     128#
BIT9   = 001000     127#
BPTVEC= 000014      143#
BSEL0   001432      392#
BSEL1   001434      393#
BSEL2   001436      394#
BSEL3   001440      395#     587     663     735*    919     988*    1014*   1057*   1083*   1126*   1152*   1195*   1221*
                   1264*   1290*   1333*   1359*   1402*   1428*   1471*   1497*   1552    1578    1619    1645    1686
                   1712    1753    1779    1820    1846    1887    1913    1954    1980    2021    2047    2063*   2152
                   2171*   2204*   2237*   2270*   2303*   2336*   2369*   2402*   2435*   2483    2515    2547    2579
                   2611    2643    2675    2707    2739
BSEL4   001442      396#
BSEL5   001444      397#     533     753     818     895     953     2129    2770    2790    2791    2821    2822    2848
                   2850    2982    3002    3004    3033    3034    3036    3059    3279
BSEL6   001446      398#
BSEL7   001450      399#
CKSWR  = 104407    3890    3916    3982    3983    4418#
CKVCT2  001454      402#
CKVECT  001452      401#
CR     = 000015      51#    4269    4279
CRLF   = 000200      52#     498    4240    4279
DDISP  = 177570      58#     218     432
DF0     017310      303     310     317     324     331     338     345     352     359    4522#
DH1     017102      301     308     315     322     329     336    4494#
DH11    017212      357    4507#
DH7     017142      343     350    4500#
DISPLA  001142      218#    432*    440*   3893*   4018*
DISPRE  000174       31#    440
DOIT    012166     3487    3497#
```

```
DSWR   = 177570            57#   217   431
DT1      017250           302   309   316   323   330   337  4515#
DT11     017275           358  4519#
DT7      017262           344   351  4517#
EMTVEC=  000030           146#  419*  420*
EM1      016507           300  4446#
EM10     017015           349  4483#
EM11     017045           356  4488#
EM2      016523           307  4449#
EM3      016537           314  4452#
EM4      016607           321  4459#
EM5      016657           328  4466#
EM6      016722           335  4472#
EM7      016765           342  4478#
ERCNT    001456           403#  448*  3361  3918*
ERRIS    012050          3424  3440#
ERRVEC=  000004           139#  429   430*  441*  3989  3990*  3992*  3995*
FILBUF   012542          3176  3252  3599#
FILEX    012576          3605  3609#
GNS    = ****** U          30   497  3352  3359  3366  3431  3566  3570  3578  3626  3634  3641  3647
                          3657  3672  3686  3694  3700  3707  3726  4410  4411  4412  4413  4414  4416
                          4418  4419  4420  4421
GTSWR  = 104406            492  4416#
HT     = 000011             49#  4238  4279
INNU     001460           404#  584*  621*  660*  697*  4517
IOTVEC=  000020           144#  417*  418*
ISSEX    012044          3416  3421  3437#  3441  3456
ISSUEC   011656           519   526   578   654   738   746   812   858   913   980   993  1016  1049
                          1059  1085  1118  1128  1154  1187  1197  1223  1256  1266  1292  1325  1335
                          1361  1394  1404  1430  1463  1473  1499  1545  1571  1612  1638  1679  1705
                          1746  1772  1813  1839  1880  1906  1947  1973  2014  2040  2065  2146  2173
                          2206  2239  2272  2305  2338  2371  2404  2437  2476  2508  2540  2572  2604
                          2636  2668  2700  2732  2764  2773  2784  2806  2815  2842  2937  2976  2985
                          2996  3019  3026  3051  3179  3254  3403#
KLAD     001462           405#  3442*  3548*  4519
KMADR    001426           390#  3527*  3539*  3544*  3548  3552*
KMCSR    001424           389#   451   457   464   520   527   579   655   739   747   813   859   914
                           981   991  1017  1050  1060  1086  1119  1129  1155  1188  1198  1224  1257
                          1267  1293  1326  1336  1362  1395  1405  1431  1464  1474  1500  1546  1572
                          1613  1639  1680  1706  1747  1773  1814  1840  1881  1907  1948  1974  2015
                          2041  2066  2147  2174  2207  2240  2273  2306  2339  2372  2405  2438  2477
                          2509  2541  2573  2605  2637  2669  2701  2733  2765  2774  2785  2807  2816
                          2843  2938  2977  2986  2997  3020  3027  3052  3180  3255  3324  3525*  3529*
                          3533*  3538*  3547*  3551*  3555*  3592*  4515  4517
KMDBR    001430           391#  3531*  3549  3580
KMMADR   001376           374#   466*   469*
KMMCSR   001374           373#   464*   465*   466   467   471  3593*
KMMDBR   001400           375#   467*   470*
KMSIM    012100           550   616   692   729   771   791   833   867   873   934   996  1022  1065
                          1091  1134  1160  1203  1229  1272  1298  1341  1367  1410  1436  1479  1505
                          1531  1539  1565  1598  1606  1632  1665  1673  1699  1732  1740  1766  1799
                          1807  1833  1866  1874  1900  1933  1941  1967  2000  2008  2034  2071  2093
                          2119  2124  2179  2212  2245  2278  2311  2344  2377  2410  2443  2470  2502
                          2534  2566  2598  2630  2662  2694  2726  2836  2873  2880  2889  2909  2916
```

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                        2943    3085    3092    3101    3122    3127    3150    3191    3197    3205    3266    3273    3472#
KWADR   001422           385#
KWINT   012236          3512#
LF    = 000012            50#    4273    4279
LOAD    012246           504    3522#
LOADER= 012402          3550    3560#
LSTED   001724           451#   3326
MBSELO  001402           376#    472
MBSEL1  001404           377#   3497*   3501*   3508*
MBSEL2  001406           378#
MBSEL3  001410           379#    624     700     796     865*   1002    1028    1071    1097    1140    1166    1209    1235
                        1278    1304    1347    1373    1416    1442    1485    1511    1538*   1564*   1605*   1631*   1672*
                        1698*   1739*   1765*   1806*   1832*   1873*   1899*   1940*   1966*   2007*   2033*   2098    2118*
                        2185    2218    2251    2284    2317    2350    2383    2416    2449    2469*   2501*   2533*   2565*
                        2597*   2629*   2661*   2693*   2725*   3196    3202    3265*
MBSEL4  001412           380#
MBSEL5  001414           381#    556     776     838     879     939    2076    2878    2894    2895    2921    2922    2948
                        2950    3090    3106    3108    3133    3134    3136    3157    3211
MBSEL6  001416           382#   3499*
MBSEL7  001420           383#
MCNT    001366           364#   3321
MESWCH  016310           503    4422#
MOCRAM  012632            37    3623#
MRCODE= ******  G          1#   3477    3482    3523    3545
NCNT    001372           366#    450*   3321    3323*
ODT     013070            39    3683#   3714
PC    =%000007            70#   2062*   2117*   2801*   2832*   2861*   2905*   2932*   2961*   3014*   3046*   3049*   3072*
                       3118*   3146*   3149*   3170*   3176*   3226*   3252*   3294*   3342*   3345*   3372*   3377    3434*
                       3487*   3509*   3594*   3602*   3609*   3615*   3903*   3909*   3958*   4076*   4228*   4247*   4254*
                       4261*   4275*   4277*   4310*   4327*
PIRQ  = 177772           56#
PIRQVE= 000240          150#
PR0   = 000000           73#
PR1   = 000040           74#
PR2   = 000100           75#
PR3   = 000140           76#
PR4   = 000200           77#
PR5   = 000240           78#
PR6   = 000300           79#
PR7   = 000340           80#
PS    = 177776           53#     54
PSW   = 177776           54#
PWRVEC= 000024          145#    423*    424*   4340*   4341*   4350*   4356*   4368*   4369*
RANA    012626         3603    3611    3612*   3613*   3617#
RANB    012630         3606    3611*   3613    3614*   3618#
RAND    012600         3602    3611#
RBST  = 011770         3427#
RDCHR = 104410         4135    4419#
RDLIN = 104411         4177    4420#
RDOCT = 104412         3628    3636    3674    3688    3728    4421#
RECB    017316         4525#
RECBUF  017722         3188    3228    3260    3296    3604    3607    4525    4528#
RESVEC= 000010          140#
RE2B    017320         4526#
```

```
RE2BUF  020122          4526    4529#
RSTART  001706           448#
RTNAD   001712           449#   3378
R0      =%000000          61#    449*    452    453*    454    455*    456    457*    459    460*    471*    474    475*
                        2760*  2779*  2870*  2885*  2972*  2991*  3082*  3097*  3188*  3228*  3263*  3296*  3324*
                        3325*  3369*  3372   3403   3404*  3437*  3442   3472   3474*  3475*  3476*  3477*  3485*
                        3494*  3499   3523*  3540   3545*  3553   3574   3599*  3604   3607   3629*  3630*  3690*
                        3696   3717*  3721*  3822   3832*  3836   3852   3853   3866*  3930   3931*  3932*  3939*
                        3940*  3941*  3942*  3943*  3944   3949   3954*  3956*  3960   3962   4174   4178*  4181
                        4197*  4221   4222*  4227   4232   4235*  4287   4295*  4299   4300   4302*  4303*  4304
                        4326*  4342   4367*  4387   4388*  4389   4390*  4391*  4392*  4393*
R1      =%000001          62#    451*    456*    472*   3189*  3203*  3229*  3254*  3271*  3297*  3473   3478*  3479*
                        3480*  3481*  3482*  3493*  3637*  3643   3650   3665*  3711*  3712*  3713   3715   3719
                        3823   3836*  3837   3841   3865*  4175   4179*  4183*  4185*  4187*  4190*  4193   4196*
                        4288   4325*  4343   4366*
R2      =%000002          63#    458*    461*    473*    476*  3230*  3245*  3298*  3313*  3652*  3653   3675*  3677
                        3824   3835*  3839*  3842   3849*  3850*  3851   3856*  3864*  4176   4180*  4184*  4186*
                        4188*  4194   4195*  4344   4365*
R3      =%000003          64#   3661*  3662*  3663   3667   3765   3774*  3780*  3781*  3784*  3789*  3790*  3791
                        3800*  3825   3833*  3834*  3848*  3851*  3860*  3861*  3863*  4131   4132*  4133   4136*
                        4137   4141   4143   4145*  4147*  4345   4364*
R4      =%000004          65#   3522*  3561*  3766   3768*  3769*  3770*  3771   3772*  3786   3788*  3796*  3799*
                        4346   4363*
R5      =%000005          66#    504*    519*    526*    550*    578*    616*    654*    692*    729*    738*    746*    771*
                         791*   812*   833*   858*   867*   873*   913*   934*   980*   990*   996*  1016*  1022*
                        1049*  1059*  1065*  1085*  1091*  1118*  1128*  1134*  1154*  1160*  1187*  1197*  1203*
                        1223*  1229*  1256*  1266*  1272*  1292*  1298*  1325*  1335*  1341*  1361*  1367*  1394*
                        1404*  1410*  1430*  1436*  1463*  1473*  1479*  1499*  1505*  1531*  1539*  1545*  1565*
                        1571*  1598*  1606*  1612*  1632*  1638*  1665*  1673*  1679*  1699*  1705*  1732*  1740*
                        1746*  1766*  1772*  1799*  1807*  1813*  1833*  1839*  1866*  1874*  1880*  1900*  1906*
                        1933*  1941*  1947*  1967*  1973*  2000*  2008*  2014*  2034*  2040*  2065*  2071*  2093*
                        2119*  2124*  2146*  2173*  2179*  2206*  2212*  2239*  2245*  2272*  2278*  2305*  2311*
                        2338*  2344*  2371*  2377*  2404*  2410*  2437*  2443*  2470*  2476*  2502*  2508*  2534*
                        2540*  2566*  2572*  2598*  2604*  2630*  2636*  2662*  2668*  2694*  2700*  2726*  2732*
                        2764*  2773*  2784*  2806*  2815*  2836*  2842*  2873*  2880*  2889*  2909*  2916*  2937*
                        2943*  2976*  2985*  2996*  3019*  3026*  3051*  3085*  3092*  3101*  3122*  3127*  3150*
                        3179*  3191*  3197*  3205*  3254*  3266*  3273*  3413*  3438*  3495*  3556*  3767   3773*
                        3775*  3777*  3778*  3779*  3780   3798*  3826   3828*  3830*  3837*  3841*  3856   3862*
                        4347   4362*
R6      =%000006          67#    411*    412*    413
R7      =%000007          68#
SENA    017314          4524#
SENBUF  017322          3185   3229   3263   3297   3599   4524   4527#
SP      =%000006          69#    415*    429*    437*    441  3354*  3361*  3403*  3433*  3437   3472*  3473*  3493
                        3494   3574*  3580*  3629   3637   3643*  3653*  3675   3690   3696*  3702*  3729   3757*
                        3758   3759   3760*  3765*  3766*  3767*  3773   3798   3799   3800   3801*  3802*  3822*
                        3823*  3824*  3825*  3826*  3827*  3828   3831*  3844   3846*  3848   3858   3860   3862
                        3863   3864   3865   3866   3868*  3869*  3898   3930*  3935*  3956   3960*  3989*  3992
                        3994   3995   4017   4019*  4036*  4037*  4038   4045*  4048*  4049*  4053*  4054*  4058
                        4061*  4065   4067   4069   4070*  4077   4079   4081*  4082   4084*  4085*  4086*  4087*
                        4088*  4103*  4104*  4107*  4108*  4109   4113*  4114*  4115   4118   4120   4122*  4131*
                        4136   4147   4148*  4149*  4150*  4172*  4173*  4174*  4175*  4176*  4178   4181*  4189*
                        4190   4192   4193*  4195   4196   4197   4221*  4222   4232*  4234   4235   4236*  4238
                        4240   4242   4248   4250*  4252*  4260*  4264   4268   4269   4273   4287*  4288*  4295
```

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                    4296*  4307   4308*  4309*  4319   4320*  4325   4326   4342*  4343*  4344*  4345*  4346*
                    4347*  4348*  4349   4357*  4361   4362   4363   4364   4365   4366   4367   4387*  4388
                    4398*  4399*
STACK  = 001100       44*   415    3433
START    001464       35    408*
STKLMT= 177774        55*
SWR      001140      217*   413    431*   433    439*   446*   490    3894   3901   3913   3984   3998   4000
                    4006   4032   4069*  4348   4361*
SWREG    000176       32*   439    490    4032   4045
SW0    = 000001      108*
SW00   = 000001       98*   108
SW01   = 000002       97*   107
SW02   = 000004       96*   106
SW03   = 000010       95*   105
SW04   = 000020       94*   104
SW05   = 000040       93*   103
SW06   = 000100       92*   102
SW07   = 000200       91*   101
SW08   = 000400       90*   100
SW09   = 001000       89*    99
SW1    = 000002      107*
SW10   = 002000       88*
SW11   = 004000       87*
SW12   = 010000       86*
SW13   = 020000       85*
SW14   = 040000       84*
SW15   = 100000       83*
SW2    = 000004      106*
SW3    = 000010      105*
SW4    = 000020      104*
SW5    = 000040      103*
SW6    = 000100      102*
SW7    = 000200      101*
SW8    = 000400      100*
SW9    = 001000       99*
TBITVE= 000014      141*
TIME     012244     3414*  3425*  3512*  3514*
TKVEC  = 000060      148*
TPVEC  = 000064      149*
TRAPVE= 000034      147*   421*   422*
TRTVEC= 000014      142*
TST1     002204      509*
TST10    003106      768    789    808    830    842    855*
TST11    003340      893    908    931    951    957    977*
TST12    003464     1029   1046*
TST13    003610     1098   1115*
TST14    003734     1167   1184*
TST15    004060     1236   1253*
TST16    004204     1305   1322*
TST17    004330     1374   1391*
TST2     002316      538    547*
TST20    004454     1443   1460*
TST21    004600     1512   1529*
TST22    004722     1579   1596*
```

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TST23   005044          1646    1663#
TST24   005166          1713    1730#
TST25   005310          1780    1797#
TST26   005432          1847    1864#
TST27   005554          1914    1931#
TST3    002366           561     574#
TST30   005676          1981    1998#
TST31   006020          2048    2060#
TST32   006130          2090    2099    2115#
TST33   006240          2143    2153    2168#
TST34   006314          2187    2201#
TST35   006370          2220    2234#
TST36   006444          2253    2267#
TST37   006520          2286    2300#
TST4    002440           589     613#
TST40   006574          2319    2333#
TST41   006650          2352    2366#
TST42   006724          2385    2399#
TST43   007000          2418    2432#
TST44   007054          2451    2466#
TST45   007130          2485    2498#
TST46   007204          2517    2530#
TST47   007260          2549    2562#
TST5    002510           626     650#
TST50   007334          2581    2594#
TST51   007410          2613    2626#
TST52   007464          2645    2658#
TST53   007540          2677    2690#
TST54   007614          2709    2722#
TST55   007670          2741    2756#
TST56   010130          2802    2833    2866#
TST57   010356          2906    2933    2967#
TST6    002562           665     689#
TST60   010630          3015    3047    3077#
TST61   011066          3119    3147    3175#
TST62   011256          3227    3244    3251#
TST63   011434          3295    3312    3319#
TST7    002632           702     726#
TYPDS = 104405          3356    3362    4414#
TYPE  = 104401           484     503    3350    3357    3364    3429    3564    3568    3576    3624    3632    3639    3645
                        3655    3670    3684    3692    3698    3705    3724    3792    3867    3896    3904    3929    3946
                        3948    3951    3953    3957    3964    4043    4044    4047    4060    4071    4090    4139    4142
                        4146    4243    4370    4410#
TYPOC = 104402          3575    3581    3644    3654    3697    3703    3937    3961    4046    4411#
TYPON = 104404          4413#
TYPOS = 104403          4412#
UCODEE= ******  G          1#    3540    3553
VAR1    001364           363#    465
VAR2    001370           365#   3325
$APTHD  001000           177     183#
$ASTAT= ****** U        4313    4328
$ATYC   015626          4284    4286#
$ATY1   015602          4282#
$ATY3   015610          4228    4283#
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$ATY4   015620  3909  4285#
$AUTOB  001134   214#   494#  4040  4161
$BASE   001246   277#   449
$BDADR  001122   209#
$BDDAT  001126   211#   533#  534#  537   556#  557#  560   586#  587#  588   623#  624#  625
                 662#   663#  664   699#  700#  701   753#  754#  757   776#  779   796#  818#
                 820    838#  841   879#  882   895#  898   919#  939#  941   953#  956   1002#
                1003   1028#  1071#  1072  1097#  1140#  1141  1166#  1209#  1210  1235#  1278#  1279
                1304#  1347#  1348  1373#  1416#  1417  1442#  1485#  1486  1511#  1552#  1553  1578#
                1619#  1620   1645#  1686#  1687  1712#  1753#  1754  1779#  1820#  1821  1846#  1887#
                1888   1913#  1954#  1955  1980#  2021#  2022  2047#  2076#  2078  2098#  2129#  2131
                2152#  2185#  2186  2218#  2219  2251#  2252  2284#  2285  2317#  2318  2350#  2351
                2383#  2384   2416#  2417  2449#  2450  2483#  2484  2515#  2516  2547#  2548  2579#
                2580   2611#  2612  2643#  2644  2675#  2676  2707#  2708  2739#  2740  2790#  2821#
                2848#  2894#  2921#  2948#  3004#  3033#  3036#  3059#  3060  3108#  3133#  3136#  3157#
                3158   3210#  3211#  3213  3233#  3278#  3279#  3281  3301#  3443#  3444#  4515  4517
                4519
$BELL   001162   228#  3896  3921
$CDWI   001252   279#
$CHARC  015576  4245#  4255#  4262  4271#  4276#
$CKSWR  014442  4032#  4418
$CMTAG  001100   197#   410   411   419   425   426
$CM3    000000   227#
$CNTLG  015167  4043  4156#
$CNTLU  015162  4060  4155#
$CPUOP  001220   251#
$CRLF   001167   230#  3904  3921  3929  3948  3953  3957  4071  4155  4244  4279
$DBLK   013716  3833  3867  3875#
$DEVCT  001202   242#
$DEVM   001250   278#
$DOAGN  011646  3344  3370  3376#
$DTBL   013706  3836  3871#
$ENDAD  011636   163  3372#
$ENDCT  011522  3346#
$ENULL  011652  3379#
$ENV    001212   247#   488  3906  4223  4291  4315
$ENVM   001213   248#   444  4225  4230  4293
$EOP    011466  3336#
$EOPCT  011514  3343#  3347
$ERFLG  001103   200#  3891#  3921  3973  4002  4004#  4022
$ERMAX  001115   206#  4022
$ERROR  013726   419   3889#
$ERrPC  001116   207#  3898#  3899#  3900  3921  3935  4515  4517  4519
$ERRTB  001254   296#  3943
$ERrTY  014074  3903  3928#
$ERTTL  001112   204#  3897#  3921
$ETABL  001212   246#
$ETEND  001254   189   280#
$FATAL  001174   239#  4319#
$FFLG   016046  4282#  4285#  4313  4322#  4330#
$FILLC  001156   225#  4248  4279
$FILLS  001155   224#  4279
$GDADR  001120   208#
$GDDAT  001124   210#   535#  537   558#  560   585#  588   622#  625   661#  664   698#  701
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                                 755*    757     777*    779     798*    819*    820     839*    841     880*    882     896*    898
                                 921*    940*    941     954*    956     987*    988     1003    1013*   1056*   1057    1072    1082*
                                1125*   1126    1141    1151*   1194*   1195    1210    1220*   1263*   1264    1279    1289*   1332*
                                1333    1348    1358*   1401*   1402    1417    1427*   1470*   1471    1486    1496*   1537*   1538
                                1553    1563*   1604*   1605    1620    1630*   1671*   1672    1687    1697*   1738*   1739    1754
                                1764*   1805*   1806    1821    1831*   1872*   1873    1888    1898*   1939*   1940    1955    1965*
                                2006*   2007    2022    2032*   2077*   2078    2100*   2130*   2131    2155*   2170*   2171    2186
                                2203*   2204    2219    2236*   2237    2252    2269*   2270    2285    2302*   2303    2318    2335*
                                2336    2351    2368*   2369    2384    2401*   2402    2417    2434*   2435    2450    2468*   2469
                                2484    2500*   2501    2516    2532*   2533    2548    2564*   2565    2580    2596*   2597    2612
                                2628*   2629    2644    2660*   2661    2676    2692*   2693    2708    2724*   2725    2740    2782*
                                2813*   2849*   2888*   2915*   2949*   2993*   3032*   3057*   3058*   3060    3099*   3132*   3155*
                                3156*   3158    3212*   3213    3234*   3280*   3281    3302*   4515    4517
$GET42  011626                  3369#
$GTSWR  014512                  4044#   4416
$HD     =  000001                 12     13
$HIBTS  001000                   184#
$HIOCT  015316                  4194*   4199#
$ICNT   001104                   201#   4010*   4011    4013*   4021
$ILLUP  016210                  4340    4356    4373#
$INTAG  001135                   215#   4072    4161
$ITEMB  001114                   205#   3900*   3908    3921    3932
$LF     001170                   231#   3921    4146    4155    4279
$LFLG   016045                  4323*   4329#
$LPADR  001106                   202#    426*    511*    514*   3435    4017*   4019    4021
$LPERR  001110                   203#    515*
$MADR1  001224                   264#
$MADR2  001230                   268#
$MADR3  001234                   271#
$MADR4  001240                   274#
$MAIL   001172                   185     189     237#    443     488    3906    4016    4223
$MAMS1  001222                   258#
$MAMS2  001226                   266#
$MAMS3  001232                   269#
$MAMS4  001236                   272#
$MBADR  001002                   165#
$MFLG   016044                  4283*   4289    4324*   4328#
$MNEW   015205                  4047    4159#
$MSGAD  001206                   244#   4299*   4302
$MSGLG  001210                   245#   4304*
$MSGTY  001172                   238#   4297    4305*   4317    4321*
$MSWR   015174                  4044    4157#
$MTYP1  001223                   259#
$MTYP2  001227                   267#
$MTYP3  001233                   270#
$MTYP4  001237                   273#
$MXCNT  014440                  4014    4021#
$NULL   001154                   223#   4250    4279
$NWTST= 000001                   506#    544#    571#    610#    647#    686#    723#    852#    969#    971    1038#   1040    1107#
                                1109    1176#   1178    1245#   1247    1314#   1316    1383#   1385    1452#   1454    1521#   1523
                                1588#   1590    1655#   1657    1722#   1724    1789#   1791    1856#   1858    1923#   1925    1990#
                                1992    2057#   2112#   2165#   2198#   2231#   2264#   2297#   2330#   2363#   2396#   2429#   2463#
                                2495#   2527#   2559#   2591#   2623#   2655#   2687#   2719#   2753#   2863#   2964#   3074#   3172#
                                3248#   3316#
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$OCNT   013476          3764*  3793*  3806#
$OMODE  013500          3759*  3763*  3768   3771*  3782*  3808#
$OVER   014424          3985   3996   4001   4012   4018#
$PASS   001200           241#   443*  3340*  3341*  3354   3379   4008   4022
$PASTM  001006           187#
$POWER  016216          4371   4376#
$PWRDN  016050           423   4340*  4368
$PWRMG  016204          4371#
$PWRUP  016122          4350   4356#
$QUES   001166           229*  3921   4090   4139   4155   4279
$RDCHR  014724          4103*  4419
$RDDEC= ****** U        4422
$RDLIN  015044          4131*  4420
$RDOCT  015216          4172*  4421
$RDSZ = 000010          4124#
$RTNAD  011650          3378#
$R2A  = ****** U        4422
$SAVRE= ****** U        4422
$SAVR6  016214          4349*  4357   4358*  4359*  4375#
$SCOPE  014230           417   3981#
$SETUP= 000117           407*   416    417    419    421    423    425    426    484    485   3338   3890   3916
                        3918   3982   4027   4161
$STUP = 177777           407#
$SVLAD  014406          3993   4015#
$SVPC = 000224           161#   166
$SWR  = 166400             1#    12     18     19     20     21     22     23    227    228    425    426    427
                         510    548    575    614    651    690    727    856    978   1047   1116   1185   1254
                        1323   1392   1461   1530   1597   1664   1731   1798   1865   1932   1999   2061   2116
                        2169   2202   2235   2268   2301   2334   2367   2400   2433   2467   2499   2531   2563
                        2595   2627   2659   2691   2723   2757   2867   2968   3078   3176   3252   3320   3333
                        3339   3371   3377   3379   3882   3883   3884   3885   3886   3894   3901   3913   3917
                        3921   3974   3975   3976   3977   3984   3996   3998   3999   4002   4003   4004   4005
                        4006   4018   4021   4372
$SWREG  001214           249*   446
$SWRMK= 000000            23     24   3977   3978   4000
$TESTN  001176           240*  4016*
$TIMES  001160           227*   425*   510*   548*  2757*  2867*  2968*  3078*  3339*  4005*  4011   4014*  4021
$TKB    001146           220*  3661   3711   4025   4036   4053   4107   4113
$TKS    001144           219*  3659   3709   4025   4034   4050  4074*   4105   4111
$TN   = 000064            12*   155*   506    510*   538    544    548*   561    571    575*   589    610    614*
                         626    647    651*   665    686    690*   702    723    727*   768    789    808    830
                         842    852    856*   893    908    931    951    957    969    978*  1029   1038   1047*
                        1098   1107   1116*  1167   1176   1185*  1236   1245   1254*  1305   1314   1323*  1374
                        1383   1392*  1443   1452   1461*  1512   1521   1530*  1579   1588   1597*  1646   1655
                        1664*  1713   1722   1731*  1780   1789   1798*  1847   1856   1865*  1914   1923   1932*
                        1981   1990   1999*  2048   2057   2061*  2090   2099   2112   2116*  2143   2153   2165
                        2169*  2187   2198   2202*  2220   2231   2235*  2253   2264   2268*  2286   2297   2301*
                        2319   2330   2334*  2352   2363   2367*  2385   2396   2400*  2418   2429   2433*  2451
                        2463   2467*  2485   2495   2499*  2517   2527   2531*  2549   2559   2563*  2581   2591
                        2595*  2613   2623   2627*  2645   2655   2659*  2677   2687   2691*  2709   2719   2723*
                        2741   2753   2757*  2802   2833   2863   2867*  2906   2933   2964   2968*  3015   3047
                        3074   3078*  3119   3147   3172   3176*  3227   3244   3248   3252*  3295   3312   3316
                        3320#
$TPB    001152           222'   4268*  4279
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$TPFLG  001157            226#  4217  4279
$TPS    001150            221#  4266  4279
$TRAP   016226            421   4387#
$TRAP2  016250           4398#  4409
$TRP  = 000013           4402#  4411#  4412#  4413#  4414#  4415#  4416  4417#  4418  4419#  4420#  4421#  4422#
$TRPAD  016262           4392   4409#
$TSTM   001004            186#
$TSTNM  001102            199#   513*  3338*  3893  3921  3973  4000  4015*  4016  4018  4022  4519
$TTYIN  015152           4132   4133  4150  4154#
$TYPBN= ****** U         4415
$TYPDS  013502           3821#  4414
$TYPE   015320           4217#  4310  4402  4410
$TYPEC  015532           4076   4247  4254  4261  4266#  4267
$TYPEX  015600           4272   4274  4277#
$TYPOC  013300           3762#  4411
$TYPON  013314           3761   3764#  4413
$TYPOS  013254           3757#  4412
$UNIT   001204            243#
$UNITM  001010            188#
$USWR   001216            250#
$VECT1  001242            275#
$VECT2  001244            276#
$XTSTR  014244           3987#
$$GET4= 000000           3371#
$OFILL  013477           3758*  3762*  3772  3807#
$40CAT= ****** U         3903   3984
.       = 020322            26#    30#    34#    36#    38#   161   162#   164#   166#   167#   173   174#   176#
                           178#   196#   232   414   426  3353#  3360#  3367#  3379  3380#  3427  3432#  3560
                          3567#  3627#  3635#  3648#  3701#  3727#  3875#  3921  3967#  4021  4022  4025  4154#
                          4155   4161  4279  4331#  4352  4374  4513#  4527#  4528#  4529#
.MD.    = 000001           521#   523   528#   530   551#   553   580#   582   617#   619   656#   658   693#
                           695   730#   732   740#   742   748#   750   772#   774   792#   794   814#   816
                           834#   836   860#   862   868#   870   874#   876   915#   917   935#   937   982#
                           984   992#   994   997#   999  1018#  1020  1023#  1025  1051#  1053  1061#  1063
                          1066#  1068  1087#  1089  1092#  1094  1120#  1122  1130#  1132  1135#  1137  1156#
                          1158  1161#  1163  1189#  1191  1199#  1201  1204#  1206  1225#  1227  1230#  1232
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                  527     530     553     579     582     619     655     658     695     732     739     742     747     750     774
                  794     813     816     836     859     862     870     876     914     917     937     981     984     991     994
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ERRORS DETECTED:  0
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 CORE USED:  28K
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