CONTROL DATA® SMM17

Program Listings

SMM

CONTROL DATA CORPORATION

CUSTOMER ENGINEERING MANUAL

REVISION RECORD

REVISION	DESCRIPTION
A	Manual released. Information complete through SMM17 Edition 3.0.
(4-16-73)	
B	Information complete through Edition 3.1. This edition obsoletes all previous editions.
(5-1-74)	
C	Information complete through Edition 3.1-1. This edition obsoletes all previous editions.
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or use Comment Sheet in the back of this manual.

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0001              NAM       SMM000       12064 COPYRIGHT CONTROL DATA CORP 1974


0003              ********************************************************************
0004              ********************************************************************
0005              **                                                                **
0006              **                                                                **
0007              **          *** 1700 SYSTEM MAINTENANCE MONITOR ***               **
0008              **                                                                **
0009              **        EXECUTIVE PROGRAM FOR SMM17 3.1-1 LIBRARY DIAGNOSTICS    *
0010              **                                                                **
0011              **                                                                **
0012              ********************************************************************
0013              ********************************************************************

0015      0FDD          EQU       PASSMM($FFF-$22)     SMM CONTROL PARAMETER.
0016      0FDE          EQU       PASSJ($FFF-$21)      STOP/JUMP PARAMETER.
0017      0FDF          EQU       PASEQ($FFF-$20)      LIBRARY LOADER EQUIPMENT ADDRESS
0018      0EA0          EQU       PRELDR($0EA0)        PRELOADER STARTING ADDRESS
0019      0001          EQU       NAME(1)              TEST ADDR FOR ALF 3,ID STATEMENT
0020      0005          EQU       MUXRTA(NAME+4)       TEST ADDR OF MULTIPLEX RTN ADDR
0021      0006          EQU       TESTEQ(MUXRTA+1)     ADDR FOR  PASSING EQUIP ADDRESS
0022      0001          EQU       PT(1)                LOADER
0023      0002          EQU       CRD(2)                      DEVICE
0024      0003          EQU       MT(3)                             TYPE
0025      0004          EQU       DP(4)                                   EQUATES
0026      0005          EQU       CDD(5)
0027      0008          EQU       MT8(8)

0029      0000          EQU       START(0)             START OF TEST
0030      0001          EQU       WEST1(START+1)       STATUS 1 EQUIP ADDRESS
0031      0002          EQU       WEST2(WEST1+1)       STATUS 2 EQUIP ADDR.(0=NONE)
0032      0003          EQU       WEST3(WEST2+1)       STATUS 3 EQUIP ADDR.(0=NONE)
0033      0004          EQU       WEST4(WEST3+1)       STATUS 4 EQUIP ADDR. (0=NONE)
0034      0005          EQU       WECHST(WEST4+1)      CAHN STATUS ADDR. (0=NONE)
0035      0006          EQU       WE(WECHST+1)         EQUIP ADDRESS
0036      0007          EQU       ILT(WE+1)            INTERRUPT LINE DATA (2 WORDS)
0037      0009          EQU       PRGCLK(ILT+2)        PROGRAM CLOCK
0038      000A          EQU       HACT(PRGCLK+1)       DSA ACTIVE CELL
0039      000B          EQU       DATLGH(HACT+1)       DATA LENGTH TRANSFERE CEDL
0040      000C          EQU       TSTNAM(DATLGH+1)     TEST NAME
0041      000E          EQU       PRGERR(TSTNAM+2)     PROGRAM ERROR NUMBER
0042      000F          EQU       MNTERR(PRGERR+1)     MONITOR ERROR NUMBER
0043      0010          EQU       ITESYM(MNTERR+1)     INTERRUPT TIME ERROR SYMBOL
0044      0011          EQU       IOESYM(ITESYM+1)     I/O TIME ERROR SYMBOL
0045      0012          EQU       PRESYM(IOESYM+1)     PROGRAMMED ERROR SYMBOL
0046      0013          EQU       AFESYM(PRESYM+1)     ADDRESSING FAULT ERROR SYBOL
0047      0014          EQU       PEESYM(AFESYM+1)     PAREITY ERROR SYMBOL
0048      0015          EQU       PFESYM(PEESYM+1)     PROTECT FAULT SYMBO
0049      0016          EQU       CHANNO(PFESYM+1)     CHANNEL NO W FIELD
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0050    0017    EQU    EQUIPT(CHANNO+1)      EQUIPMENT NO.
0051    0018    EQU    STATNO(EQUIPT+1)      STATION NUMBER
0052    0019    EQU    ITLINS(STATNO+1)      INTERRUPT LINE NUMBERS
0053    001A    EQU    XTIME(ITLINS+1)       TIME EXPECTED
0054    001B    EQU    TIMER(XTIME+1)        ACTUAL TIME
0055    001C    EQU    STCNTL(TIMER+1)       STATUS CONTROL WORD.
0056    001D    EQU    LOPER(STCNTL+1)       LAST OPERATION.
0057    001E    EQU    LOPRSP(LOPER+1)       LAST OPERATION RESPONSE
0058    001F    EQU    LOPERA(LOPRSP+1)      LAST OPERATION (A)
0059    0020    EQU    LOPERQ(LOPERA+1)      LAST OPERATION (Q)
0060    0021    EQU    LINST(LOPERQ+1)       LAST INSTRUCTION
0061    0022    EQU    LINRSP(LINST+1)       LAST INSTRUCTION RESPONSE
0062    0023    EQU    LINSTA(LINRSP+1)      LAST INSTRUCTION (A)
0063    0024    EQU    LINSTQ(LINSTA+1)      LAST INSTRUCTION (Q)
0064    0025    EQU    IMR(LINSTQ+1)         INTERRUPT MASK REGISTER
0065    0026    EQU    PREG(IMR+1)           CONTENTS OF PREG AT ERROR TIME
0066    0027    EQU    LINENO(PREG+1)        CONTENTS OF TRAPNO AT ERROR TIME
0067    0028    EQU    EXIMR(LINENO+1)       EXPECTED MASK VALUE.
0068    0029    EQU    ST1RSP(EXIMR+1)       STATUS 1 RESPONSE.
0069    002A    EQU    SKIP7(ST1RSP+1)       SKIP STATUS 2 INFO
0070    002B    EQU    ST2RSP(SKIP7+1)       STATUS 2 RESPONSE
0071    002C    EQU    SKIP5(ST2RSP+1)       SKIP CHANNEL INFO
0072    002D    EQU    CHRSP(SKIP5+1)        CHANNEL STATUS RESPONSE
0073    002E    EQU    CHARSP(CHRSP+1)       CHANNEL ADDRESS RESPONSE
0074    002F    EQU    SKIP5A(CHARSP+1)      SKIP CHANNEL STATUS 3
0075    0030    EQU    CH3RSP(SKIP5A+1)      CHANNEL STATUS 3 RESPONSE
0076    0031    EQU    ST1(CH3RSP+1)         STATUS 1
0077    0032    EQU    SKIP8(ST1+1)          SKIP STATUS 2 INFO
0078    0033    EQU    ST2(SKIP8+1)          STATUS 2
0079    0034    EQU    SKIP4(ST2+1)          SKIP CHANNEL INFO
0080    0035    EQU    CHST(SKIP4+1)         CHANNEL STATUS
0081    0036    EQU    CHADR(CHST+1)         CHANNEL ADDRESS
0082    0037    EQU    SKIP4A(CHADR+1)       CHECK STATUS 3 CHANNEL
0083    0038    EQU    CHST3(SKIP4A+1)       CHANNEL STATUS 3
0084    0039    EQU    XST1(CHST3+1)         EXPECT STATUS U
0085    003A    EQU    SKIP6(XST1+1)         SKIP STATUS 2 INFO
0086    003B    EQU    XST2(SKIP6+1)         EXPECTED STATUS 2
0087    003C    EQU    SKIP2(XST2+1)         SKIP CHANNEL INFO
0088    003D    EQU    XCHST(SKIP2+1)        EXPECTED CHANNEL STATUS
0089    003E    EQU    XCHADR(XCHST+1)       EXPECTED CHANNEL ADDRESS
0090    003F    EQU    SKIP2A(XCHADR+1)      STATUS 3 CHANNEL SHT
0091    0040    EQU    XCHST3(SKIP2A+1)      STATUS 3 EXPECTED CHANNEL STATUS
0092    0041    EQU    CALLP(XCHST3+1)       ADDRESS OD CALLER FOR MULTIPLEX
0093    0042    EQU    MPXRTN(CALLP+1)       ADDRESS OF MULTIPLEX CALLER
0094    0043    EQU    RBIT(MPXRTN+1)        RECOGNIZE INTERRUPT BIT00
0095    0044    EQU    TSCOML(RBIT+1)        TEST COMMAND LIST LENGTH
0096    0019    EQU    SDATA(XCHST3-LINENO)  LENGTH OF STATIC ERROR INFO
0097    0056    EQU    TSDATA(TSCOML-7+SDATA) LNGTH OF VOLITILE TSDATA AREA
0098    005D    EQU    TDATA(TSCOML+SDATA)   TOTAL LENGTH OF TEST COMMEND ARE
0099    000B    EQU    ERRFLE(START+$B)      ADDRESS OF ERROR/OPERATION FILE
0100    000C    EQU    CRLUNO(ERRFLE+1)      NUMBER OF FILES   1 ONLY=0
0101    000D    EQU    CRSUNO(CRLUNO+1)      CURRENT STATION/UNIT
```

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0104            ********************************************************************************
0105            *                              ERROR ID = 00X8                                 *
0106            *                           FOR ALL MONITOR ERRORS                             *
0107            *          SMM ERROR                                                           *
0108            *            NUMBER                                                            *
0109            *              XX                                                              *
0110      0001   EQU   MEMPE($01)  MEMORY PARITY ERROR. A3=INTERRUPTED PROGRAM ADDRESS.
0111      0002   EQU PROTECT($02)  PROTECT FAULT. A3=INTERRUPTED PROGRAM ADDRESS.
0112      0003   EQU   CLRPP($03)  MONITOR MESSAGE. CLEAR COMPUTER PROTECT SWITCH(ES).
0113      0004   EQU  UNREQI($04)  UNREQUESTED INTERRUPT. A3 = DECIMAL LINE NUMBER.
0114      0005   EQU   ILBZY($05)  INTERRUPT LINE REQUEST CONFLICT. A3=REQUESTORS IA,
0115            ****             Q3=ASSIGNED INTERRUPT PROCESSORS ADDRESS.
0116      0006   EQU DATAREJ($06)  TELETYPE REJECTED DATA AFTER DATA INTERRUPT.
0117      0007   EQU  ITIMER($07)  MBS COULD NOT RETURN TO TEST AFTER INTERRUPT WITHIN
0118            ****             THE TIME SPECIFIED BY THE TEST.
0119      0010   EQU NOMOCOR($10)  LOAD AREA INSUFFICIENT FOR TEST. RETRIED AFTER TESTS
0120            ****             IN CORE RAN, ABORTED IF NONE. A3=TEST ID, Q3=ASSIGNED IA.
0121      0011   EQU  ILLRBD($11)  LOADER ENCOUNTERED ILLEGAL RBD BLOCK ID. A3=ID WORD.
0122            ****             Q3 = CODE OF LOAD ERROR, IF ANY.  LOAD ABORTED.
0123      0012   EQU   NOXFR($12)  NO RBD TRANSFER BLOCK FOUND.  LOAD ABORTED.
0124      0013   EQU  CKSMER($13)  CHECKSUM ERROR. (CARD OR PAPER TAPE) ATTEMPT RELOAD.
0125      0014   EQU PTALARM($14)  PAPER TAPE READER ALARM.  A3=STATUS. ATTEMPT RELOAD.
0126      0015   EQU CRALARM($15)  CARD READER ALARM.  A3=STATUS. ATTEMPT RELOAD.
0127      0016   EQU   CREOP($16)  IMPROPER CARD READER EOP. A3=COLUMN COUNT. TRY RELOAD
0128      0017   EQU    MTPE($17)  LOAD TAPE PARITY ERROR. A3=STATUS. Q3=TIMES ERROR
0129            ****             RECURRED (LOAD RETRY ABORTED ON 8TH, SUCCESSFUL IF LESS)
0130      0018   EQU DPALARM($18)  DISK PACK ALARM. A3=STATUS. Q3=TIMES ERROR RECURRED
0131            ****             (LOAD RETRY ABORTED ON 50TH, SUCCESSFUL IF LESS)
0132      0019   EQU  COPALM($19)  CART. DISK ALARM. A3=STATUS. Q3=TIMES ERROR RECURRED.
0133            ****             (LOAD RETRY ABORTED ON 50TH, SUCCESSFUL LOAD IF LESS)
0134      001A   EQU  OLLERR($1A) OVERLAY LOADING ERROR ON OVLY  0(MBS) RELOAD SYSTEM
0135      0020   EQU  CORMOD($20)  POST-LOAD, PRE-EXECUTION TEST MODIFICATION STOP.  MC,
0136            ****             MAKE CORE CHANGES WHERE TEST(S) LOADED. MC, RUN TO RESTART
0137      0021        EQU  MUTEXC($21)  ANY TWO OF THE FOLLOWING TESTS HAVE BEEN
0138            ****               LOADED CONCURRENTLY- MY1,MY2,MEM,RPT
0139            *                                                                              *
0140            ********************************************************************************


0142            ** IO ERRORS REPORTED DURING LIB LIST INCLUDE STOPA4/Q4 = 1ST/3RD            **
0143            *    RECORD WORDS. (A4=BLOCK ID, Q4=PROGRAM ADDRESS OF BLOCK DATA             *
0144            **     IF ID=RBD8LK, $4050)                                                   **


0146            ********************************************************************************
0147            *
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0148          ********************  REVISION RECORD  **********************************
0149          *
0150          * MODAYR VRSN      WHAT WAS DONE, WHY, AND BY WHOM.
0151          *
0152          * 032074 V 3.1     SYSTEM RELEASED                                        *
0153          *                                                                         *
0154          * 042274           1. FIXED MANUAL INTERRUPT PROBLEMS      EJW            *
0155          *                  CHANGED ENA 6 TO ENA 4                                 *
0156          *                  2. ADDED LINE PRINTER DRIVER TO MONITOR  EJW           *
0157          *                                                                         *
0158          *                  3. FIXED MBS THREADING PROBEEMS ON CR 600 NS  MSS      *
0159          *                                                                         *
0160          *                  4 ADDED COPYRIGHT MSG. EJW                             *
0161          *                                                                         *
0162          * 050774           ADD CHECK FOR ONE OF THE FOLLOWING TESTS
0163          *                  TO BE IN CORE AT THE SAME TIME- MY1 MY2 MEM RPT        *
0164          *                  IF MORE THAN ONE IS IN CORE- ERROR 21 IS REPORTED      *
0165          *                  EJW
0166          *
0167          * 061074           IMPROVE MBS INTERRUPT PROCESSING  MSS/TLO
0168          *    061574        CHANGE TTY INPUT PACKAGE FORMAT                        *
0169          *                       NO PREFEX- HEX NUMBERS                            *
0170          *                       N  PREFEX- DEC NUMBERS                            *
0171          *                       B, PREFEX- SET BITS                               *
0172          *                       P  PREFEX- SET P REGISTER AND GO                  *
0173          *                                                    EJW                  *
0174          * 051074           IMPLEMENTED 8000 LOADER DEVICE TYPE 8                  JU
0175          *                  OVERLAY 7. ADDED EQUATE FOR LOW CORE CELL              JU
0176          *                  $E2(USED IN EDIT AS 8000/1732 PRELOADER SWAP
0177          *                  FLAG WILL BE ZERO EXCEPT DURING QL-BINARY-             JU
0178          *                  TRANSFER AND PRELOADER SWAP)                           JU
0179          *                  ADDED MT8-EQUATE                                       JU
0180          *                  CHANGED DEVICE CHECK IN LIB) LISTTO INCLUDE            JU
0181          *                  8000 TAPES. CORRECTED TTY INPUT ERROR MESS.            JU
0182          *                                N.E.JUNGJOHANN CDC CE MUNICH             JU
0183          * 062774 V 3.1     ADDED ISERR CALL TO REPORT ERROR FROM INTERRUPT         *
0184          *                  STATE     TLO                                          *
0185          *                                                                         *
0186          * 073074 V 3.1-1   IMPROVE CARTRIDGE DISK LOADER   JU                     *
0187          *                                                                         *
0188          * 080674           ADDED OMIT TTYPEOUT CK TO TTY INPUT PACKAGE SO NO      *
0189          *                  TYPEOUTS OCCURE IF BIT 08 IS SET.  EJW                 *
0190          * 081074           MOVED LP DRIVER TO MINIMIZE CORE REQ
0191          *                  CORRECTED SENSING FOR MACHINE TYPES       EJW
0192          * 081574           CORRECTED EXIT OF LP DRIVER       EJW
0193          * 120374 SPEEDUP TO TAPE LOADER-ERROR 17 NOW ALARM// NEJ   ****
0194          *        FIXED MBS PROTECT PROBLEM CAUSED BY RIE325 LOGIC                 *
0195          *        ADDITIONS AND MPX CHANGES.  M.S.SATTER                           *
0196          * 120674      FIXED PROTECT FAULT IN MBS RIE025       // NEJ

0198          ***************************************************************************
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0200        0000            ORG     0
0201  0000  1C25  SMM000    JMP*    (INTX)          SMM INITIALIZATION ROUTINE.

0203              ********************************************************************
0204              *
0205              *                  ADDRESS POINTERS AND PARAMETERS                 *
0206              *
0207              ********************************************************************

0209  0001  037E  CONTROL    ADC     CONTRO          SMM MULTILPEX ROUTINE
0210  0002  03DD  STOP       ADC     PRESTP          ALL STOPS AND ERRORS TYPEOUTS
0211  0003  0391             ADC     EXIT            EXIT TEST WHEN PASS IS COMPLETED
0212  0004  0285  REQIT      ADC     REQINT          REQUEST INTERRUPR ADDRESS
0213  0005  0283  FAKE       ADC     FCLRINT         DO NOTHING ROUTINE FAKES CLRINT
0214  0006  004C  JUMP       ADC     JUMPX           JUMP ROUTINE
0215  0007  05B4  GENRDM     ADC     GENRAN          RANDOM NUMBER GENERATOR
0216  0008  0522  TYPEOUT    ADC     MESSAGE         OUTPUT MESSAGE TO THE TELETYPE
0217  0009  05AA  TTYBZY     ADC     TTBUSY          WAIT TTY SOFTWARE BUSY
0218  000A  03B8  HEXASC     ADC     CONASC          HEX TO ASCII CONVERSION ROUTINE
0219  000B  05CF  OVRLAY     ADC     OVERLAY         OVERLAY CALL ROUTINE
0220  000C  03D4  RELPOS     ADC     AQPOS           POINT TO RELATIVE POSITION TEST
0221  000D  0280  MANUALIN   ADC     MAINL           MANUAL INTERRUPT ROUTINE
0222  000E  0781  INPTTY     ADC     INTTY
0223  000F  0762  MONPP      ADC     SPP000          SET SMM PROTECT PATTERN
0224  0010  0829  FN         ADC     FNE000
0225  0011  0B91  MNTRST     ADC     MNE000
0226  0012  0C7E  CKST       ADC     CKE000
0227  0013  0C6F  RECKST     ADC     REE000
0228  0014  0C84  ERROR      ADC     ERE000
0229  0015  0D30  CLOCK      ADC     TIE000
0230  0016  0D76  RDMDLY     ADC     XDE000
0231  0017  0D86  FIXDLY     ADC     FXE000
0232  0018  0DF5  SPB        ADC     SPE000
0233  0019  0E00  CPB        ADC     CPE000
0234  001A  0E0B  RD         ADC     RDE000
0235  0018  0E11  WR         ADC     WRE000
0236  001C  0823  HOG        ADC     HGE000          ADDR OF SET HOG FLAG ROUTINE
0237  001D  0B0F             ADC     RIE025          RECOGNIZE INT RETURN
0238  001E  0DD9  FWAI       ADC     FWE000
0239  001F  0DE3  FWAEI      ADC     POS000
0240  0020  0DA5  MSINIT     ADC     MSE000          ADDR OF MBS INITIALIZE
0241  0021  0ACE  RINT       ADC     RIE000          RECOGNIZE INTERRUPT
0242  0022  0A7E  DSELIN     ADC     DSE000          DE-SELECT INTERRUPT
0243  0023  0A9A  SELIN      ADC     SIE000
0244  0024  0181  INTPRC     ADC     PROCESS
0245  0025  099C  INTX       ADC     INSMM17         CHANGED TO MCINIT IN INITIALIZE
0246  0026  09E9  MPX        ADC     MPE000          ADDR OF MBS MULTIPLEXER
0247  0027  0220  PFRT       ADC     PFR             PWR FAILURE INTRPT RESTART ADDR.
0248  0028  026A  SMERROR    ADC     SMMERRS         SMM ERROR MESSAGE ROUTINE
0249  0029  09CA  TYSEL      ADC     INE025          FWA OF MBS PACKAGE
0250  002A  08BE  ASCHEX     ADC     CONHEX          ASCII TO HEX CONVERSION ROUTINE
0251  002B  08E7  ASCDEC     ADC     CONDEC          ASCII TO DECIMAL CONVERSION
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0252  002C 0622  PRGLOAD  ADC       LDCONT              LOAD CONTROLLER
0253  002D 0A32  ADINST   ADC       INTSTK              ADDR OF MBS STACK COUNT
0254  002E 0000  INTFLG   NUM       *                   MBS INT HAS OCCURED
0255  002F 0000  IOACT    NUM       0                   DSA ACTIVE
0256  0030 0000  NULL     NUM       0                   REQUEST DSA STOP ACTIVITY
0257  0031 0000  HEXWORD  NUM       0                                        PTC2
0258  0032 0800  ASCWD    NUM       0                                        PTC2
0259  0033 0000           NUM       0                                        PTC2
0260  0034 0000  HOG2     NUM       *                   INHIBIT SMM17 INTS DURING HOG
0261  0035 0000  ILO      NUM       *                   INTERRUPT LOCKOUT
0262  0036 801E  AUTOPP   NUM       $801E               PROTECT CONSTANT         PTC2
0263  0037 0000  CALLPT   NUM       *                   ADDR OF LAST RTJ TO MNTR
0264  0038 0000  TKR      NUM       *                   TIME REMAINDER
0265  0039 0000  TK16     NUM       *                   16  USEC CLOCK
0266  003A 0000  TK32     NUM       *                   32  USEC CLOCK
0267  003B 0000  TK64     NUM       *                   64  USEC CLOCK
0268  003C 0000  TK128    NUM       *                   128 USEC CLOCK
0269  003D 00CA  XCOMUS   ADC       COMUSE                                   PTC2
0270  003E 0000  IODATA   NUM       *                   RD/WR TIME RUNNIMG
0271  003F 0000  IOTM1    NUM       *                   8000-(112)(MSEC)   FAST CLOCK
0272  0040 0000  IOTM2    NUM       *                   8000-(112)(MSEC)   FAST CLOCK
0273  0041 0000  IOTM3    NUM       *                   8000-MILLISECOND  SLOW CLOCK
0274  0042 FFFF  SETMASK  NUM       $FFFF               MASK LINES TO BE UESD BY SMM
0275  0043 0200  STJP     NUM       $200                STOP/JUMP FOR TEST IN CONTROL.
0276  0044 0794  LASTVALU ADC       ENDMON1             MONITOR LWA+1
0277  0045 0000  LASTAD   NUM       $0                  LAST LOAD LWA+1
0278  0046 7F3F  INBI1    NUM       $7F3F               RBD INPUT BUFFER
0279  0047 7FFF  LDLCORE  NUM       $7FFF               LAST ADDRESS OF BANK 0
0280  0048 FFFF  LDL1COR  NUM       $FFFF               LAST ADDRESS OF BANK 1
0281  0049 0000  INFORM   NUM       $0                  INFORMATION WORD  (SEE TABLE)
0282  004A 0000  LASTOV   NUM       0                   LIB OVRLAY POSITION, IF NON ZERO
0283  004B 0000  OVFWA    NUM       0                   CURRENT OVERLAY FWA ON LIB.
0284               ********************************************************************
0285               *                    INFORM = INFORMATION WORD                     *
0286               *
0287               *       BITS 15 TO 12--CORE SIZE      BIT 11--MASK SIZE
0288               *       ------------------------      -----------------
0289               *            0000 = 4K                     0 = 4 BIT MASK
0290               *            0001 = 8K                     1 =16 BIT MASK
0291               *            0010 =12K
0292               *            0011 =16K
0293               *            0100 =20K
0294               *            0101 =24K
0295               *            0110 =28K
0296               *            0111 =32K
0297               *       BITS 7 TO 4--BUSY SWITCHES    BITS 3 TO 0--BUSY SWITCHES
0299               *       0001 0000 = 1716,06 NO. 1          0001 = TELETYPE
0300               *       0010 0000 = 1716,06 NO. 2          0010 = PAPER TAPE READER
0301               *       0100 0000 = 1716,06 NO. 3          0100 = PAPER TAPE PUNCH
0302               *                                          1000 = CARD READER
0303               *
0304               ********************************************************************
```

```
0305                ********************************************************************************
0306                *                                                                              *
0307                *                          JUMPX PROCESSING ROUTINE                            *
0308                *                                                                              *
0309                ********************************************************************************


0311  004C 0000  JUMPX    NUM       0                    JUMP ROUTINE - ENTER SUBROUTINE
0312  004D 680B            STA*      JUMP1                WITH A CONTAINING THE JUMP MASK.
0313  004E 480B            STQ*      JUMP3
0314  004F C000            LDA-      0
0315  0050 0000  MISWX    NUM       0
0316  0051 0111            SAN       JUMP0-*-1            MANUAL INTERRUPT SWITCH,
0317  0052 0197            SWN       JUMP2-*-1               OR SKIP SWITCH SET-
0318  0053 5C70  JUMP0     RTJ*      (MSTOP)
0319  0054 1806            JMP*      JUMP2
0320  0055 0011            NUM       $11                  ID.
0321                ******************  SMM PARAMETER WORD  ******************************
0322                *
0323                *        BITS
0324                *
0325                *        15
0326                *        14
0327                *        13 = LOADER TYPE  001=PT  010=CARDS  011=MAG TAPE  100=85X
0328                *        12                   101 = 1739  1000 = 8000 TAPE
0329                *
0330                *        11 = CORRECTION STOP
0331                *        10 = SELECT LINE PRINTED DRIVER
0332                *
0333                *        9  = SKIP HEX CORRECTION ON LOAD
0334                *
0335                *        8  = SEL MBS PACKAGE (INITIALIZATION TIME ONLY)
0336                *        7  = BUILD TEST LIST
0337                *        6  = SEL TTY INPUT PACKAGE (INITIALIZATION TIME ONLY)
0338                *        5  = TYPE OUT IN NON INTERUPT MODE
0339                *        4  = LOAD TESTS AT EVEN $100
0340                *
0341                *        3  = MEMORY SPEED  0        0        1        1
0342                *        2  =               0=1.1MS  1=1.5MS  0=900NS  1=600NS
0343                *
0344                *        1  = REPEAT Q.L.  (INITIALIZATION TIME ONLY)
0345                *
0346                *        0  = TYPE OUT LIBRARY LIST  (INITIALIZATION TIME ONLY)
0347                ********************************************************************************


0349  0056 0200  SMMCNT    NUM       $0200                SMM17 CONTROL PARAMETER WORD.
0350                ******************  LOADER EQUIPMENT ADDRESS  ************************
0351  0057 1181  EQUIP     NUM       $1181                EQUIP ADDR FOR MT OR DP LOADER.
0352  0058 0000  JUMP1     NUM       0
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0353  0059 0000  JUMP3   NUM      *                Q-REG TEMP SAVE
0354  005A 0A00  JUMP2   ENA      0                RESET MANUAL INTERRUPT SWITCH.
0355  005B 68F4          STA*     MISWX
0356  005C E8EF          LDQ*     JUMPX
0357  005D 5806          RTJ*     LDSTJP           LOAD APPROPRIATE STOP/JUMP WORD.
0358  005E E8FA          LDQ*     JUMP3
0359  005F A8F8          AND*     JUMP1            PROCESS THE PARAMETER STOP.
0360  0060 0111          SAN      1                JUMP BIT SET IN STOP/JUMP WORD
0361  0061 D8EA          RAQ*     JUMPX            NO
0362  0062 1CE9          JMP*     (JUMPX)          YES

0364  0063 0000  LDSTJP  NUM      0                LOAD AREG WITH
0365  0064 C8DF          LDA*     LASTVALUE             APPROPRIATE STOP/JUMP WORD.
0366  0065 5CA6          RTJ*     (RELPOS)         DETERMINE RELATIVE POSITION.
0367  0066 0132          SAM      SMMSJ-*-1        ANEG = SMM REQUEST.
0368  0067 C8D8          LDA*     STJP             APOS = TEST REQUEST.
0369  0068 1CFA          JMP*     (LDSTJP)
0370  0069 C851  SMMSJ   LDA*     MSTJP            USE SMM STJP.
0371  006A 1CF8          JMP*     (LDSTJP)
```

```
0373              ********************************************************************************
0374              *
0375              *                                   CONSTANT TABLE
0376              *
0377              ********************************************************************************



0379  006B 0001  BIT00    NUM       1
0380  006C 0002  BIT01    NUM       2
0381  006D 0004  BIT02    NUM       4
0382  006E 0008  BIT03    NUM       8
0383  006F 0010  BIT04    NUM       $10
0384  0070 0020  BIT05    NUM       $20
0385  0071 0040  BIT06    NUM       $40
0386  0072 0080  BIT07    NUM       $80
0387  0073 0100  BIT08    NUM       $100
0388  0074 0200  BIT09    NUM       $200
0389  0075 0400  BIT10    NUM       $400
0390  0076 0800  BIT11    NUM       $800
0391  0077 1000  BIT12    NUM       $1000
0392  0078 2000  BIT13    NUM       $2000
0393  0079 4000  BIT14    NUM       $4000
0394  007A 8000  BIT15    NUM       $8000
0395  007B 0000  H0000    NUM       $0000              USED IN MBS    MNE006-MNE010
0396  007C FFFF  HFFFF    NUM       $FFFF
0397  007D 000F  H000F    NUM       $000F
0398  007E 00F0  H00F0    NUM       $00F0
0399  007F 0F00  H0F00    NUM       $0F00
0400  0080 F000  HF000    NUM       $F000
0401  0081 00FF  H00FF    NUM       $00FF
0402  0082 FF00  HFF00    NUM       $FF00
0403  0083 FFF0  HFFF0    NUM       $FFF0
0404  0084 0FFF  H0FFF    NUM       $0FFF
0405  0085 FF0F  HFF0F    NUM       $FF0F
0406  0086 F0FF  HF0FF    NUM       $F0FF
0407  0087 7FFF  H7FFF    NUM       $7FFF
0408  0088 7F00  H7F00    NUM       $7F00
0409  0089 0780  H0780    NUM       $0780              EQUIP NUMBER MASK
0410  008A 007F  H007F    NUM       $007F
0411  008B 2020  H2020    NUM       $2020
0412  008C 0108  C108     NUM       $108
0413  008D FEFD  HFEFD    NUM       $FEFD              -$102
0414  008E 0E00  H0E00    NUM       $0E00              EXIT INTERRUP INSTRUCTION
0415       007B           EQU       ZERO(H0000)
```

```
                  ***********************************************************************
                  *
                  *                                                                     *
                  *                       TEST  LIST  TABLES  AND  PARAMETERS           *
                  *                                                                     *
                  *
                  ***********************************************************************


      008F               ORG     *
008F 0002    TSSEL       NUM     2                   NUMBER OF TESTS SELECTED
0090 0000    TSINIT      NUM     0                   NUMBER OF TESTS INITIALIZED
0091 0000    TSACTV      NUM     0                   TABLE INDEX TO TEST IN CONTROL.

0092 0101    TSFREQ      NUM     $0101               COMMAND TEST
0093 0201                NUM     $0201               MEMORY TEST
0094 0000                NUM     0                   1ST ZERO ENTRY TERMINATES LIST
0095 0000                NUM     0
0096 0000                NUM     0
0097 0000                NUM     0
0098 0000                NUM     0
0099 0000                NUM     0
009A 0000                NUM     0
009B 0000                NUM     0

009C 0000    TSEQAD      NUM     0                   TEST EQUIPMENT ADDRESSES
009D 0000                NUM     0
009E 0000                NUM     0
009F 0000                NUM     0
00A0 0000                NUM     0
00A1 0000                NUM     0
00A2 0000                NUM     0
00A3 0000                NUM     0
00A4 0000                NUM     0
00A5 0000                NUM     0

00A6 0000    TSIAAD      NUM     0                   INITIAL ADDR OF INDIVIDUAL TESTS
00A7 0000                NUM     0
00A8 0000                NUM     0
00A9 0000                NUM     0
00AA 0000                NUM     0
00AB 0000                NUM     0
00AC 0000                NUM     0
00AD 0000                NUM     0
00AE 0000                NUM     0
00AF 0000                NUM     0

00B0 0000    TSTJP       NUM     0                   INDIVIDUAL TEST STOP/JUMP PARAMS
00B1 0000                NUM     0
00B2 0000                NUM     0
00B3 0000                NUM     0
```

```
     00B4 0000             NUM      0
     00B5 0000             NUM      0
     00B6 0000             NUM      0
     00B7 0000             NUM      0
     00B8 0000             NUM      0
     00B9 0000             NUM      0
     00BA 0000   MSTJP     NUM      0                   MONITOR STOP/JUMP PARAMETER.

     00BB 0001   B0        BZS      B0(1)               B0-B7 ARE MONITOR PSEUDO-REGS.
     00BC 0001   B1        BZS      B1(1)               THEY SHOULD BE USED WHEN
     00BD 0001   B2        BZS      B2(1)               POSSIBLE BUT WITH THE EFFORT
     00BE 0001   B3        BZS      B3(1)               NECESSARY TO PREVENT
     00BF 0001   B4        BZS      B4(1)               INTER-ROUTINE CONFLICT.
     00C0 0001   B5        BZS      B5(1)
     00C1 0001   B6        BZS      B6(1)
     00C2 0001   B7        BZS      B7(1)
     00C3 03E8   MSTOP     ADC      STOPX
     00C4 0225   ISER      ADC      ISERR
     00C5 0516   TTOTTI    ADC      TTYPE               TTY INPUT PACKAGE OUTPUT ENTRY
     00C6 0000   RWDFLG    NUM      0                   BECOMES NONZERO WHEN DISK AT EOF


                 ****************************************************************
                 *
                 *                   COMMON TEST COMMUNICATION AREA
                 *
                 ****************************************************************


          00CA             ORG      $CA
     00CA 0000   COMUSE    NUM      0
     00CB 0000             NUM      0
     00CC 0000             NUM      0
     00CD 0000             NUM      0
     00CE 0000             NUM      0
     00CF 0000             NUM      0
     00D0 0140             ADC      REG                 RESERVED FOR RANDOM PROTECT
     00D1 00D3             NUM      $D3               * LOCATIONS D1, D2, AND D3 ARE
     00D2 0000   D2        NUM      0                 * RESERVED FOR THE 1706/16 BDC
     00D3 00D1             NUM      $D1               * TEST   (TEST NUMBER $0F)
     00D4 000A   TEMPLOC   BZS      TEMPLOC(10)         COMMON STORAGE USED BY ALL TESTS
     00DE 0000             NUM      0,0,0           FOR USE ONLY BY COMMAND TEST
     00DF 0000
     00E0 0000
     00E1 7F4F   STOPBFR   NUM      $7F4F           STOPX BUFFER AREA
     00E2 0000   PRLFLG    NUM      0             USED BY DDIT DURING QL-BIN
     00E3 0000   TEMPTS    NUM      0
     00E4 2020   CHAR1     NUM      $2020
     00E5 2020   CHAR2     NUM      $2020
```

```
0513    0100        ORG     $100
```

```
0515  0100 0000  LEV0     NUM     0
0516  0101 5424            RTJ-    (INTPRC)
0517  0102 0000            NUM     0                    OVERFLOW FLAG
0518  0103 0000  LV0ADR    NUM     0
0519  0104 0000  LEV1     NUM     0
0520  0105 5424            RTJ-    (INTPRC)
0521  0106 0000            NUM     0                    OVERFLOW FLAG
0522  0107 0000  LV1ADR    NUM     0
0523  0108 0000  LEV2     NUM     0
0524  0109 5424            RTJ-    (INTPRC)
0525  010A 0000            NUM     0                    OVERFLOW FLAG
0526  010B 0000  LV2ADR    NUM     0
0527  010C 0000  LEV3     NUM     0
0528  010D 5424            RTJ-    (INTPRC)
0529  010E 0000            NUM     0                    OVERFLOW FLAG
0530  010F 0000  LV3ADR    NUM     0
0531  0110 0000  LEV4     NUM     0
0532  0111 5424            RTJ-    (INTPRC)
0533  0112 0000            NUM     0                    OVERFLOW FLAG
0534  0113 0000  LV4ADR    NUM     0
0535  0114 0000  LEV5     NUM     0
0536  0115 5424            RTJ-    (INTPRC)
0537  0116 0000            NUM     0                    OVERFLOW FLAG
0538  0117 0000  LV5ADR    NUM     0
0539  0118 0000  LEV6     NUM     0
0540  0119 5424            RTJ-    (INTPRC)
0541  011A 0000            NUM     0                    OVERFLOW FLAG
0542  011B 0000  LV6ADR    NUM     0
0543  011C 0000  LEV7     NUM     0
0544  011D 5424            RTJ-    (INTPRC)
0545  011E 0000            NUM     0                    OVERFLOW FLAG
0546  011F 0000  LV7ADR    NUM     0
0547  0120 0000  LEV8     NUM     0
0548  0121 5424            RTJ-    (INTPRC)
0549  0122 0000            NUM     0                    OVERFLOW FLAG
0550  0123 0000  LV8ADR    NUM     0
0551  0124 0000  LEV9     NUM     0
0552  0125 5424            RTJ-    (INTPRC)
0553  0126 0000            NUM     0                    OVERFLOW FLAG
0554  0127 0000  LV9ADR    NUM     0
0555  0128 0000  LEV10     NUM     0
0556  0129 5424            RTJ-    (INTPRC)
0557  012A 0000            NUM     0                    OVERFLOW FLAG
0558  012B 0000  LV10ADR   NUM     0
0559  012C 0000  LEV11     NUM     0
0560  012D 5424            RTJ-    (INTPRC)
0561  012E 0000            NUM     0                    OVERFLOW FLAG
0562  012F 0000  LV11ADR   NUM     0
0563  0130 0000  LEV12     NUM     0
0564  0131 5424            RTJ-    (INTPRC)
0565  0132 0000            NUM     0                    OVERFLOW FLAG
0566  0133 0000  LV12ADR   NUM     0
0567  0134 0000  LEV13     NUM     0
```

```
0135 5424           RTJ-      (INTPRC)
0136 0000           NUM       0                  OVERFLOW FLAG
0137 0000  LV13ADR  NUM       0
0138 0000  LEV14    NUM       0
0139 5424           RTJ-      (INTPRC)
013A 0000           NUM       0                  OVERFLOW FLAG
013B 0000  LV14ADR  NUM       0
013C 0000  LEV15    NUM       0
013D 5424           RTJ-      (INTPRC)
013E 0000           NUM       0                  OVERFLOW FLAG
013F 0000  LV15ADR  NUM       0

           ****************************************************************************
           *
           *                         PROCESS SYSTEM INTERRUPTS
           *
           ****************************************************************************

0140 0040  REG      BZS       REG(64)            ALL REG. FOR ALL INTP. LEVELS

0180 0246  AXREPT   ADC       REPORT
0181 0000  PROCESS  NUM       0
0182 4834           STQ*      QTEMP              SAVE Q
0183 E8FD           LDQ*      PROCESS
0184 01B1           SNO       1                  SAVE OVERFLOW CONDITION  (NOT
0185 467B           STQ-      (H0000),Q          FIRMWARE ON DUAL BANK 1700)
0186 F08D           ADQ-      HFEFD              CALCULATE THE DELTA (-102)
0187 4820           STQ*      PROC2+1            INTERRUPT EXIT VALUE.
0188 6AB8           STA*      REG+1,Q            (A)
0189 080C           TRM       A
018A 6AB7           STA*      REG+2,Q            (M) WHEN INTERRUPT OCCURRED
018B 0F22           QRS       2
018C B26B           EOR-      BIT00,Q            CLEAR INTERRUPT LINE BIT
018D 0FA2           QLS       2
018E 0821           TRA       M                      FROM MASK REG
018F C0FF           LDA-      I
0190 6AB2           STA*      REG+3,Q            (I) WHEN INTERRUPT OCCURRED
0191 C825           LDA*      QTEMP              MOVE (Q) WHEN THE INTERRUPT
0192 6AAD           STA*      REG,Q                OCCURRED TO THE REG TABLE.
0193 D8ED           RAO*      PROCESS
0194 CCEC           LDA*      (PROCESS)          TEST INTERRUPT ROUTINE ADDRESS
0195 60FF           STA-      I                  STORE IN I
0196 C056           LDA-      SMMCNT
0197 A073           AND-      BIT08
0198 0105           SAZ       PROC-*-1           SKIP MBS CHECKS IF NOT SELECTED.
0199 C056           LDA-      SMMCNT
019A A06B           AND-      BIT00          LOOK FOR LIB LIST SELECTION
019B 0112           SAN       PROC           YES, SKIP MBS CALL
019C 5400           RTJ+      INE000
019D 099B
019E C0FF  PROC     LDA-      I                  GET THIS TESTS PROCESS ADDR
019F 0DFA           INQ       -5
```

```
0619  01A0 0165          SQP       PROC2-*-1          DID INT. OCCUR ON LINE 1 OR 0
0620  01A1 0D01          INQ       1                  YES
0621  01A2 0162          SQP       PROC1-*-1          LINE 0
0622  01A3 0112          SAN       PROC2-*-1          YES  HAS LINE 0 BEEN REQUESTED
0623  01A4 1853          JMP*      CHPEPF
0624  01A5 1830  PROC1   JMP*      INTON1             INT HAS OCCURRED ON LINE 1
0625  01A6 E000  PROC2   LDQ       =N$0               LOAD INTERRUPT EXIT VALUE.
      01A7 0000
0626  01A8 011E          SAN       PROCD-*-1          AZERO = UNREQUESTED INTERRUPT.
0627  01A9 CCD6          LDA*      (AXREPT)
0628  01AA 0103          SAZ       3                  SKIP IF REPORTER NOT BUSY.
0629  01AB 000C          TRM       A
0630  01AC 6A95          STA*      REG+2,Q            TEMPORARILY DISABLE THIS LINE
0631  01AD 180C          JMP*      EXITL                    AND EXIT INTERRUPT STATE.
0632  01AE 40FF          STQ-      I                  SAVE EXIT VALUE FOR REPORTER.
0633  01AF 0F22          QRS       2                  FORM HEX LINE NUMBER.
0634  01B0 0DF5          INQ       -$A                CONVERT
0635  01B1 0171          SQM       1                          TO
0636  01B2 0D06          INQ       $10-$A                        DECIMAL
0637  01B3 0D0A          INQ       $A                                  EQUIVALENT.
0638  01B4 0A04          ENA       UNREQI             (ERROR CODE)
0639  01B5 5CCA          RTJ*      (AXREPT)       REPORT ERROR
0640  01B6 0000  QTEMP   NUM       0

0642  01B7 0400  PROCD   EIN       0
0643  01B8 54FF          RTJ-      (I)                GO TO THE INT ROUTINE
0644  01B9 0814  EXITL   TRQ       A
0645  01BA 808E          ADD-      H0E00              MAKE EXIT INTERRUPT INST )
0646  01BB 0500          IIN       0
0647  01BC 6818          STA*      EXLEV
0648  01BD C600          LDA-      (0),Q              RESTORE
0649  01BE 0102  XLEV02  ADC       LEV0+2
0650  01BF 0103          SAZ       CHKMBS-*-1
0651  01C0 8087          ADD-      H7FFF                    OVERFLOW
0652  01C1 0844          CLR       A
0653  01C2 6EFB          STA*      (XLEV02),Q                        CONDITION
0654  01C3 CCBD  CHKMBS  LDA*      (PROCESS)          USE CURRENT MASK
0655  01C4 0901          INA       1                    FOR MBS
0656  01C5 0106          SAZ       EXIT05-*-1
0657  01C6 C034          LDA-      H0G2               CHECK FOR MBS INT STACK
0658  01C7 0101          SAZ       EXIT03-*-1           REQUEST 0=NO
0659  01C8 0153          SQN       EXIT05-*-1         SKIP FOR EXTERNAL INTERRUPT
0660  01C9 C600  EXIT03  LDA+      REG+2,Q            REPLACE THE MASK
      01CA 0142
0661  01CB 0821          TRA       M                  RESET VIA SAME IN MUX CONTROL.
0662  01CC CA00  EXIT05  LDA       REG+3,Q
      01CD FF75
0663  01CE 60FF          STA-      $FF                I
0664  01CF CA00          LDA       REG+1,Q            A
      01D0 FF70
0665  01D1 D039          RAO-      TK16               UPDATE COUNTER (MBS)
0666  01D2 EA00          LDQ       REG,Q
      01D3 FF6C
```

```
0667  01D4 0000  EXLEV   NUM       0                    EXIT INTERRUPT STATE
0668  01D5 0CF8  INTON1  ENQ       -4                   INTERRUPT ON LINE 1
0669  01D6 48DF          STQ*      QTEMP
0670  01D7 EA18  PROC3   LDQ*      SLSPIO+4,Q           CHECK INTERRUPT STATUS OF EACH
0671  01D8 0844          CLR       A                    STATION IN THE LOW SPEED PACKAGE
0672  01D9 0201          INP       1
0673  01DA A06D          AND-      BIT02                0004
0674  01DB 0114          SAN       PROC4-*-1            HAS THIS STATION INTERRUPTED
0675  01DC D8D9          RAO*      QTEMP                NO
0676  01DD E8D8          LDQ*      QTEMP
0677  01DE 014D          SQZ       PROC6-*-1            HAVE ALL STATIONS BEEN CHECKED
0678  01DF 18F7          JMP*      PROC3                NO ONE MORE
0679  01E0 0854  PROC4   TCQ       A
0680  01E1 8810          ADD*      SLSPIO+3
0681  01E2 E8D3          LDQ*      QTEMP
0682  01E3 0116          SAN       PROC5A-*-1           INTERRUPT FROM THE TELETYPE
0683  01E4 C800          LDA       INTACT               YES, Q= -1
      01E5 03BE
0684  01E6 0112          SAN       PROC5-*-1            SMM TYPING IN INT. MODE
0685  01E7 CA0F          LDA*      SLSPAD+4,Q           NO,  HAS A TEST REQUESTED THE
0686  01E8 0111          SAN       PROC5A-*-1           TELETYPE INTS.
0687  01E9 0D01  PROC5   INQ       1                    NO. GO TO MESSIN, CHECK MAN.INT.
0688  01EA CA0C  PROC5A  LDA*      SLSPAD+4,Q           STORE THE INT. ROUTINE ADDRESS
0689  01EB 60FF          STA-      I                    IN THE I REGISTER AND GO CHECK
0690  01EC C0FF  PROC6   LDA-      I                    TO SEE IF THE INT WAS REQUESTED
0691  01ED 18B8          JMP*      PROC2
0692                     *              -SLOW SPEED PACKAGE TABLES-      ** STATION ADDRESSES **
0693  01EE 00A1  SLSPIO  NUM       $A1                  1721 PAPER TAPE READER
0694  01EF 00E1          NUM       $E1                  1729 CARD READER
0695  01F0 00C1          NUM       $C1                  1723 PAPER TAPE PUNCH
0696  01F1 0091          NUM       $91                  1711, 1712, 1713 TELETYPES
0698                     *                                ** REQUEST ADDRESSES **
0699  01F2 0000  SLSPAD  NUM       0                    1721
0700  01F3 0000          NUM       0                    1729
0701  01F4 0000          NUM       0                    1723
0702  01F5 0000          NUM       0                    1711, 1712, 1713
0703  01F6 0577          ADC       MESSIN               SMM MESSAGE REQUEST

0705                     ********************************************************************
0706                     *                                                                  *
0707                     *                CHECK FOR MEMORY PARITY ERROR OR PROTECT FAULT    *
0708                     *                ON UNREQUESTED LEVEL 0 INTERRUPTS.  IF NEITHER,   *
0709                     *                ENTER POWER FAILURE ROUTINE.                      *
0710                     *                                                                  *
0711                     ********************************************************************

0713  01F7 60FF  CHPEPF  STA-      I                    FLAG EXIT VALUE AS ZERO.
0714  01F8 E048          LDQ-      LDL1COR
0715  01F9 0174          SQM       CKPE-*-1             SKIP IF DUAL BANK 1700.
0716  01FA C473          LDA-      (BIT08)              OTHERWISE, STRIP OFF
0717  01FB A087          AND-      H7FFF                   OVERFLOW BIT ON TRAP ADDRESS.
0718  01FC 6473          STA-      (BIT08)
```

```
0719  01FD 0844          CLR     A
0720  01FE 01D1  CKPE    SNP     CKPF-*-1                                  PTC2
0721  01FF 1817          JMP*    PE              REPORT PARITY ERROR       PTC2
0722  0200 01E1  CKPF    SPF     PFE000-*-1                                PTC2
0723  0201 181A          JMP*    PWR             MUST BE                   PTC2
0724  0202 E473  PFE000  LDQ-    (BIT08)         GET TRAP ADDRESS          PTC2
0725  0203 0DFE          INQ     -1                                        PTC2
0726  0204 4473          STQ-    (BIT08)                                   PTC2
0727  0205 0DFD          INQ     -2                                        PTC2
0728  0206 E201          LDQ-    1,Q             GET ADDR OF CALLING INST  PTC2
0729  0207 0DFD          INQ     -2                                        PTC2
0730  0208 C201          LDA-    1,Q             GET THE INSTRUCTION       PTC2
0731  0209 B000          EOR     =N$5400         CHECK FOR LEGAL RTJ- INST WITH
      020A 5400
0732  020B 09FE          INA     -CONTROL           DELTA BETWEEN CONTROL-SELPTC2
0733  020C 0133          SAM     PFE005-*-1      NOT LEGAL                 PTC2
0734  020D 09DC          INA     CONTROL-SELIN-1 CHECK UPPER BOUNDS        PTC2
0735  020E 0121          SAP     PFE005-*-1      NOT LEGAL RTJ- INST       PTC2
0736  020F 1814          JMP*    XITINT          LEGAL - EXIT              PTC2
0737  0210 E056  PFE005  LDQ-    SMMCNT                                    PTC2
0738  0211 0FA7          QLS     7
0739  0212 0162          SQP     PF-*-1          SKIP IF MBS NOT SELECTED.
0740  0213 1400          JMP+    PFE010          GO TO MBS                 PTC2
      0214 0EF2
0741  0215 0A01  PF      ENA     PROTECT-MEMPE
0742  0216 0901  PE      INA     MEMPE           (FORM ERROR CODE)
0743  0217 E82F          LDQ*    REPORT
0744  0218 015A          SQN     XITINT-*-1      IGNORE REPORT IF REPORTER BUSY
0745  0219 E473          LDQ-    (BIT08)         (ERROR INFO)
0746  021A 582C          RTJ*    REPORT          REPORT ERROR.
0747  021B D47B  PWR     RAO-    (H0000)         POWER FAILURE CAUSED INTERRUPT.
0748  021C 0A18          ENA     $18
0749  021D 0C7F          ENQ     $7F
0750  021E 0000          SLS     0       * * * * * * * POWER FAILURE IRPT DETECTED *
0751  021F 1CFE          JMP*    (*-1)
0752  0220 C47B  PFR     LDA-    (H0000)
0753  0221 09FE          INA     -1
0754  0222 647B          STA-    (H0000)         RESTORE MC RESTART JUMP.
0755  0223 E0FF  XITINT  LDQ-    I               (EXIT VALUE)
0756  0224 1894          JMP*    EXITL           RESTORE REGS, EXIT INTRPT STATE.


0759  0225 0000  ISERR   NUM     0               ROUTINE TO REPORT ERRORS FROM
0760                     *                       INTERRUPT STATE
0761  0226 0500          IIN     0
0762  0227 480D          STQ*    ISERRQ          SAVE Q (TEST BIAS)
0763  0228 580D          RTJ*    BUSY            CHECK STOPX-ERR-MSG FOR BUSY
0764  0229 1805          JMP*    ISERR1          NOT BUSY RETURN
0765  022A E80A          LDQ*    ISERRQ          BUSY RETURN
0766  022B CCF9          LDA*    (ISERR)         BUSY RETURN ADDRESS TO IA+5
0767  022C 6205          STA-    5,Q
0768  022D 18F5          JMP*    XITINT          EXIT THROUGH EXITL IF BUSY
```

```
0770  022E 08F6  ISERR1  RAO*    ISERR          NOT BUSY
0771  022F CCF5          LDA*    (ISERR)
0772  0230 6803          STA*    ISERR2
0773  0231 0400          EIN     0
0774  0232 1C01          JMP*    (ISERR2)       NOT BUSY-EXIT TO TEST
0775                *
0776  0233 0000  ISERR2  NUM     *              NOT BUSY EXIT ADDRESS
0777  0234 0000  ISERRQ  NUM     *              SAVE Q

0779  0235 0000  BUSY    NUM     0              THIS SUBROUTINE CHECKS TO SEE
0780                *                          IF STOPX-MSG-SMMERR WAS
0781                *                          INTERRUPTED
0782  0236 0CFD          ENQ     -2
0783  0237 CA2A  RPT00   LDA*    FLGMSG,Q       DETERMINE IF SMMERRS, STOPX,
0784  0238 011B          SAN     RPT02B-*-1      OR TYPEOUT ROUTINE INTERRUPTED
0785  0239 0142          SQZ     RPT01-*-1      SKIP IF FLAGS CLEAR.
0786  023A 0D01          INQ     1
0787  023B 18FB          JMP*    RPT00
0788  023C 0CFA  RPT01   ENQ     -5
0789  023D C573          LDA-    (BITO8),I      COMPARE TRAP ADDRESS TO 1ST
0790  023E 9A29  RPT02   SUB*    ADR6,Q           AND LAST ROUTINE ADDRESSES.
0791  023F 0103          SAZ     RPT02A-*-1     SKIP IF MATCH
0792  0240 0144          SQZ     RPT02C-*-1
0793  0241 0D01          INQ     1
0794  0242 18FB          JMP*    RPT02
0795  0243 0F21  RPT02A  QRS     1
0796  0244 08F0  RPT02B  RAO*    BUSY           ADD 1 FOR BUSY RETURN
0797  0245 1CEF  RPT02C  JMP*    (BUSY)         EXIT RFOM BUSY CHECK

0799                *
0800  0246 0000  REPORT  NUM     0              SYSTEM INTERRUPTION ERROR REPORT
0801                *
0802  0247 0400          EIN     0
0803  0248 6820          STA*    ENTA           SAVE ERROR CODE
0804  0249 4820          STQ*    ENTQ               STOPX A3 INFO
0805  024A 58EA          RTJ*    BUSY           WAS STOPX-MSG-SMMERR BUSY
0806  024B 1808          JMP*    RPT06          NOT BUSY RETURN
0807                *                          BUSY RETURNS WITH Q POINTING TO
0808                *                           BUSY ROUTINE
0809  024C EA12  RPT04   LDQ*    RTNMSG,Q       ROUTINE FOUND BUSY, INTERJECT
0810  024D C201          LDA-    1,Q             THIS MESSAGE AFTER ROUTINE FINI
0811  024E 680D          STA*    RPTRTN         SAVE APPROPRIATE RTA
0812  024F C000          LDA     =XRPT10
      0250 0256
0813  0251 6201          STA-    1,Q            PLUG RTA CELL WITH REPORTER ADR.
0814  0252 18D0  RPT05   JMP*    XITINT         RETURN TO INTERRUPTED ROUTINE.

0816  0253 C000  RPT06   LDA     =XXITINT       NO MSG INTERRUPTION
      0254 0223
0817  0255 6806          STA*    RPTRTN         REPORT AND EXIT INT STATE.
0818  0256 C812  RPT10   LDA*    ENTA           INTERRUPTED MESSAGE COMPLETE.
0819  0257 E812          LDQ*    ENTQ
```

```
0820  0258 5428          RTJ-    (SMERROR)          REPORT ERROR.
0821  0259 68EC          STA*    REPORT (A=0)       FLAG REPORTER NOT BUSY.
0822  025A 1400          JMP-    (0)                RETURN TO ORIGINAL MESSAGE USER.
0823  025B 0000  RPTRTN  NUM     0

0825  025C 0269  RTNSMR  ADC     SMMERRS-1          ROUTINE
0826  025D 03E7  RTNSTP  ADC     STOPX-1                   ENTRY
0827  025E 0521  RTNMSG  ADC     MESSAGE-1                       ADDRESSES.
0828  025F 0000  FLGSMR  NUM     0                  ROUTINE
0829  0260 0000  FLGSTP  NUM     0                         ACTIVE
0830  0261 0000  FLGMSG  NUM     0                               FLAGS.
0831  0262 026B  ADR1    ADC     SMMERRS+1          ROUTINE ADDRESSES
0832  0263 0014  ADR2    ADC     ENDSMR-SMMERRS-1     NOT REFLECTING BUSY CONDITION.
0833  0264 065B  ADR3    ADC     PRESTP-1+ENDSMR                                  PTC2
0834  0265 0079  ADR4    ADC     ENDSTP-PRESTP-1                                  PTC2
0835  0266 00CC  ADR5    ADC     MESSAGE+1-ENDSTP
0836  0267 0053  ADR6    ADC     ENDMESS-MESSAGE-1
0837  0268 0000  ENTA    NUM     0                  ERROR CODE
0838  0269 0000  ENTQ    NUM     0                  ERROR INFO

0840               ************************************************************
0841               *
0842               *                    PROCESS MONITOR ERRORS
0843               *
0844               ************************************************************

0846  026A 0000  SMMERRS  NUM     0                  SMM ERROR ROUTINE
0847  026B D8F3           RAO*    FLGSMR             FLAG BUSY TO INT ERROR REPORTER.
0848  026C 680E           STA*    SMERCD             A= ERROR CODE
0849  026D C8FC           LDA*    SMMERRS
0850  026E 680D           STA*    SMERRTA
0851  026F 0A08           ENA     $8
0852  0270 0144           SQZ     SMER1-*-1          EXTRA INFO-    (QZERO = NO)
0853  0271 480B           STQ*    SMERQ              YES.  Q CONTAINS 3RD AREG.
0854  0272 E0FF           LDQ-    I                        I CONTAINS 3RD QREG.
0855  0273 480A           STQ*    SMERQ+1
0856  0274 0910           INA     $10                INCREASE STOP COUNT.
0857  0275 6804  SMER1    STA*    SMERID
0858  0276 0844           CLR     A
0859  0277 5402           RTJ-    (STOP)
0860  0278 1806           JMP*    ENDSMR-1
0861  0279 0008  SMERID   NUM     $0008              STOP ID
0862  027A 0000  SMERCD   NUM     $0                 ERROR CODE
0863  027B 0000  SMERRTA  NUM     0                  REPORTED RETURN ADDRESS.
0864  027C 0000  SMERQ    NUM     $0                 EXTRA ERROR INFORMATION
0865  027D 0000           NUM     $0
0866  027E 68E0           STA*    FLGSMR             CLR BZY FLAG.
0867  027F 1CEA  ENDSMR   JMP*    (SMMERR)           EXIT ROUTINE.

0869  0280 0000  MAINL   NUM     0
0870  0281 6050           STA-    MISWX              FORCE PARAM STOP NEXT JUMPX CALL
0871  0282 1CFD           JMP*    (MAINL)            RETURN
```

```
0873  0283 0000  FCLRINT  NUM      0
0874  0284 1CFE           JMP*     (FCLRINT)
0875               ********************************************************************
0876               *
0877               *                          REQUEST INTERRUPT CALL
0878               *                            PROCESSOR PACKAGE
0879               *                         ENTER WITH A = INTERRUPT LINE
0880               *                                    Q = EQUIPMENT ADDR
0881               *                              CALL+1 = INTERRUPT ROUTINE ENTRY
0882               *                    CHECK FOR 2 TESTS REQUESTING THIS LINE          *
0883               *
0884               ********************************************************************


0886  0285 0000  REQINT   NUM      0                  REQUEST INTERRUPT
0887  0286 40BB  REQIN2   STQ-     B0                 SAVE REQUESTORS EQUIPMENT ADR.
0888  0287 0C0F           ENQ      15
0889  0288 0133  REQIN3   SAM      REQIN4-*-1         FIND THE ADDRESS IN WHICH TO
0890  0289 0FC1           ALS      1                  STORE THE REQUEST ROUTINE ADDRES
0891  028A 0DFE           INQ      -1
0892  028B 18FC           JMP*     REQIN3
0893  028C 0814  REQIN4   TRQ      A
0894  028D 0FC2           ALS      2                  (MULTIPLY DECIMAL LINE NO. BY 4)
0895  028E 8000           ADD-     0
0896  028F 0103  XLV0ADR  ADC      LV0ADR
0897  0290 60BD           STA-     B2                 (ADDRESS INTO WHICH THE
0898  0291 0DFE           INQ      -1                  REQUESTING INTERRUPT ROUTINE'S
0899  0292 015B           SQN      REQIN7-*-1           ENTRY ADDRESS WILL BE STORED)
0900  0293 0CFB           ENQ      -4                 REQUEST IS FOR INT LINE 1.
0901  0294 C600  REQIN5   LDA+     SLSPIO+4,Q         FIND OUT IF STATION IN
      0295 01F2
0902  0296 90BB           SUB-     B0                 THE SLOW SPEED PACKAGE IS
0903  0297 0103           SAZ      REQIN6-*-1         REQUESTING THIS INTERRUPT
0904  0298 0145           SQZ      REQIN7-*-1         STATIONS FOUND
0905  0299 0D01           INQ      1                  NOT YET
0906  029A 18F9           JMP*     REQIN5
0907  029B F000  REQIN6   ADQ      =XSLSPAD+4         STATION HAS BEEN FOUND MOVE ITS
      029C 01F6
0908  029D 40BD           STQ-     B2                 ADDRESS TO POINTER.
0909  029E E091  REQIN7   LDQ-     TSACTV
0910  029F 40FF           STQ-     I
0911  02A0 C2A5           LDA-     TSIAAD-1,Q         CHECK AGAINST DUAL TEST REQ'S.
0912  02A1 E4BD           LDQ-     (B2)               GET PREVIOUS PROCESSOR ADDRESS.
0913  02A2 0146           SQZ      REQIN8-*-1         SKIP IF LINE IS FREE.
0914  02A3 540C           RTJ-     (RELPOS)
0915  02A4 0138           SAM      REQIN9-*-1         SKIP IF PREV REQ NOT SAME TEST.
0916  02A5 C1A6           LDA-     TSIAAD,I
0917  02A6 0102           SAZ      REQIN8-*-1         SKIP = REQ'NG TEST LAST IN LIST.
0918  02A7 540C           RTJ-     (RELPOS)
0919  02A8 0124           SAP      REQIN9-*-1         SKIP = PREV REQ NOT SAME TEST.
0920  02A9 CCDB  REQIN8   LDA*     (REQINT)
```

```
02AA 648D            STA-     (B2)              SATISFY REQUEST.
02AB 08D9            RAO*     REQINT
02AC 1CD8            JMP*     (REQINT)          EXIT TO CALLER.
02AD 40FF   REQIN9   STQ-     I                 (ERROR STOP Q3 = PREV PROC ADR)
02AE 0A05            ENA      ILBZY             (ERROR CODE)
02AF E091            LDQ-     TSACTV
02B0 E2A5            LDQ-     TSIAAD-1,Q        (ERROR STOP A3 = REQUESTOR!S IA)
02B1 5428            RTJ-     (SMERROR)         REPORT ERROR.
02B2 5403            RTJ-     (STOP+1)  =EXIT   DROP TEST FROM LIST. (MC-RESTART
02B3 18FE            JMP*     *-1                FROM REQ!R IA AT ERROR STOP OK)


                  ****************************************************************
                  *                                                              *
                  *                  BUILD TEST EXECUTION LIST                   *
                  *                                                              *
                  *       A=XXYY, Q=EQUIPMENT ADDRESS, FOR TEST LOAD.            *
                  *         WHERE XX=TEST NUMBER, YY=TEST RERUN COUNT.           *
                  *       A=FF00, Q=LOAD ADDRESS, TO SELECT IA OF NEXT TEST ENTRY.*
                  *       A=0001 TO TERMINATE LOAD STRING WITHIN LIST.           *
                  *       A=0000 TO TERMINATE TEST LIST.                         *
                  *                                                              *
                  ****************************************************************


02B4 C049   MCINIT   LDA-     INFORM            CLEAR
02B5 A082            AND-     HFF00                  SOFTWARE BUSY          PTC2
02B6 6049            STA-     INFORM                              SWITCHES  PTC2
02B7 0A00   BUILDTL  ENA      0
02B8 68A6            STA*     FLGSMR            CLEAR
02B9 68A6            STA*     FLGSTP                 REPORTING ROUTINE
02BA 68A6            STA*     FLGMSG                                BUSY FLAGS
02BB 5406            RTJ-     (JUMP)            CHECK THE SKIP SWITCH
02BC 0B00            NOP      0
02BD 0400            EIN      0                 (SETMASK ENTRY PRIOR TO ENABLE)
02BE C08F            LDA-     TSSEL             TEST LIST EMPTY
02BF 0104            SAZ      TSLIS1-*-1        AZERO = YES. BUILD TEST LIST.
02C0 C056   SMSTART  LDA-     SMMCNT
02C1 A072            AND-     BIT07
02C2 0111            SAN      TSLIS1-*-1        IS BIT 7 OF SMM PARAMETER SET
02C3 181D            JMP*     INITA               NO  EXECUTE PRESTORED LIST
02C4 540F   TSLIS1   RTJ-     (MONPP)           RESET MONITOR PROTECT PATTERPTC2
02C5 C000            LDA      =XTYPBTL                                      PTC2
02C6 0747
02C7 0C09            ENQ      9                                             PTC2
02C8 5408            RTJ-     (TYPEOUT)         TYPEOUT-  BUILD TEST LIST
02C9 0844            CLR      A
02CA 608F            STA-     TSSEL             CLEAR NUMBER OF TESTS SELECTED
02CB 6090            STA-     TSINIT            NUMBER OF TESTS LOADED
02CC 60FF            STA-     I                 CLEAR I
```

```
0968  02CD 61A6  CLRIA    STA-    TSIAAD,I          CLEAR LOAD ADDRESS ENTRY.
0969  02CE C192  TSLIS2   LDA-    TSFREQ,I          PRESENT FREQ. AND TEST NUMBER
0970  02CF E19C           LDQ-    TSEQAD,I          PRESENT EQUIPMENT NUMBER
0971  02D0 540E           RTJ-    (INPTTY)          DISPLAY ENTRY VIA A/Q OR TTY.
0972  02D1 B082  TSLIS3   EOR-    HFF00             SELECT IA OPERATION
0973  02D2 0112           SAN     TSLIS4-*-1        A ZERO = YES
0974  02D3 41A6           STQ-    TSIAAD,I          STORE IA FOR NEXT TEST ENTRY.
0975  02D4 18F9           JMP*    TSLIS2
0976  02D5 B082  TSLIS4   EOR-    HFF00             RESTORE ENTRY.
0977  02D6 6192           STA-    TSFREQ,I
0978  02D7 0108           SAZ     INITA-*-1         AZERO = TERMINATE TEST LIST.
0979  02D8 419C           STQ-    TSEQAD,I
0980  02D9 D08F  INITAC   RAO-    TSSEL             INCREMENT NO. OF TESTS SELECTED
0981  02DA 0A0A           ENA     10
0982  02DB B08F           EOR-    TSSEL             DETERMINE IF LIST IS FULL-
0983  02DC 0103           SAZ     INITA-*-1         AZERO = YES.  EXECUTE LIST.
0984  02DD 0844           CLR     A                 TABLE IS NOT FULL.
0985  02DE D0FF           RAO-    I
0986  02DF 18ED           JMP*    CLRIA


0988                *                       CHECK MUTUALLY EXCLUSIVE TESTS- MY1,2,MEM,RPT  *


0990  02E0 0C01  INITA    ENQ     1
0991  02E1 40FF           STQ-    I
0992  02E2 0842           CLR     Q
0993  02E3 C191  INITA1   LDA-    TSFREQ-1,I        GET TEST FROM LIST
0994  02E4 0F48           ARS     8
0995  02E5 09FD           INA     -2                CK FOR MY1 (02)
0996  02E6 0113           SAN     3                 NO
0997  02E7 0141           SQZ     1                 YES,CK FLAG IF SECOND TEST
0998  02E8 1816           JMP*    INITA2            THIS IS 2ND TEST-SO ERROR
0999  02E9 E0FF           LDQ-    I                 THIS IS 1ST TEST-SAVE I IN Q
1000  02EA 09F8           INA     -7                CK FOR RPT (09)
1001  02EB 0113           SAN     3                 NO
1002  02EC 0141           SQZ     1                 YES-CK FLAG IF THIS 2ND TEST
1003  02ED 1811           JMP*    INITA2            THIS IS 2ND TEST-SO ERROR
1004  02EE E0FF           LDQ-    I                 THIS IS 1ST TEST-SAVE I AS FLAG
1005  02EF 09F6           INA     -9                CK FOR MY2 (12)
1006  02F0 0113           SAN     3                 NO
1007  02F1 0141           SQZ     1                 YES-CK FLAG IF SECOND TEST
1008  02F2 180C           JMP*    INITA2            THIS IS 2ND TEST-SO ERROR
1009  02F3 E0FF           LDQ-    I                 THIS IS 1ST TEST-SAVE I AS FLAG
1010  02F4 09FD           INA     -2                CK FOR MEM (14)
1011  02F5 0113           SAN     3                 NO
1012  02F6 0141           SQZ     1                 YES-CK FLAG IS THIS IS 2ND TEST
1013  02F7 1807           JMP*    INITA2            THIS IS 2ND TEST-SO ERROR
1014  02F8 E0FF           LDQ-    I                 THIS IS 1ST TEST-SAVE I AS FLAG
1015  02F9 D0FF           RAO-     I                UPDATE LIST INDEX
1016  02FA 0A0A           ENA     10
```

```
1017  02FB B0FF          EOR-     I              CHECK FOR END OF LIST
1018  02FC 010C          SAZ      INITA3-*-1
1019  02FD 18E5          JMP*     INITA1         CK NEST TEST IN THE LIST
1020  02FE C291  INITA2  LDA-     TSFREQ-1,Q
1021  02FF A082          AND-     HFF00
1022  0300 0822          TRA      Q              GET 2ND TEST ID FOR MSG
1023  0301 C191          LDA-     TSFREQ-1,I
1024  0302 0F48          ARS      8
1025  0303 0872          EAQ      Q              COMBINE 1ST AND 2ND TEST IDS
1026  0304 0844          CLR      A
1027  0305 60FF          STA-      I
1028  0306 0A21          ENA      $21            ERROR CODE
1029  0307 5428          RTJ-     (SHERROR)      REPORT ERROR $21
1030  0308 147B          JMP-     (H0000)        START OVER AGAIN
1031  0309 0842  INITA3  CLR      Q
1032  030A 0AEF          ENA      -16
1033  030B 60BC          STA-     B1
1034  030C 0844  INITAA  CLR      A                  CLEAR ALL INTERRUPT LINE REQUEST
1035  030D 6E00          STA      (XLVOADR),Q        BY STORING ZERO IN THE ADDRESS
      030E FF80
1036  030F 0D04          INQ      4                  FOR EACH LINE REQUEST
1037  0310 D08C          RAQ-     B1
1038  0311 C08C          LDA-     B1
1039  0312 0101          SAZ      1
1040  0313 18F8          JMP*     INITAA
1041  0314 E056          LDQ-     SHKCNT             CHECK FOR MBS SELECTION
1042  0315 0FA7          QLS      7
1043  0316 0161          SQP      1                  SKIP IF NOT SELECTED
1044  0317 642D          STA-     (ADINST)           CLEAR MBS INT STACKER
1045  0318 0CFB          ENQ      -4                 TEST
1046  0319 6600  INITAB  STA+     SLSPAD+4,Q         CLEAR THE INTERRUPT RESERVATION.
      031A 01F6
1047  031B 0D01          INQ      1                  REQUESTS FOR THE SLOW SPEED
1048  031C 0141          SQZ      1                  PACKAGE
1049  031D 18F8          JMP*     INITAB
1050  031E 40D2          STQ-     D2                 CLEAR LOCATION D2 FOR THE 1716.
1051  031F C090          LDA-     TSINIT             TSINIT ZERO=1ST SMM ENTRY OR BTL
1052  0320 0108          SAZ      EXECTL-*-1         OTHERWISE, PREPARE CONTROL TO
1053  0321 0822  TRANSFR TRA      Q                  RESTART ALL TESTS NOW IN CORE.
1054  0322 E2A5          LDQ-     TSIAAD-1,Q         LOAD TEST IA
1055  0323 4205          STQ-     MUXRTA,Q           STORE IA AT TEST ADDRESS FOR RTA
1056  0324 09FE          INA      -1
1057  0325 6091          STA-     TSACTV
1058  0326 0101          SAZ      IXT1-*-1
1059  0327 18F9          JMP*     TRANSFR              BEGIN MUXING AT 1ST LIST ENTRY
1060  0328 181D  IXT1    JMP*     INIT1C
1061                *  IF MASTER CLEAR/TEST RESTART USED TO RE-CREATE ERROR CONDITION, SAME
1062                *  SEQUENCE MAY NOT OCCUR IF ANY OF ORIGINAL TEST LIST FINISHED AND
1063                *  EXITED, SINCE THESE ARE NOT RESTARTED.

1065  0329 C044  EXECTL  LDA-     LASTVALUE
1066  032A 6045          STA-     LASTAD             RESET LOAD ADDRESS.
```

```
1068                ********************************************************************************
1069                *                                                                              *
1070                *                          - EXECUTE TEST LIST -                               *
1071                *                      PREPARES B1 FOR LOAD CONTROL                            *
1072                *                                                                              *
1073                ********************************************************************************

1075  032B C08F  INIT1    LDA-      TSSEL               NUMBER OF TESTS TO BE LOADED
1076  032C 8090           EOR-      TSINIT              NUMBER OF TESTS LOADED
1077  032D 0101           SAZ       INIT1A
1078  032E 181C           JMP*      INIT2
1079  032F 6091  INIT1A   STA-      TSACTV              RESET CONTROL POINTER
1080  0330 E056           LDQ-      SMMCNT              CHECK SMM PARAM-
1081  0331 0FA4           QLS       4                   CHECK PRE-EXECUTION TEST MOD.
1082  0332 0171           SQM       1
1083  0333 1815           JMP*      INIT1B
1084  0334 E000           LDQ       =XMESSA3            ELSE PREPARE FOR POST-LOAD,
      0335 056E
1085  0336 4025           STQ-      INTX                PRE-EXECUTION TEST MODIFICATION.
1086  0337 C000           LDA       =XPREEXS            START OF MSG FOR CHANGES
      0338 0750
1087  0339 E000           LDQ       =XPREEXD-PREEXS+1    LENGTH OF MSG
      033A 0012
1088  033B 54C5           RTJ-      (TTOTTI)            MSG TO OPERATOR
1089  033C 0846           CLR       A,Q                 ZERO REGS FOR 1ST DISPLAY
1090  033D 540E  INIT1D   RTJ-      (INPTTY)            STOP OR TTY INPUT FOR CHANGE
1091  033E 0109           SAZ       INIT1B              SKIP OUT TO TERMINATE
1092  033F 60FF           STA-      I
1093  0340 457B           STQ-      (H0000),I           UPDATE CORE WITH NEW WORD
1094  0341 0901           INA       1                   FOR POSSIBLE NEXT CHANGE
1095  0342 D0FF           RAO-      I                   UPDATE ADDRESS
1096  0343 E57B           LDQ-      (H0000),I           GET NEXT CELL FOR NEXT DISPLAY
1097  0344 18F8           JMP*      INIT1D
1098  0345 E000  INIT1C   LDQ       =XMCINIT
      0346 0284
1099  0347 4025           STQ-      INTX
1100  0348 5408  INIT1B   RTJ-      (TYPEOUT)           FORMAT TEST HEADINGS  (A = ZERO)
1101  0349 5401           RTJ-      (CONTROL)           ALL TESTS HAVE BEEN INITIALIZED.
1102  034A E090  INIT2    LDQ-      TSINIT
1103  034B 40FF           STQ-      I
1104  034C E1A6  INIT4    LDQ-      TSIAAD,I            IS THERE AN IA TABLE ENTRY@
1105  034D 0141           SQZ       INIT4D-*-1          QZERO = NO.
1106  034E 4045           STQ-      LASTAD              YES. USE ENTRY FOR LOAD ADDRESS.
1107  034F C192  INIT4D   LDA-      TSFREQ,I
1108  0350 0F48           ARS       8                   POSITION TEST NUMBER.
1109  0351 0114           SAN       INITF-*-1            A=0 = LOAD STRING TERMINATOR
1110  0352 E090           LDQ-      TSINIT              TERMINATOR FIRST ENTRY
1111  0353 0151           SQN       INIT4E-*-1          QZERO = YES.
1112  0354 1847           JMP*      EXITC               MOVE TABLE UP ONE ENTRY.
1113  0355 18D9  INIT4E   JMP*      INIT1A              RUN LOADED TESTS.
1114  0356 A081  INITF    AND-      H00FF
1115  0357 608C           STA-      B1                  STORE TEST NUMBER.
1116  0358 C056  INITC    LDA-      SMMCNT
```

```
1117  0359 A06F          AND-      BIT04               LOAD AT EVEN ONE HUNDREDS IF SET
1118  035A 0107          SAZ       INITD-*-1
1119  035B C045          LDA-      LASTAD
1120  035C A081          AND-      H00FF
1121  035D 0104          SAZ       INITD-*-1           SKIP IF ADR ALREADY EVEN 100
1122  035E C045          LDA-      LASTAD
1123  035F A082          AND-      HFF00
1124  0360 8073          ADD-      BIT08               0100
1125  0361 6045          STA-      LASTAD
1126  0362 C045  INITD   LDA-      LASTAD
1127  0363 61A6          STA-      TSIAAD,I            STORE INITIAL ADDRESS IN TABLE.
1128  0364 542C          RTJ-      (PRGLOAD)           GO LOAD TEST
1129  0365 E090          LDQ-      TSINIT
1130  0366 0136          SAM       INITB-*-1           (AREG)=TERMINATE FLAG ON RETURN.
1131  0367 09EF          INA       -NOMOCOR            APOS = CODE OF TERMINAL ERROR.
1132  0368 0113          SAN       INIT9A-*-1          AZERO = LACK OF AVAILABLE LOAD
1133  0369 0142          SQZ       INIT9A-*-1          CORE. IF NOT 1ST LOAD OF STRING,
1134  036A 62A6          STA-      TSIAAD,Q            RESET LOAD ADDRESS TO ZERO,
1135  036B 18C3          JMP*      INIT1A              RUN TESTS NOW IN CORE AND RETRY.
1136  036C 182F  INIT9A  JMP*      EXITC               OTHERWISE, DELETE LIST ENTRY.
1137  036D C29C  INITB   LDA-      TSEQAD,Q
1138  036E D090          RAO-      TSINIT
1139  036F E2A6          LDQ-      TSIAAD,Q
1140  0370 0101          SAZ       1                   (DONT PASS ZERO ADDRESS)
1141  0371 6206          STA-      TESTEQ,Q            PASS EQUIPMENT ADDRESS TO TEST.
1142  0372 C400          LDA+      RBD004              MUXRTA BIASED BY LOADER-
      0373 0696
1143  0374 0113          SAN       BIASED-*-1          AZERO = NO.
1144  0375 C205          LDA-      MUXRTA,Q            (RBD004 = ZERO IF NEGATE
1145  0376 0834          AAQ       A                             BY NAM CARD COL. 64)
1146  0377 6205          STA-      MUXRTA,Q            BIAS RTA FOR CONTROL ENTRY.
1147  0378 0A30  BIASED  ENA       $30                 CHECK 4TH CHARACTER OF NAME
1148  0379 A202          AND-      NAME+1,Q                  FOR RUN-ALONE TESTS.
1149  037A 0111          SAN       INIT5-*-1           AZERO = RUN-ALONE. GO TO CONTROL
1150  037B 18B4          JMP*      INIT1A+1                  WITH TSACTV = TSINIT+1
1151  037C D091  INIT5   RAO-      TSACTV              (THIS MAKES TSACTV = TSINIT)
1152  037D 18AD          JMP*      INIT1


1154              ********************************************************************
1155              *
1156              *                              CONTROL ROUTINE
1157              *                          FOR MULTIPLEXING TESTS
1158              *
1159              ********************************************************************

1161  037E 0000  CONTRO  NUM       *
1162  037F C042          LDA-      SETMASK             RESET MASK.
1163  0380 0821          TRA       M
1164  0381 0400          EIN       0                   INSURE INTERRUPTS ENABLED.
1165  0382 0A00          ENA       0
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1166  0383 5406          RTJ-    (JUMP)              CHECK SKIP SWITCH
1167  0384 0800          NOP     0
1168  0385 C091  CONTR7  LDA-    TSACTV              LAST TEST TO WHICH CONTROL WAS
1169  0386 9090          SUB-    TSINIT              GIVEN
1170  0387 0131          SAM     CONTR1-*-1          END OF TEST LIST
1171  0388 6091          STA-    TSACTV              START AT TOP OF LIST
1172  0389 D091  CONTR1  RAO-    TSACTV
1173  038A E091  CONTR3  LDQ-    TSACTV
1174  038B C2AF          LDA-    TSTJP-1,Q           PREPARE STJP TO CONTAIN
1175  038C 6043          STA-    STJP                    INDIVIDUAL STOP/JUMP PARAM.
1176  038D E2A5          LDQ-    TSIAAD-1,Q
1177  038E 0141          SQZ     1                   (MC-RESTART IF NO BTL ENTRY)
1178  038F E205          LDQ-    MUXRTA,Q            IA+MUXRTA CONTAINS RETURN ADD.
1179  0390 167B          JMP-    (H0000),Q
1180                ********************************************************************
1181                *
1182                *                   CHECK IF ALL PASSES ARE COMPLETE
1183                *                   IF THEYARE, CLEAR ALL ENTRIES IN THE TABLES
1184                *                   ENTER WITH   A= INITIAL ADDR OF TEST
1185                *
1186                ********************************************************************

1188  0391 0000  EXIT     NUM     0                   TEST PASS COMPLETION ROUTINE.
1189  0392 E091          LDQ-    TSACTV
1190  0393 C291          LDA-    TSFREQ-1,Q
1191  0394 09FE          INA     -1
1192  0395 6291          STA-    TSFREQ-1,Q          REDUCE TESTS FREQUENCY NUMBER.
1193  0396 A081          AND-    H00FF
1194  0397 0101          SAZ     EXITB-*-1           SKIP = DELETE TEST FROM LIST.
1195  0398 1CF8          JMP*    (EXIT)              REPEAT TEST.
1196  0399 0DFE  EXITB    INQ     -1
1197  039A 4091          STQ-    TSACTV              MAINTAIN MULTIPLEX ORDER.
1198  039B C2B1  EXITC    LDA-    TSTJP+1,Q
1199  039C 62B0          STA-    TSTJP,Q
1200  039D 00F6          INQ     TSFREQ-TSEQAD+1     (NEGATIVE TERMINAL VALUE FOR Q)
1201  039E 0149          SQZ     EXITD-*-1
1202  039F 0009          INQ     TSEQAD-TSFREQ-1
1203  03A0 C2A7          LDA-    TSIAAD+1,Q
1204  03A1 62A6          STA-    TSIAAD,Q
1205  03A2 C29D          LDA-    TSEQAD+1,Q
1206  03A3 629C          STA-    TSEQAD,Q
1207  03A4 C293          LDA-    TSFREQ+1,Q
1208  03A5 6292          STA-    TSFREQ,Q            MOVE ENTRY IN TABLE UP ONE PLACE
1209  03A6 0D01          INQ     1
1210  03A7 18F3          JMP*    EXITC               GO BACK AND MOVE NEXT ENTRY
1211  03A8 409B  EXITD    STQ-    TSEQAD-1
1212  03A9 40A5          STQ-    TSIAAD-1
1213  03AA 40AF          STQ-    TSTJP-1
1214  03AB C08F          LDA-    TSSEL
1215  03AC 09FE          INA     -1
1216  03AD 608F          STA-    TSSEL
1217  03AE E090          LDQ-    TSINIT
```

```
03AF 0141           SQZ     1                       QZERO = INIT4 JMP TO EXITC
03B0 00FE           INQ     -1
03B1 4090           STQ-    TSINIT
03B2 0154           SQN     EE-*-1                  OTHER TESTS IN CORE-
03B3 0111           SAN     EXITG-*-1               QZERO = NO.  TEST LIST EMPTY-
03B4 0CE3           ENQ     TSLIS1-INITA            GO BUILD TEST LIST.
03B5 1600  EXITG    JMP+    INITA,Q                 OR CONTINUE LOADING FROM LIST.
03B6 02E0
03B7 5401  EE       RTJ-    (CONTROL)               CONTINUE MUXING TESTS IN CORE.



           ***************************************************************************
           *                CONVERTS THE CONTENTS A (HEX) TO ASCII CODE
           *                EXIT WITH Q EQUAL TO THE UPPER TWO CHARACTER AND
           *                A EQUAL TO THE LOWER TWO CHARACTER
           *                    USES B0 TRANSIENTLY.                             *
           ***************************************************************************
03B8 0000  CONASC   NUM     0                       *** HEX TO ASCII CONVERSION ***
03B9 0842           CLR     Q
03BA 4819           STQ*    CONV04
03BB 0FC4  CONV00   ALS     4
03BC 6031           STA-    HEXWORD                                           PTC2
03BD 0C0F           ENQ     $F
03BE 08B6           LAQ     A,Q                     MASK OFF HEX DIGIT.
03BF 0DF5           INQ     -$A
03C0 0172           SQM     CONV01-*-1              QNEG = 0 THRU 9, ADD $30.
03C1 0011           INQ     $11                     QPOS = A THRU F, ADD $41
03C2 0814           TRQ     A                                   TO THE DIFFERENCE.
03C3 0930  CONV01   INA     $30
03C4 E80F           LDQ*    CONV04
03C5 0FAF           QLS     15
03C6 0173           SQM     CONV02-*-1              CHECK CHARACTER POSITION-
03C7 0FC8           ALS     8                       COUNT EVEN = UPPER.
03C8 6232           STA-    ASCHD,Q                                           PTC2
03C9 1805           JMP*    CONV03
03CA F087  CONV02   ADQ-    H7FFF                   COUNT ODD = LOWER.
03CB 8232           ADD-    ASCWD,Q                 Q = 0 FOR 1ST WD, Q=1 FOR 2NPTC2
03CC 6232           STA-    ASCHD,Q                                           PTC2
03CD 0153           SQN     ENDCNV-*-1              SKIP OUT ON SECOND WORD.
03CE D805  CONV03   RAO*    CONV04              BUMB INDEX
03CF C031           LDA-    HEXWORD                                           PTC2
03D0 18EA           JMP*    CONV00
03D1 E032  ENDCNV   LDQ-    ASCWD                                             PTC2
03D2 1CE5           JMP*    (CONASC)                EXIT ROUTINE.
03D3 0000  CONV04   NUM     0                   INDEX

           ***************************************************************************
           *            DUAL BANK RELATIVE CORE POSITION TEST                        *
           *                EXIT WITH A=NEG IF A GREATER THAN Q ON ENTRY             *
```

```
                *                           A=POS IF Q = OR GREATER THAN A ON ENTRY   *
                *                              (A=0 IF A=Q ON ENTRY)                   *
                ************************************************************************
03D4 0000  AQPOS   NUM     0                        RELATIVE CORE POSITION  A , Q
03D5 0133          SAM     RP1-*-1
03D6 0163          SQP     RP2-*-1
03D7 0A01          ENA     1
03D8 1804          JMP*    RP3
03D9 0162  RP1     SQP     RP3-*-1
03DA 0864  RP2     TCA     A                        BOTH POS OR NEG.
03DB 0834          AAQ     A
03DC 1CF7  RP3     JMP*    (AQPOS)
                ************************************************************************
                *                                                                      *
                *                       STOPX PROCESSING ROUTINE                       *
                *                                                                      *
                ************************************************************************

03DD 0000  PRESTP  NUM     0
03DE D800          RAO     FLGSTP                   BUSY FLAG TO INT ERR REPORTEPTC2
03DF FE80
03E0 5800          RTJ     JUMPX                    CHECK FOR MONITOR STOP FIRST
03E1 FC6A
03E2 0B00          NOP     0
03E3 C8F9          LDA*    PRESTP
03E4 6804          STA*    STOPX
03E5 C800          LDA     JUMP1
03E6 FC71
03E7 1802          JMP*    STOPX+1                  GO INTO STOPX NOW FROM THE TEST


03E8 0000  STOPX   NUM     0
03E9 5800          RTJ     TTBUSY                   PRESERVE PRESENT STOPX ACTIVITY.
03EA 01C0
03EB E0FF          LDQ-    I                                       IREG,
03EC 486F          STQ*    ISAVE                                            AND
03ED 6874          STA*    BIAS                                                  AREG.
03EE C800          LDA     LASTVALUE                (MONITOR LWA+1)
03EF FC54
03F0 E8F7          LDQ*    STOPX
03F1 486B          STQ*    XSAVE                                                 PTC2
03F2 0D01          INQ     1                                                     PTC2
03F3 486A          STQ*    XSAVE+1                  USED BY A/Q TTY              PTC2
03F4 580F          RTJ*    AQPOS                    DETERMINE RELATIVE POSITION.
03F5 E800          LDQ     TSACTV
03F6 FC9A
03F7 0125          SAP     STOPX1-*-1               APOS = TEST ENTRY TO STOPX.
03F8 C000          LDA     =XERE100+1               ANEG = SMM ENTRY,
03F9 0D16
03FA 98ED          SUB*    STOPX                      CHECK FOR MBS CALL-
03FB 0101          SAZ     STOPX1-*-1                 AZERO= YES, USE TEST POINTER.
03FC 0C00          ENQ     0                        USRPNT INDEXES TEST LIST TABLES,
03FD 485B  STOPX1  STQ*    USRPNT                          = TSACTV IF TEST ENTRY.
```

```
1310  03FE 0151          SQN     1                       = ZERO IF SMM ENTRY.
1311  03FF 0C0B          ENQ     11
1312  0400 CA00          LDA     TSTJP-1,Q
      0401 FCAD
1313  0402 685D          STA*    SJX
1314  0403 E800          LDQ     MSTJP                   BRING UP MONITOR STJP
      0404 FC85
1315  0405 0195          SWN     STOPX3-*-1              MONITOR STOP
1316  0406 0FAF          QLS     15                      YES
1317  0407 0172          SQN     STOPX2-*-1              IS MSTJP BIT0 SET
1318  0408 F800          ADQ     BIT15                   NO SET IT.
      0409 FC70
1319  040A 0FA1  STOPX2  QLS     1
1320  040B 0864  STOPX3  TCA     A                       LOGICAL
1321  040C 0852          TCQ     Q                         OR
1322  040D 08F4          CAQ     A                           OPERATION
1323  040E 684C          STA*    MTSTJP
1324  040F EC4E          LDQ*    (XSAVE+1)               LOAD ENTRY ID,
1325  0410 C84F          LDA*    SJX
1326  0411 A000          AND     =N$0200                 BIAS RTA-
      0412 0200
1327  0413 0113          SAN     STOPX4-*-1              AZERO = YES.
1328  0414 C8D3          LDA*    STOPX
1329  0415 984C          SUB*    BIAS                    UNBIAS RTA.
1330  0416 0121          SAP     STOPX5-*-1              (RESULT NEGATIVE FOR MBS
1331  0417 C8D0  STOPX4  LDA*    STOPX                       ENTRIES. USE ENTRY VALUE).
1332  0418 6848  STOPX5  STA*    RTA
1333  0419 0D10          INQ     $10                     ENTRY ID PLUS ONE STOP.
1334  041A 0A0E          ENA     $E
1335  041B 0884          LAQ     A                       (PREPARE DATA INDEX FLAG)
1336  041C 0112          SAN     2
1337  041D 6844          STA*    BIAS
1338  041E 1802          JMP*    STOPX6
1339  041F 0D10          INQ     $10                     NO. ADDITIONAL STOP NECESSARY.
1340  0420 483E  STOPX6  STQ*    ID                      AMENDED ID TO BE REPORTED.
1341  0421 C839          LDA*    MTSTJP
1342  0422 A000          AND     =N$100
      0423 0100
1343  0424 6835          STA*    OMITTO                  PREPARE OMIT-TYPEOUT FLAG.
1344  0425 0F24          QRS     4
1345  0426 0A0F          ENA     $F
1346  0427 0884          LAQ     A
1347  0428 6856          STA*    STOPCNT                 STOPCNT = DATA PAIR COUNT (A/Q).
1348  0429 0864          TCA     A
1349  042A 6855          STA*    NEGCNT                  NEGCNT = COMPLEMENT OF STOPCNT.
1350  042B 6855          STA*    AQCNT                   AQCNT = ACTUAL STOPS TO BE MADE.
1351  042C E82D          LDQ*    OMITTO

1353  042D 0A03  CKID    ENA     3                       DECIDE STOP TYPE.  (1,2,4, OR 8)
1354  042E A830          AND*    ID
1355  042F 0107          SAZ     ID48-*-1                SKIP IF END-OF-TEST OR ERROR.
1356  0430 A82A          AND*    MTSTJP
1357  0431 09FE          INA     -1
```

```
1358  0432 0106          SAZ     ID1-*-1          SKIP IF PARAM STOP
1359  0433 013F          SAM     CKSJ48-*-1       SKIP IF S/J BIT NOT SET.
1360  0434 0154          SQN     ID1-*-1          OTHERWISE = END-OF-SECTION STOP.
1361  0435 0CFE          ENQ     -1               (ONLY ONE ACTUAL STOP
1362  0436 1802          JMP*    ID2                UNLESS OMIT TYPEOUT SET)
1363  0437 015B  ID48    SQN     CKSJ48-*-1       OMIT TYPEOUT SET-  (STOP 4 OR 8)
1364  0438 4848  ID2     STQ*    AQCNT            NO. AQTTY PREPARES TYPEOUT DATA.
1365  0439 5829  ID1     RTJ*    AQTTY            (DISPLAY/ENTRY, ASCII DATA PREP)
1366  043A 011F          SAN     SKPXIT-*-1       SKIP TO EXIT IF STOP1,2 + OMITTO
1367  043B 5800          RTJ     STPTYP           GO TO STOPX TYPEOUT ROUTINE.
      043C 008D
1368  043D 0A01          ENA     1
1369  043E 6840          STA*    STOPCNT          PREPARE FOR SINGLE,
1370  043F 0864          TCA     A                      STJP ENTRY STOP,
1371  0440 683F          STA*    NEGCNT                       RE-TYPE ON CHANGE.
1372  0441 683F          STA*    AQCNT
1373  0442 014D          SQZ     STPEXIT-*-1    (BYPASS STOP AFTER CORE MOD RE-START)
1374  0443 0A0C  CKSJ48  ENA     $C
1375  0444 A81A          AND*    ID
1376  0445 A815          AND*    MTSTJP
1377  0446 0109          SAZ     STPEXIT-*-1      SKIP = ERROR OR EOT STOP NOT SET
1378  0447 5800          RTJ     TTBUSY           (COMPLETE TYPEOUT BEFORE STOP)
      0448 0162
1379  0449 5819          RTJ*    AQTTY            GO TO A/Q/TTY FOR STOP.
1380  044A 0115  SKPXIT  SAN     STPEXIT-*-1      (A=OMIT TYPEOUT FLAG ON RETURN)
1381  044B C000          LDA-    0                OMIT TYPEOUT NOT SET,
1382  044C 0000  NEWSJ   NUM     0                      CHECK FOR STOP/JUMP
1383  044D 8812          EOR*    SJX                          PARAMETER CHANGE.
1384  044E 0101          SAZ     STPEXIT-*-1      SKIP IF NO CHANGE.
1385  044F 587A          RTJ*    STPTYP           TYPE NEW PARAMETER
1386  0450 C808  STPEXIT LDA*    ISAVE
1387  0451 60FF          STA-    I                RESTORE
1388  0452 E800          LDQ     JUMP3
      0453 FC05
1389  0454 0844          CLR     A                              CLR STOPX BUSY FLAG.
1390  0455 6800          STA     FLGSTP
      0456 FE09
1391  0457 1C90  ENDSTP  JMP*    (STOPX)          EXIT STOP ROUTINE                PTC2

1393  0458 0000  USRPNT  NUM     0                INDEX TO TEST LIST TABLES.
1394  0459 0000  OMITTO  NUM     0                FLAG=0, OMIT TYPEOUTS NOT SET.
1395  045A 0000  MTSTJP  NUM     0                PSUEDO STOPO JUMP PARAM.
1396  045B 0000  ISAVE   NUM     0                I ON ENTRY
1397  045C 0000  XSAVE   NUM     0                RETURN ADDR OF STOPX ENTRY RTJ.
1398  045D 0000          NUM     0                RETURN ADDRESS+1 OF ENTRY RTJ.
1399  045E 0000  ID      NUM     0                IDENTITY OF STOPX INSTIGATOR.
1400  045F 0000  SJX     NUM     0                STOP/JUMP PARAM OF INSTIGATOR.
1401  0460 0000  RTA     NUM     0                RETURN ADDR OF STOPX INSTIGATOR.
1402  0461 0000  BIAS    NUM     0                LISTING, LOADED ADDR DIFFERENCE.

1404  0462 0000  AQTTY   NUM     0                A/Q DISPLAY/ENTRY,
1405  0463 C0E1          LDA-    STOP8FR              TYPEOUT DATA PREP.
1406  0464 981A          SUB*    STOPCNT          (TYPEOUT BFR MINUS TWO TIMES
```

```
1407  0465 9819          SUB*    STOPCNT          STOP COUNT = DATA BFR FWA)
1408  0466 685E          STA*    BFR1
1409  0467 685E          STA*    BFR2
1410  0468 8860          ADD*    S7FFF            LIGHT OVERFLOW LAMP ON 1ST STOP.
1411  0469 885F          ADD*    S7FFF            (FOR 65K ASSURANCE)
1412  046A 0500  AQ1     IIN     0
1413  046B 080C          TRM     A                DISPLAY CURRENT M-REG AT
1414  046C 0113          SAN     AQ1A-*-1           1ST STOP.  USE SYSTEM
1415  046D C800          LDA     SETMASK            MASK FOR M.C. START
      046E FBD3
1416  046F 0821          TRA     M                  FROM TEST FWA
1417  0470 C8ED  AQ1A    LDA*    ID
1418  0471 E8ED          LDQ*    SJX
1419  0472 5839          RTJ*    CKAQ             CHECK FOR A/Q STOP, TTY INPUT.
1420  0473 6C51          STA*    (BFR1)           1ST DATA BFR WORD = ID.
1421  0474 0850          RAO*    BFR1
1422  0475 4C4F          STQ*    (BFR1)           2ND DATA BFR WORD = STJP.
1423  0476 D84E          RAO*    BFR1
1424  0477 A800  CKIDNM  AND     =N$FF00
      0478 FF00
1425  0479 0FF0          LLS     16
1426  047A 4000          STQ-    0
1427  047B 0000  IDSAVE  NUM     0
1428  047C 68CF          STA*    NEWSJ
1429  047D 1804          JMP*    SINGLE           PLUG STJP INTO TEST OR SMM STJP

1431  047E 0000  STOPCNT NUM     0                DATA PAIR COUNT.
1432  047F 0000  NEGCNT  NUM     0                COMPLEMENT OF STOPCNT.
1433  0480 0000  AQCNT   NUM     0                ACTUAL AQ STOP COUNT.

1435  0481 E8D6  SINGLE  LDQ*    USRPNT           (USRPNT POINTS TO STOPX USER)
1436  0482 0142          SQZ     2                SKIP IF USER IS SMM.
1437  0483 6800  SJPARAM STA     STJP             (ACTIVE TEST:S STJP PARAM)
      0484 FBBE
1438  0485 015F          SQN     SCAN4-*
1439  0486 E8F4          LDQ*    IDSAVE
1440  0487 014C          SQZ     SCAN4-*-1        IS ID = SMM
1441  0488 68D6          STA*    SJX              NI CHANGE TEST STJP
1442  0489 0C0A          ENQ     10
1443  048A CA00  SCANID  LDA     TSFREQ-1,Q
      048B FC05
1444  048C A8E8          AND*    CKIDNM+1
1445  048D B8ED          EOR*    IDSAVE
1446  048E 0103          SAZ     SCAN2-*-1        SKIP IF THIS IS THE TEST
1447  048F 0147          SQZ     NEWMASK-*-1      SKIP IF LIST HAS BEEN EXAUSTED
1448  0490 0DFE          INQ     -1
1449  0491 18F8          JMP*    SCANID
1450  0492 C8CC  SCAN2   LDA*    SJX
1451  0493 1802          JMP*    SCAN4+1
1452  0494 0C08  SCAN4   ENQ     11
1453  0495 6A00          STA     TSTJP-1,Q        STORE IN USER:S STJP TABLE ENTRY
      0496 FC18
1454  0497 0400  NEWMASK EIN     0
```

```
1455  0498 01A0          SOV     0               (TURN OFF OVERFLOW LIGHT)
1456  0499 C8C7  AQ2     LDA*    BIAS            NOT PARAMETER ENTRY
1457  049A 0105          SAZ     PARDAT-*-1      RTA SUPPLIED BY USER-
1458  049B 5818          RTJ*    CKCOUNT         NO, USE RTA FORMED BY STOPX.
1459  049C CDC0          LDA*    (XSAVE+1),I
1460  049D E8C2          LDQ*    RTA
1461  049E 5800          RTJ*    CKAQ
1462  049F 1807          JMP*    PD1
1463  04A0 5816  PARDAT  RTJ*    CKCOUNT         CONTINUE PARAMETER/DATA CYCLE
1464  04A1 CDBA          LDA*    (XSAVE),I               FOR REMAINDER OF COUNT.
1465  04A2 EDBA          LDQ*    (XSAVE+1),I
1466  04A3 5808          RTJ*    CKAQ
1467  04A4 4DB8          STQ*    (XSAVE+1),I
1468  04A5 6DB6          STA*    (XSAVE),I
1469  04A6 6C1E  PD1     STA*    (BFR1)
1470  04A7 D81D          RAO*    BFR1
1471  04A8 4C1C          STQ*    (BFR1)
1472  04A9 D81B          RAO*    BFR1
1473  04AA 18F5          JMP*    PARDAT


1476  04AB 0000  CKAQ    NUM     0               CHECK AQ COUNT FOR STOP.
1477  04AC 6804          STA*    CKAQA
1478  04AD C8D2          LDA*    AQCNT
1479  04AE 0133          SAM     AQSTP-*-1       ANEG = REGISTER DISPLAY/ENTRY.
1480  04AF C000          LDA-    0               APOS = NO STOP. CONTINUE AQTTY
1481  04B0 0000  CKAQA   NUM     0                  FOR TYPEOUT DATA PREPARATION.
1482  04B1 1CF9          JMP*    (CKAQ)
1483  04B2 C8FD  AQSTP   LDA*    CKAQA
1484  04B3 5800          RTJ     INTTY           DISPLAY ENTRY VIA A/Q OR TTY.
      04B4 02CD
1485  04B5 1CF5  RTAQ    JMP*    (CKAQ)

1487  04B6 0000  CKCOUNT NUM     0               UPDATE COUNTERS,
1488  04B7 D8C7          RAO*    NEGCNT               MAKE AQTTY TERMINATION,
1489  04B8 D8C7          RAO*    AQCNT                     CONTINUATION DECISION.
1490  04B9 C8C5          LDA*    NEGCNT
1491  04BA 0107          SAZ     ENDAQ-*-1
1492  04BB 88C2          ADD*    STOPCNT
1493  04BC 0FC1          ALS     1               (PAIR COUNT DOUBLED=DATA INDEX)
1494  04BD E8A3          LDQ*    BIAS            DECREMENT DATA INDEX
1495  04BE 0141          SQZ     1                  IF RTA NOT SUPPLIED BY USER.
1496  04BF 09FE          INA     -1
1497  04C0 60FF          STA-    I
1498  04C1 1CF4          JMP*    (CKCOUNT)
1499  04C2 C896  ENDAQ   LDA*    OMITTO          RETURN FROM AQTTY WITH
1500  04C3 1C9E          JMP*    (AQTTY)                AREG = OMIT TYPEOUT FLAG.

1502  04C4 0000  BFR1    NUM     0               TYPEOUT DATA BUFFER.
1503  04C5 0000  BFR2    NUM     0               BFR1 RESET POINTER.
1504  04C6 0000  BFRB4L  NUM     0               BFR1 COUNT TO LINE UPDATE.
1505  04C7 FFFF  LASTID  NUM     -0              PREVIOUS ENTRY ID.
1506  04C8 7FFF  S7FFF   NUM     $7FFF
```

```
1508  04C9 0000  STPTYP  NUM     0              FORM STOPX BUFFER
1509  04CA 0C00          ENQ     0                    FOR MESSAGE ROUTINE.
1510  04CB 40FF          STQ-    I              (RESET STOPBFR INDEX,
1511  04CC C8F8          LDA*    BFR2                 DATA BFR POINTER)
1512  04CD 68F6          STA*    BFR1
1513  04CE E88F          LDQ*    ID
1514  04CF C8F7          LDA*    LASTID
1515  04D0 0874          EAQ     A
1516  04D1 0109          SAZ     JTYPL-*-1
1517  04D2 68F4          STA*    LASTID
1518  04D3 0A00          ENA     0              FORMAT MESSAGE
1519  04D4 584E          RTJ*    MESSAGE           WITH INITIAL CARRIAGE RETURN.
1520  04D5 C8F1          LDA*    LASTID
1521  04D6 A000          AND     =N$FF00
      04D7 FF00
1522  04D8 E885          LDQ*    ID
1523  04D9 48ED          STQ*    LASTID
1524  04DA 0111          SAN     TYPAQX-*-1
1525  04DB 181B  JTYPL   JMP*    TYPLINE
1526  04DC E81B  TYPAQX  LDQ*    S8D0A
1527  04DD 45E1          STQ-    (STOPBFR),I
1528  04DE D0FF          RAO-    I
1529  04DF E89E          LDQ*    STOPCNT
1530  04E0 0852          TCQ     Q
1531  04E1 489D          STQ*    NEGCNT
1532  04E2 0A01  AQX     ENA     1
1533  04E3 A0FF          AND-    I              (I = STOPBFR POINTER)
1534  04E4 E806          LDQ*    S2020
1535  04E5 0D21          INQ     $21            FORM AX ASCII CODE.
1536  04E6 0112          SAN     AQX1-*-1        POINTER EVEN
1537  04E7 0D10          INQ     $10            AZERO = YES, FORM QX, UPDATE X.
1538  04E8 D896          RAO*    NEGCNT
1539  04E9 8000  AQX1    ADD-    0
1540  04EA 2020  S2020   NUM     $2020
1541  04EB 8892          ADD*    STOPCNT        FORM THE X OF AX, QX.
1542  04EC 8892          ADD*    NEGCNT         (ODD/EVEN BIT PLUS STOP/NEGCNT)
1543  04ED 0910          INA     $10
1544  04EE 0FC8          ALS     8
1545  04EF 581E          RTJ*    BLOBFR         STORE Q, A, $2020 IN STOPBFR.
1546  04F0 E88E          LDQ*    NEGCNT
1547  04F1 0144          SQZ     TYPLINE-*-1    END AX/QX HEADING,
1548  04F2 F888          ADQ*    STOPCNT           IF X = STOPCNT.
1549  04F3 0DF9          INQ     -6                      OR X = 6.
1550  04F4 0141          SQZ     TYPLINE-*-1
1551  04F5 18EC          JMP*    AQX
1552  04F6 E000  TYPLINE LDQ-    0
1553  04F7 8D0A  S8D0A   NUM     $8D0A          CARRIAGE RETURN,
1554  04F8 45E1          STQ-    (STOPBFR),I       LINE FEED,
1555  04F9 D0FF          RAO-    I                       AND UPDATE POINTER
1556  04FA 0AF3          ENA     -12
1557  04FB 68CA          STA*    BFRB4L         DATA COUNT BEFORE NEXT TYPE LINE
1558  04FC C8C7  DATA    LDA*    BFR1
```

```
1559  04FD 90E1          SUB-    STOPBFR
1560  04FE 010A          SAZ     ENDBFR-*-1          EXIT STOPBFR PREP ON END OF DATA
1561  04FF E8C6          LDQ*    BFRB4L
1562  0500 0151          SQN     DATA1-*-1           ENTER CARRIAGE RETURN, LINE FEED
1563  0501 18F4          JMP*    TYPLINE                   FOR EACH 12 WORDS OF DATA.
1564  0502 D8C3  DATA1   RAO*    BFRB4L
1565  0503 CCC0          LDA*    (BFR1)
1566  0504 D8BF          RAO*    BFR1
1567  0505 5800          RTJ     CONASC              CONVERT DATA TO TYPEWRITER CODES
      0506 FEB1
1568  0507 5806          RTJ*    BLDBFR              ENTER CODED DATA IN STOPBFR.
1569  0508 18F3          JMP*    DATA                REPEAT UNTIL END OF DATA.
1570  0509 E0FF  ENDBFR  LDQ-    I                   (I = WORD COUNT)
1571  050A C0E1          LDA-    STOPBFR
1572  050B 5817          RTJ*    MESSAGE             OUTPUT STOPX BUFFER.
1573  050C 1CBC          JMP*    (STPTYP)

1575  050D 0000  BLDBFR  NUM     0                   BUILD CODED BUFFER
1576  050E 45E1          STQ-    (STOPBFR),I             FOR MESSAGE ROUTINE
1577  050F D0FF          RAO-    I
1578  0510 65E1          STA-    (STOPBFR),I     STORE Q REG,
1579  0511 D0FF          RAO-    I                         AREG,
1580  0512 C8D7          LDA*    S2020                           AND SPACES.
1581  0513 65E1          STA-    (STOPBFR),I
1582  0514 D0FF          RAO-    I
1583  0515 1CF7          JMP*    (BLDBFR)
```

```
1585                ********************************************************************************
1586                *
1587                *                          MESSAGE TYPEOUT ROUTINE
1588                *                  ENTER WITH A= INITIAL ADDRESS OF DATA BLOCK
1589                *                              Q= NUMBER OF WORDS FOR OUTPUT
1590                *
1591                *
1592                *                                      N O T E
1593                *
1594                *        NON INTERRUPT PORTION OF THIS ROUTINE MUST BE
1595                *                  R U N  A N Y W H E R E
1596                *
1597                ********************************************************************************


1599  0516 0000     TTYPE     NUM       0               ENTRY FOR MSG OUTPUT FROM TTYINPUT OR
1600  0517 D800               RAO       FLGMSG          SET BUSY FLAG FOR INT ERROR
      0518 FD48
1601  0519 6800               STA       TEMPLOC
      051A FBB9
1602  051B C8FA               LDA*      TTYPE
1603  051C 6806               STA*      MESSAGE
1604  051D 0844               CLR       A
1605  051E 68F7               STA*      TTYPE
1606  051F C800               LDA       TEMPLOC
      0520 FBB3
1607  0521 1805               JMP*      MESSAO


1609  0522 0450     MESSAGE   ADC       STPEXIT  (FOR SHMCNT BIT15 + MSTJP BIT09 POSSIBILITY)
1610  0523 D800               RAO       FLGMSG                FLAG BUSY TO INT ERROR REPORTER.
      0524 FD3C
1611  0525 D8F0               RAO*      TTYPE                 NONZERO ENTRY AS A FLAG
1612  0526 5800     MESSAO    RTJ       TTBUSY                PRESERVE MSG ACTIVITY
      0527 0083
1613  0528 D800               RAO       INFORM                SET TTY BUSY SWITCH
      0529 FB1F
1614  052A 687B               STA*      ADDR
1615  052B 0844               CLR       A
1616  052C 0163               SQP       3                  SKIP IF THIS IA A FULL MESSAGE
1617  052D 0FA1               QLS       1
1618  052E 0F21               QRS       1                  DROP BIT 15 FLAG IN WORD COUNT
1619  052F 0901               INA       1
1620  0530 6879               STA*      TTYMSG             SET OR CLEAR LP DRIVER FLAG
1621  0531 C874               LDA*      ADDR               RESTORE A REG
1622  0532 0111               SAN       NOTFORM-*-1
1623  0533 0C01               ENQ       1
1624  0534 0852     NOTFORM   TCQ       Q                     (COMPLEMENT WORD COUNT)
1625  0535 4871               STQ*      CNTNUM
1626  0536 E8EB               LDQ*      MESSAGE
1627  0537 5800               RTJ       LDSTJP                (LOAD APPROPRIATE STOP/JUMP WD)
      0538 FB2A
```

```
1628  0539 0FC7          ALS     7
1629  053A 0121          SAP     1               OMITT TYPE-OUT SET
1630  053B 1833          JMP*    MESSA3          YES
1631  053C C800          LDA     SMMCNT          GET SMM PARAMETER
      053D F818
1632  053E A800          AND     BIT10           CHECK IF PRINTER SELECTED
      053F F835
1633  0540 0104          SAZ     NOTFM1        SKIP TO TTY OUTPUT
1634  0541 C8D4          LDA*    TTYPE         GET POSSIBLE TTY INPUT PACKAGE RTN ADD
1635  0542 0102          SAZ     NOTFM1        IF RTN ADDR    ZERO, USE TTY
1636  0543 1800          JMP       DR42                IF NON ZERO, USE LINEPRINTER
      0544 03C6
1637  0545 E862  NOTFM1  LDQ*    MESS
1638  0546 02FE          INP     -1              STATUS
1639  0547 0FCE          ALS     14
1640  0548 0121          SAP     1               WAIT NOT BUSY
1641  0549 18FC          JMP*    *-3
1642  054A C000          LDA     =N$400
      054B 0400
1643  054C 0300          OUT     0               SELECT (K) MODE
1644  054D 0F42          ARS     2
1645  054E 03FE          OUT     -1              SELECT WRITE MODE
1646  054F C856          LDA*    ADDR
1647  0550 0113          SAN     MESS0-*
1648  0551 C857          LDA*    H8D0A           (AZERO = LINE FEED,
1649  0552 0DFE          INQ     -1
1650  0553 1812  MESS0   JMP*    MESSA2+1                  CARRIAGE RETURN ENTRY)
1651  0554 C800          LDA     SMMCNT
      0555 F800
1652  0556 0FCA          ALS     10
1653  0557 0138          SAM     MESSA1-*-1      NO INTERRUPTS
1654  0558 080C          TRM     A
1655  0559 A800          AND     BIT01           IS LEVEL 1 INT. ENABLED
      055A F811
1656  055B 0107          SAZ     MESSA1-*-1      NO, USE NON-INT. MODE TYPEOUT
1657  055C 0804          SET     A
1658  055D 6847          STA*    MESS6
1659  055E 6845          STA*    INTACT          INDICATE INTERRUPT MODE ACTIVE.
1660  055F 0A04          ENA     4               SELECT DATA INTERRUPTS
1661  0560 03FE          OUT     -1              FUNCTION MAY REJECT
1662  0561 0400          EIN     0
1663  0562 1811          JMP*    MESSA4

1665  0563 0DFE  MESSA1  INQ     -1
1666  0564 CC41  MESSA2  LDA*    (ADDR)
1667  0565 0FC8          ALS     8
1668  0566 03FE          OUT     -1
1669  0567 0FC8          ALS     8
1670  0568 03FE          OUT     -1
1671  0569 D83D          RAO*    CNTNUM
1672  056A D838          RAO*    ADDR
1673  056B C838          LDA*    CNTNUM
```

```
1674  056C 0101          SAZ     1               LAST WORD OUTPUT
1675  056D 18F6          JMP*    MESSA2          NO
1676  056E 0AFE  MESSA3  ENA     -1
1677  056F A800          AND     INFORM          CLEAR TTY BUSY SWITCH
      0570 FAD8
1678  0571 6800          STA     INFORM
      0572 FAD6
1679  0573 0844  MESSA4  CLR     A
1680  0574 6800          STA     FLGMSG          CLR REPORTER FLAG.
      0575 FCEB
1681  0576 1CAB  ENDMES  JMP*    (MESSAGE)
1682  0577 0000  MESSIN  NUM     $0
1683  0578 E82F  MESS1C  LDQ*    MESS            NO
1684  0579 0223          INP     MESS4-*-1       INPUT STATUS
1685  057A A076          AND-    BIT11           MANUAL INTERRUPT
1686  057B 0104          SAZ     MESS1A-*-1
1687  057C 0A02          ENA     2               YES
1688  057D 03FE          OUT     -1              CLEAR MANUAL INT
1689  057E 540D          RTJ-    (MANUALINT)     GO TO MANUAL INT ROUTINE
1690  057F 181A          JMP*    MESS2A
1691  0580 C826  MESS1A  LDA*    CNTNUM
1692  0581 0119          SAN     MESS1B-*-1      ALLOWS ONE EXTRA INTERRUPT SO TH
1693                     *                       THE TELETYPE IS NOT BUSY WHEN
1694                     *                       THE INTERRUPT IS CLEARED
1695  0582 0A02          ENA     $2              CLEAR DATA INT
1696  0583 03FE          OUT     -1              FUNCTION MAY REJECT
1697  0584 0500  MESS3   IIN     0
1698  0585 0844          CLR     A
1699  0586 681D          STA*    INTACT          CLEAR INT MODE ACTIVE FLAG
1700  0587 0AFE          ENA     -1
1701  0588 A049          AND-    INFORM
1702  0589 6049          STA-    INFORM          CLEAR TTY BUSY SWITCH
1703  058A 180F          JMP*    MESS2A          RETURN TO SMM INT ROUTINE.
1704  058B 0DFE  MESS1B  INQ     -1
1705  058C C818          LDA*    MESS6
1706  058D 0104          SAZ     MESS1-*-1       FIRST CHAR OF WORD
1707  058E CC17          LDA*    (ADDR)          YES
1708  058F 0FC8          ALS     8
1709  0590 030C          OUT     MESS4-*-1
1710  0591 1805          JMP*    MESS2
1711  0592 CC13  MESS1   LDA*    (ADDR)          OUTPUT LAST CHAR OF WORD
1712  0593 0309          OUT     MESS4-*-1
1713  0594 D811          RAO*    ADDR
1714  0595 D811          RAO*    CNTNUM
1715  0596 C80E  MESS2   LDA*    MESS6           COMPLEMENT CHAR SWITCH
1716  0597 0864          TCA     A
1717  0598 680C          STA*    MESS6
1718  0599 0C04  MESS2A  ENQ     4               LOAD EXIT STATE VALUE.
1719  059A 0400          EIN     0
1720  059B 1CDB          JMP*    (MESSIN)        RETURN SMM INT ROUTINE


1722  059C 0800          NOP     0
```

```
1723  059D CC04  MESS4    LDA*     (XREPORT)
1724  059E 0113           SAN      XREPORT-*          SKIP REPORT IF REPORTER BUSY
1725  059F 0A06           ENA      DATAREJ            (ERROR CODE)
1726  05A0 5400           RTJ-     (0)                REPORT REJECT.
1727  05A1 0246  XREPORT  ADC      REPORT
1728  05A2 18E1           JMP*     MESS3
1729  05A3 0000  INTACT   NUM      $0                 INTERRUPT MODE ACTIVE SWITCH
1730  05A4 FFFF  MESS6    NUM      -$0                CHAR SWITCH
1731  05A5 0000  ADDR     NUM      $0
1732  05A6 0000  CNTNUM   NUM      $0
1733  05A7 0091  MESS     NUM      $91                EQUIPMENT ADDRESS FOR TELETYPE
1734  05A8 8D0A  H8D0A    NUM      $8D0A              ASCII CODE FOR TTY CR, LF.
1735  05A9 0000  TTYMSG   NUM      0                MULTI-PART MESSAGE FLAG
1736               *                                  =1 IF CALL IS ONLY A PARTIAL MSG
1737               *                                  =0 IF CALL IS A COMPLETE MSG

1739  05AA 0000  TTBUSY   NUM      0                  TEST TELETYPE BUSY SWITCH
1740  05AB 6808           STA*     TYBZYA
1741  05AC 0A01           ENA      1                  LOOP UNTIL NOT BUSY
1742  05AD A800           AND      INFORM
      05AE FA9A
1743  05AF 0101           SAZ      1                  BUSY
1744  05B0 18FC           JMP*     TTBUSY+3           YES.
1745  05B1 C802           LDA*     TYBZYA
1746  05B2 1CF7           JMP*     (TTBUSY)           NO  EXIT
1747  05B3 0000  TYBZYA   NUM      0

1749               ********************************************************************
1750               *
1751               *                      RANDOM NUMBER GENERATOR
1752               *                  ENTER ROUTINE WITH-
1753               *                       Q= NUMBER OF WORDS TO BE GENERATED
1754               *                       A= FWA OF STORAGE AREA
1755               *
1756               ********************************************************************

1758  05B4 0000  GENRAN   NUM      0
1759  05B5 60C2           STA-     B7                 (PRODUCT ADDRESS)
1760  05B6 0852           TCQ      Q
1761  05B7 40C1           STQ-     B6                 (COMPLEMENT WORD COUNT)
1762  05B8 C816  GENMORE  LDA*     R1
1763  05B9 2814           MUI*     R
1764  05BA 60C0           STA-     B5
1765  05BB 40BF           STQ-     B4
1766  05BC 0FE8           LLS      8
1767  05BD 09AA           INA      -$55
1768  05BE 6810           STA*     R1
1769  05BF 00C9           INQ      -$36
1770  05C0 480D           STQ*     R
1771  05C1 0C02           ENQ      2
1772  05C2 C2BE  STMORE   LDA-     B4-1,Q
```

```
1773  05C3 64C2          STA-    (B7)
1774  05C4 D0C2          RAO-    B7
1775  05C5 D8C1          RAO-    B6
1776  05C6 C0C1          LDA-    B6
1777  05C7 0111          SAN     GEN1-*-1
1778  05C8 1CEB          JMP*    (GENRAN)          NO  ALL NUMBERS HAVE BEEN GENERA
1779  05C9 0DFE  GEN1    INQ     -1
1780  05CA 0151          SQN     1
1781  05CB 18EC          JMP*    GENMORE           GENERATE 3 MORE NUMBERS
1782  05CC 18F5          JMP*    STMORE            STORE ONE MORE NUMBER
1783  05CD 7FFF  R       NUM     $7FFF
1784  05CE ABAD  R1      NUM     $ABAD


1786                     ********************************************************************
1787                     *                                                                  *
1788                     *                      LOAD OVERLAY ROUTINE                        *
1789                     *                  ENTER WITH AREG = OVERLAY NUMBER                *
1790                     *                                                                  *
1791                     ********************************************************************

1793  05CF 0000  OVERLAY NUM     0
1794  05D0 E091          LDQ-    TSACTV            POINTS TO TEST MAKING CALL
1795  05D1 E291          LDQ-    TSFREQ-1,Q
1796  05D2 0FE8          LLS     8                 RESULTING AREG = 0VXX, WHERE
1797  05D3 60BC          STA-    B1                XX = TEST, V = OVERLAY NUMBER
1798  05D4 B04A          EOR-    LASTOV
1799  05D5 0116          SAN     OVRLA1-*-1        SKIP FOR SEARCH IF LIB NOT
1800  05D6 60BC          STA-    B1                  POSITIONED FOR IMMEDIATE LOAD.
1801  05D7 60BE          STA-    B3                CLEAR ERROR FLAG ON ENTRY   PTC2
1802  05D8 C000          LDA     =XOVRLA1+1
      05D9 05DD
1803  05DA 6848          STA*    LOCONT
1804  05DB 181D          JMP*    OVRBL2
1805  05DC 542C  OVRLA1  RTJ-    (PRGLOAD)         SEARCH AND LOAD OVERLAY.
1806  05DD 0131          SAM     OVRLD1-*-1        ANEG = SUCCESSFUL LOAD.
1807  05DE D8F0          RAO*    OVERLAY           TERMINAL ERROR ENCOUNTERED.
1808  05DF 1CEF  OVRLD1  JMP*    (OVERLAY)         RETURN TO CALLER AT P+2 ON ERROR
1809  05E0 0842  LDRCHK  CLR     Q
1810  05E1 C056          LDA-    SMMCNT
1811  05E2 A079          AND-    BIT14
1812  05E3 0105          SAZ     LOADNX-*-1        NOT DP OR CART DISK
1813  05E4 C056          LDA-    SMMCNT
1814  05E5 A077          AND-    BIT12             CHECK FOR CART DISK
1815  05E6 0113          SAN     CDDSK-*-1         CART DISK LDR
1816  05E7 4800          STQ     DPNAML            DISK PACK - CLEAR ADDRESS WORD
      05E8 00F1
1817  05E9 183A  LOADNX  JMP*    LOADRBD           LOAD NEXT BLOCK
1818  05EA 4800  CDDSK   STQ     CDPNAM            CLEAR CART DISK ADDRESS WORD
      05EB 00EE
1819  05EC 18FC          JMP*    LOADNX
```

```
1821  05E0 0C02  OVRBLK  ENQ     2                 OVERLAY MARKER BLOCK READ.
1822  05EE E646          LDQ-    (INBI1),Q         RECORD LIBRAY POSITION
1823  05EF 4048          STQ-    OVFWA                WITH OVERLAY DATA FWA.
1824  05F0 0C01          ENQ     1                       OVERLAY/TEST NUMBERS.
1825  05F1 E646          LDQ-    (INBI1),Q
1826  05F2 404A          STQ-    LASTOV
1827  05F3 0111          SAN     OVRBL1-*-1        AZERO = LOAD OPERATION
1828  05F4 181F          JMP*    XFRBLK                  CONSIDER OVRBLK AS XFRBLK.
1829  05F5 804A  OVRBL1  EOR-    LASTOV
1830  05F6 0101          SAZ     OVRBL2-*-1        SKIP ON COMPARE, OR
1831  05F7 182C          JMP*    LOADRBD            CONTINUE SEARCH.
1832  05F8 C045  OVRBL2  LDA-    LASTAD
1833  05F9 09FE          INA     -1
1834  05FA 60C0          STA-    B5                SAVE LASTAD. RESTORED IN XFRBLK
1835  05FB E091          LDQ-    TSACTV            POINTS TO TEST IN CONTROL
1836  05FC C2A5          LDA-    TSIAAD-1,Q        RELOCATION FACTOR
1837  05FD 6045          STA-    LASTAD            USED FOR RELOCATION IN RBDBLK
1838  05FE E048          LDQ-    OVFWA             UNBIASED OVRLAY FWA-TEST LENGTH.
1839  05FF 0832          AAQ     Q
1840  0600 40B0          STQ-    B2                BIASED FWA OF OVERLAY AREA.
1841  0601 0842          CLR     Q
1842  0602 40C2          STQ-    B7
1843  0603 1806          JMP*    TSTFND

1845  0604 0844  TSTCLR  CLR     A
1846  0605 0DFE          INQ     -1
1847  0606 66B0          STA-    (B2),Q            CLEAR LOAD AREA.
1848  0607 0141          SQZ     1
1849  0608 18FC          JMP*    TSTCLR+1
1850  0609 40BC  TSTFND  STQ-    B1          INDICATE      TEST      FOUND
1851  060A 180F          JMP*    CKFLAGS           REPORT ANY RECORD LOAD ERRORS.


1853  060B 0117  ILLBLK  SAN     XFRBLK-*-1        IGNORE ERROR ON SEARCH OPERATION
1854  060C E446          LDQ-    (INBI1)           PREPARE STOP INFO-
1855  060D C0BE          LDA-    B3                   A3 = BLOCK ID (FIRST WORD)
1856  060E 60C1          STA-    B6                   Q3 = LOAD ERROR CODE IF ANY.
1857  060F 0A11          ENA     ILLRBD            (ERROR CODE)
1858  0610 40BF  ST87B3  STQ-    B4
1859  0611 60BE          STA-    B3                FLAG ERROR WITH CODE.
1860  0612 1806          JMP*    CKFLAGS-1         REPORT ERROR, TERMINATE LOAD.


1862  0613 011F  XFRBLK  SAN     LOADRBD-*-1       AZERO = LOAD OPERATION, XFRBLK
1863  0614 C0C0          LDA-    B5                  IS RBD LOAD TERMINATING BLOCK.
1864  0615 0901          INA     1                 (PROJECTED TEST LWA +1)
1865  0616 6045          STA-    LASTAD            RESET TEST LOAD AREA FWA.
1866  0617 0804          SET     A
1867  0618 60C2          STA-    B7                SET TERMINATE FLAG.
1868  0619 C0BE  CKFLAGS LDA-    B3
1869  061A 0104          SAZ     CKTFLG-*-1
1870  061B E0C1          LDQ-    B6                ERROR FLAG SET.
1871  061C 40FF          STQ-    I                    PREPARE STOP INFO A3/Q3.
```

```
061D E0BF            LDQ-      B4
061E 5428            RTJ-      (SMERROR)             REPORT ANY LOAD ERRORS.
061F C0C2   CKTFLG   LDA-      B7                    CHECK TERMINATE FLAG-
0620 0102            SAZ       LOADRBD-*-1             CONTINUE LOAD IF CLEAR.
0621 1C01            JMP*      (LDCONT)                EXIT LOAD CONTROLLER IF SET.


                     ******************************************************************
                     *                                                                *
                     *                        LOAD  CONTROL                           *
                     *                     USES B1,B2,B3,B4,B5,B6,B7                  *
                     *                     ENTER WITH B1 = TEST NUMBER FOR LOAD       *
                     *                     ENTER WITH B1 = FFFF FOR LIB LIST          *
                     *                                                                *
                     ******************************************************************

0622 0000   LDCONT   NUM       $0
0623 5409   LOADRBD  RTJ-      (TTYBZY)              (STOPX MSG BFR SHARES LDR BFR)
0624 0846            CLR       A,Q                   CLEAR-
0625 604A            STA-      LASTOV                  OVERLAY POSITION FLAG,
0626 60BE            STA-      B3                      ERROR CODE FLAG,
0627 60BF            STA-      B4                      ERROR STATUS FLAG,
0628 60C1            STA-      B6                      ERROR COUNT FLAG,
0629 60C2            STA-      B7                      LOAD TERMINATE FLAG.
062A 587E            RTJ*      LOADER
062B C0BC            LDA-      B1
062C 0117   LDRBD1   SAN       LDRBD3-*-1            LOAD OR SEARCH OPERATION-
062D C0BE            LDA-      B3                      LOAD, CHECK ERROR FLAG-
062E 0105            SAZ       LDRBD3-*-1                AZERO = NO ERROR.
062F 09E8            INA       -MTPE                 IF CODE LOWER THAN MTPE, REPORT,
0630 0132            SAM       LDRBD2-*-1                THEN ATTEMPT RECORD RELOAD.
0631 C0C2            LDA-      B7                    IF MTPE OR MORE, CHECK TERMINATE
0632 0101            SAZ       LDRBD3-*-1                  FLAG FOR SUCCESSFUL LOAD.
0633 18E5   LDRBD2   JMP*      CKFLAGS               REPORT ERROR, RETRY OR ABORT.
0634 C446   LDRBD3   LDA-      (INBI1)               CHECK RBD BLOCK TYPE.
0635 8000            EOR-      0
0636 2A48   HEXCOR   ALF       1,*H
0637 0115            SAN       NOTHCB-*-1            SKIP IF NOT HEX CORRECTION BLOCK
0638 C056            LDA-      SMMCNT                OR CHECK SMM PARAMETER WORD.
0639 A074            AND-      BIT09
063A 0119            SAN       RBDTAB-*-1            SKIP TO IGNORE EDITED PROG MODS.
063B C0BC            LDA-      B1
063C 184A            JMP*      RBDBLK            LOAD *H AS RBD DATE
063D B8F8   NOTHCB   EOR*      HEXCOR
063E 09AF            INA       -$50
063F 0842            CLR       Q
0640 0FE3            LLS       3
0641 0112            SAN       RBDTAB-*-1
0642 C0BC            LDA-      B1
0643 1A01            JMP*      RBDTAB,Q
0644 18DE   RBDTAB   JMP*      LOADRBD               IGNORE NON RBD-TYPE BLOCKS.
0645 1807            JMP*      NAMBLK
```

```
1923  0646 1840          JMP*    RBDBLK
1924  0647 18D1          JMP*    CKFLAGS          (Q3=BZSBLK. ZEROED IN NAMBLK)
1925  0648 18C2          JMP*    ILLBLK           (Q4=ENTBLK. CONSIDERED ILLEGAL)
1926  0649 18C1          JMP*    ILLBLK           (Q5=EXTBLK. CONSIDERED ILLEGAL)
1927  064A 18C8          JMP*    XFRBLK
1928  064B 18A1          JMP*    OVRBLK
1929  064C 0113  NAMBLK  SAN     NAMCOMP-*-1
1930  064D 0842          CLR     Q
1931  064E 0A12          ENA     NOXFR            AZERO = TWO NAMBLKS IN TEST.
1932  064F 18C0          JMP*    ST87B3             (CONSIDERATION FOR CARD INPUT)
1933  0650 A081  NAMCOMP AND-    H00FF            IGNORE OVERLAY NUMBER
1934  0651 540A          RTJ-    (HEXASC)         CONVERT ID NUMBER TO ASCII CODE.
1935  0652 0C06          ENQ     $6
1936  0653 B646          EOR-    (INBI1),Q        COMPARE WITH NAM BLOCK NUMBER
1937  0654 0101          SAZ     1
1938  0655 18CD  JMPLDR  JMP*    LOADRBD
1939  0656 C0BC          LDA-    B1
1940  0657 A07F          AND-    H0F00            CHECK FOR OVERLAY SEARCH
1941  0658 0101          SAZ     CORCHK-*-1       NOT OVERLAY SEARCH
1942  0659 1886          JMP*    LDRCHK           OVERLAY SEARCH OPERATION
1943  065A 0C03  CORCHK  ENQ     3
1944  065B E646          LDQ-    (INBI1),Q
1945  065C 40B8          STQ-    B0               SAVE TEST LENGTH.
1946  065D C045          LDA-    LASTAD           TEST LOAD ADDRESS
1947  065E 0832          AAQ     Q                PROJECTED TEST LWA+1 TO Q
1948  065F 0DFE          INQ     -1
1949  0660 40C0          STQ-    B5               SAVE TEST LWA
1950  0661 540C          RTJ-    (RELPOS)         FWA ^ LWA @
1951  0662 0121          SAP     1                ANEG = YES
1952  0663 1813          JMP*    NOGO
1953  0664 E0C0          LDQ-    B5               LWA TO Q
1954  0665 C046          LDA-    INBI1            INPUT BUFFER FWA TO A
1955  0666 540C          RTJ-    (RELPOS)         INBI1 ^ LWA @
1956  0667 012E          SAP     NOGO-*-1         ANEG = YES % INBI1 ^ TEST ^ FWA
1957  0668 C047          LDA-    LDLCORE          CONSIDER A DUAL BANK 1700%
1958  0669 B087          EOR-    H7FFF              IS BANK 0 FULL @
1959  066A 0103          SAZ     SKIPOK-*-1       AZERO = YES. CONTINUOUS MEMORY.
1960  066B E047          LDQ-    LDLCORE          NO, ADDITIONAL CHECKS NECESSARY%
1961  066C C0C0          LDA-    B5
1962  066D 540C          RTJ-    (RELPOS)         BK0 LWA = 0R ^ TEST LWA @
1963  066E 012C  SKIPOK  SAP     COREOK-*-1       APOS = YES.
1964  066F C045          LDA-    LASTAD           IS FWA IN BK1 @
1965  0670 013A          SAM     COREOK-*-1       ANEG = YES.
1966  0671 C07A          LDA-    BIT15            NOT IN CONTIGUOUS MEM.
1967  0672 6045          STA-    LASTAD
1968  0673 E090          LDQ-    TSINIT
1969  0674 62A6          STA-    TSIAAD,Q
1970  0675 18E4          JMP*    CORCHK
1971  0676 E0BC  NOGO    LDQ-    B1               INSUFFICIENT LOAD CORE,
1972  0677 C045          LDA-    LASTAD             REPORT AND RETURN TO CALLER.
1973  0678 60C1          STA-    B6
1974  0679 0A10          ENA     NOMOCOR          (ERROR CODE)
1975  067A 1895          JMP*    ST87B3
```

```
1976  067B 0C1D  COREOK   ENQ      29                 NEGATE RELOCATION IN RBD UNPACK
1977  067C C646           LDA-     (INBI1),Q           ROUTINE@ CHECK LAST WORD OF
1978  067D A06B           AND-     BIT00                NAMBLK COMMENTS.
1979  067E E045           LDQ-     LASTAD                (YES/NO = ASCII 1/0)
1980  067F 40BD           STQ-     B2
1981  0680 0101           SAZ      1
1982  0681 0C00           ENQ      0
1983  0682 4814           STQ*     RBD004
1984  0683 E0BB           LDQ-     B0                 TEST LENGTH TO Q.
1985  0684 1800           JMP      TSTCLR             CLR TEST LOAD AREA
      0685 FF7E

1987                      ********************************************************************
1988                      *                                                                  *
1989                      *                      RBD UNPACK ROUTINE                          *
1990                      *                   USES B0,B2 TRANSIENTLY                         *
1991                      *                                                                  *
1992                      ********************************************************************

1994  0686 0101  RBDBLK   SAZ      1                  LOAD OR SEARCH OPERATION-
1995  0687 1898           JMP*     LOADRBD            IGNORE RECORD IF NOT LOAD.
1996  0688 0C01           ENQ      1
1997  0689 40FF           STQ-     I
1998  068A 40BB           STQ-     B0                 SET SUB-BLOCK TO 1
1999  068B C546           LDA-     (INBI1),I          RELOCATION BYTE
2000  068C E746           LDQ-     (INBI1),B          ORIGIN ADDRESS
2001  068D F045           ADQ-     LASTAD             ADD RELOCATION FACTOR
2002  068E 40BD           STQ-     B2                 RESET CURRENT ADDRESS COUNTER
2003  068F 0FC4  RBD001    ALS     4            POSITION RELOCATION BYTE
2004  0690 D0B8           RAO-     B0                 INCREMENT SUB-BLOCK WORD COUNT
2005  0691 E0BB  RBD003   LDQ-     B0
2006  0692 E746            LDQ-   (INBI1),B   LOAD DATA WORD
2007  0693 0FC3           ALS      3
2008  0694 0122           SAP      RBD005-*-1         RELOCATION NEEDED-  SKIP IF NO.
2009  0695 F000           ADQ-     0                  YES
2010  0696 0000  RBD004   NUM      0                  (VALUE PLUGGED IN NAMBLK)
2011  0697 448D  RBD005   STQ-     (B2)               NO - STORE WORD IN PROGRAM
2012  0698 0FCD           ALS      13
2013  0699 0121           SAP      RBD007-*-1         LAST WORD IN BLOCK
2014  069A 1898           JMP*     LDRBD2 (=CKFLAGS)  EXIT RBD PROCESSOR.
2015  069B D08D  RBD007   RAO-     B2                 INCREASE CURRENT ADDRESS
2016  069C E0BB           LDQ-     B0                 LOAD SUB-BLOCK WORD COUNTER
2017  069D 0DFB           INQ      -$4
2018  069E 0141           SQZ      RBD009-*-1         IS THIS SUB-BLOCK COMPLETE
2019  069F 18EF           JMP*     RBD001             NO-GET NEXT DATA
2020  06A0 E0FF  RBD009   LDQ-     I
2021  06A1 0D05           INQ      5
2022  06A2 40FF           STQ-     I                  INCREMENT SUB-BLOCK ORDINAL
2023  06A3 C546           LDA-     (INBI1),I          LOAD RELOCATION BYTE
2024  06A4 0C01           ENQ      1
2025  06A5 40BB           STQ-     B0                 SET SUB-BLOCK COUNTER TO 1
```

```
06A6 18EA          JMP*      RBD003

                   ***************************************************************
                   *                                                             *
                   *                 MAGNETIC TAPE LOADER                        *
                   *             READ AND ASSEMBLE ONE RBD RECORD                *
                   *       USES B0,B2 TRANSIENTLY, B3,B4,B6,B7 FOR INTRA-        *
                   *         LOAD CONTROL COMMUNICATION.                         *
                   *                                                             *
                   ***************************************************************

06A7 0000  MTUNIT  NUM       0                     (USED IN EDIT)
06A8 0000  LOADER  NUM       0
06A9 E057          LDQ-      EQUIP                  MT EQUIP ADDRESS
06AA 0A01          ENA       1
06AB 03FE          OUT        -1                    CLEAR CONTROLLER
06AC 0D01          INQ        1
06AD C8F9          LDA*      MTUNIT
06AE 0FC7          ALS       7
06AF 8075          ADD-      BIT10
06B0 0B00          NOP       0
06B1 03FE          OUT       -1                    SELECT UNIT.
06B2 02FE  MTLDR1  INP       -1                    INPUT STATUS 2.
06B3 A06E          AND-      BIT03                 MASK OFF 7-TRACK STATUS BIT.
06B4 684C          STA*      FLAG7T
06B5 0101          SAZ       1                     AZERO = 9 TRACK.
06B6 0AB8          ENA       5-$4C
06B7 094C          INA       $4C
06B8 0B00          NOP       0
06B9 03FE          OUT       -1
06BA E057          LDQ-      EQUIP                  MT EQUIP ADDRESS
06BB C0BC          LDA-      B1
06BC 0123          SAP       3                     LIB LIST a
06BD C0BD          LDA-      B2                    ANEG = YES
06BE 0111          SAN       1
06BF 1820          JMP*      MTLDRW                1ST PASS LIB LIST - REWIND LIB
06C0 C000  MTLDR3  LDA       =N-160
06C1 FF5F
06C2 60FF          STA-      I                                         OVERFLOW
06C3 0864          TCA       A
06C4 8046          ADD-      INBI1
06C5 708B          SPA-      B0                                                    CHECK.
06C6 0B00          NOP       0
06C7 02FE  MTLDR4  INP       -1                    INPUT STATUS 1.
06C8 0FCE          ALS       14
06C9 0121          SAP       MTLDR6-*-1            WAIT NOT BUSY                   ***
06CA 18FC  MTLDR5  JMP*      MTLDR4
06CB C073  MTLDR6  LDA-      BIT08                 START READ MOTION.
06CC 03FE          OUT        -1
06CD 01A0          SOV       0
06CE 0500          IIN       0                     LOCKOUT INTERRUPTS DURING READ
```

```
2076  06CF 00FE          INQ      -1              SET D=0
2077  06D0 0844  MTLDR7  CLR      A
2078  06D1 020F          INP      MTLDR9-*-1      READ DATA.
2079  06D2 758B          SPA-     (80),I
2080  06D3 C0FF          LDA-     I
2081  06D4 0901          INA      1
2082  06D5 0118          SAN      MTLDR8-*-1      SKIP IF BUFFER NOT EXCEEDED
2083  06D6 0800          NOP      0
2084  06D7 0400          EIN      0               ENABLE INTERRUPTS, READ ABORTED
2085  06D8 E057  MTLD7A  LDQ-     EQUIP
2086  06D9 02FE          INP      -1
2087  06DA 0FCE          ALS      14
2088  06DB 0121          SAP      MTLD7B-*-1      WAIT NOT BUSY
2089  06DC 18FB          JMP*     MTLD7A
2090  06DD 182A  MTLD7B  JMP*     MTLD16          ABORT LOAD IF BUFFER EXCEEDED
2091  06DE 60FF  MTLDR8  STA-     I
2092  06DF 18F0          JMP*     MTLDR7          READ NEXT FRAME
2093  06E0 0800          NOP      0
2094  06E1 0D01  MTLDR9  INQ      1
2095  06E2 02FE          INP      -1               STATUS INPUT
2096  06E3 6806          STA*     SAVIT           SAVE STATUS
2097  06E4 A06F          AND-     BIT04
2098  06E5 0111          SAN      MTLD11-*-1       SKIP IF EOF
2099  06E6 18E8          JMP*     MTLDR7-1        NO
2100  06E7 0400  MTLD11  EIN      0               ENABLE INTERRUPTS, READ COMPLETE
2101  06E8 C000          LDA-     0
2102  06E9 0000  SAVIT    0       0
2103  06EA 0FC4          ALS      4               CHECK FOR FILEMARK
2104  06EB 0123          SAP      MTLDPE-*-1      SKIP IF NO FILE MARK.
2105  06EC C075  MTLDRW  LDA-     BIT10
2106  06ED 03FE          OUT      -1              REWIND TO LOAD POINT
2107  06EE 18D1          JMP*     MTLDR3
2108  06EF 0FC6  MTLDPE  ALS      6               CHECK FOR ALARM
2109  06F0 012E          SAP      MTLD15-*-1      SKIP = LOAD OK.
2110  06F1 D0C1          RAO-     B6              PARITY ERROR, BUMP ERROR COUNT.
2111  06F2 C8F6          LDA*     SAVIT           GET STATUS BACK
2112  06F3 60BF          STA-     B4              ERROR STOP A3=LAST FAULTY STATUS
2113  06F4 0A17          ENA      MTPE            (ERROR CODE)
2114  06F5 60BE          STA-     B3
2115  06F6 C0C1          LDA-     B6
2116  06F7 09F7          INA      -8
2117  06F8 0104          SAZ      MTLD14-*-1      AZERO=7 RETRIES. ABORT RECOVERY.
2118  06F9 C000  MTBS    LDA      =N$180
      06FA 0180
2119  06FB 03FC          OUT      MTBS-*-1        BACKSPACE ONE RECORD.
2120  06FC 18C3          JMP*     MTLDR3          RETRY.
2121  06FD 0A17  MTLD14  ENA      MTPE            (ERROR CODE)
2122  06FE 60C2          STA-     B7              SET TERMINATE FLAG.
2123  06FF C000  MTLD15  LDA-     0
2124  0700 0000  FLAG7T  NUM      0               (NON-ZERO = 7 TRACK)
2125  0701 0116          SAN      MTLD13-*-1      PACK DATA BEFORE EXIT IF 7-TRACK
2126  0702 E057          LDQ-     EQUIP
2127  0703 0D01          INQ      1
```

```
2128  0704 0A01          ENA     1
2129  0705 0B00          NOP     0
2130  0706 03FE          OUT     -1
2131  0707 1CA0  MTLD16  JMP*    (LOADER)
2132  0708 C046  MTLD13  LDA-    INBI1           (BUFFER FWA)
2133  0709 60B8          STA-    B0
2134  070A 60FF          STA-    I
2135  070B 093C          INA     60              (MAXIMUM 16-BIT WORD COUNT
2136  070C 60BD          STA-    B2                              IN RBD BLOCK)
2137  070D 0842  MTLD17  CLR     Q
2138  070E C4B8          LDA-    (B0)            FRAME 1+8X.
2139  070F 0FC6          ALS     6
2140  0710 D0B8          RAO-    B0              UPDATE FRAME ADDRESS.
2141  0711 B4B8          EOR-    (B0)            FRAME 2+8X.
2142  0712 0FC4          ALS     4
2143  0713 0FE2          LLS     2
2144  0714 D0B8          RAO-    B0
2145  0715 B4B8          EOR-    (B0)            FRAME 3+8X.
2146  0716 0FE6          LLS     6
2147  0717 D0B8          RAO-    B0
2148  0718 B4B8          EOR-    (B0)            FRAME 4+8X.
2149  0719 0FE6          LLS     6
2150  071A D0B8          RAO-    B0
2151  071B B4B8          EOR-    (B0)            FRAME 5+8X.
2152  071C 0FE2          LLS     2
2153  071D 44FF          STQ-    (I)             WORD 1+3X.
2154  071E 0842          CLR     Q
2155  071F D0FF          RAO-    I               UPDATE WORD ADDRESS.
2156  0720 0FE4          LLS     4
2157  0721 D0B8          RAO-    B0
2158  0722 B4B8          EOR-    (B0)            FRAME 6+8X.
2159  0723 0FE6          LLS     6
2160  0724 D0B8          RAO-    B0
2161  0725 B4B8          EOR-    (B0)            FRAME 7+8X.
2162  0726 0FE6          LLS     6
2163  0727 D0B8          RAO-    B0
2164  0728 B4B8          EOR-    (B0)            FRAME 8+8X.
2165  0729 44FF          STQ-    (I)             WORD 2+3X.
2166  072A D0FF          RAO-    I
2167  072B 64FF          STA-    (I)             WORD 3+3X.
2168  072C D0FF          RAO-    I
2169  072D C0FF          LDA-    I
2170  072E B0B0          EOR-    B2              (MAXIMUM WORD ADDRESS)
2171  072F 0102          SAZ     MTLD18-*-1      PACKING COMPLETE-
2172  0730 D0B8          RAO-    B0              NO.
2173  0731 18D8          JMP*    MTLD17
2174  0732 18D4  MTLD18  JMP*    MTLD16          YES. EXIT LOADER
2175  0733 0014          BSS     (20)        ROOM FOR LONGEST LOADER


2177  0747 8D0A  TYPBTL  NUM     $8D0A
```

```
2178  0748 4255          ALF     X,BUILD TEST LISTX
      0749 494C
      074A 4420
      074B 5445
      074C 5354
      074D 204C
      074E 4953
      074F 5420
2179  0750 800A  PREEXS   NUM     $800A
2180  0751 2050          ALF     Z, PRE-EXECUTION CORRECTION STOP Z
      0752 5245
      0753 2045
      0754 5845
      0755 4355
      0756 5449
      0757 4F4E
      0758 2043
      0759 4F52
      075A 5245
      075B 4354
      075C 494F
      075D 4E20
      075E 5354
      075F 4F50
      0760 2020
2181  0761 800A  PREEXD   NUM     $800A
2182               ************************************************************
2183               *                                                          *
2184               *                  PROTECT PROCESSOR PREPARATION           *
2185               *               SET MONITOR AND AUTOLOAD ADDRESSES         *
2186               *                  CLEAR MONITOR ENTRY POINTS              *
2187               *                    CLEAR COMMON LOW CORE                 *
2188               *                                                          *
2189               ************************************************************
2190  0762 0000  SPP000  NUM     0
2191  0763 0842  SPB1    CLR     Q
2192  0764 0700  SPB2    CPB     0
2193  0765 0001          INQ     1                                        PTC2
2194  0766 0141          SQZ     SPB4-*-1
2195  0767 18FC          JMP*    SPB2
2196  0768 01A0  SPB4    SOV     0                KILL THE OVERFLOW       PTC2
2197  0769 E044          LDQ-    LASTVALUE                                PTC2
2198  076A C036          LDA-    AUTOPP           GET THE $801E CONSTANT  PTC2
2199  076B 0DFE  SPB5    INQ     -1               PROTECT
2200  076C 0600          SPB     0                        AUTOLOAD
2201  076D 0830          AAQ     0                                AND
2202  076E 01A1          SOV     SPB6-*-1                             MONITOR
2203  076F 18FB          JMP*    SPB5                                       AREA
2204  0770 0C00  SPB6    ENQ     CONTROL-1
2205  0771 0814  SPB7    TRQ     A                A,Q = ENTRY POINT ADDRESS-1.
2206  0772 E201          LDQ-    1,Q              ENTRY POINT TO Q.
2207  0773 0700          CPB     0                UNPROTECT ENTRY POINT
2208  0774 0901          INA     1                INCREMENT ENTRY POINT ADDRESS.
```

```
2209  0775 0822           TRA     Q                   A,Q = NEXT ENTRY POINT ADDRESS.
2210  0776 09DB           INA     -SELIN-1
2211  0777 0101           SAZ     SPB8-*-1            EXIT
2212  0778 18F8           JMP*    SPB7
2213  0779 E03D  SPB8     LDQ-    XCOMUS                                        PTC2
2214  077A C088           LDA-    H7F00
2215  077B 0700  SPB9     CPB     0                   CLEAR COMMON COMMUNICATION AREA
2216  077C 0001           INQ     1
2217  077D 0830           AAQ     0
2218  077E 01A1           SOV     SPBEND-*-1
2219  077F 18FB           JMP*    SPB9
2220  0780 1CE1  SPBEND   JMP*    (SPP000)
2221                      ********************************************************************
2222                      *                                                                  *
2223                      *                  CHECK FOR TTY INPUT SELECTION                   *
2224                      *                                                                  *
2225                      ********************************************************************
2226  0781 0000  INTTY    NUM     0
2227  0782 5800           RTJ     TTBUSY              WAIT MESSAGE END BEFORE STOP.
      0783 FE26
2228  0784 680F           STA*    TTEMP
2229  0785 480F           STQ*    TTEMP+1
2230  0786 0A40           ENA     $40                 (BIT06 = SMM PARAMETER BIT
2231  0787 A800           AND     SMMCNT                      FOR TTY INPUT SELECTION)
      0788 F8CD
2232  0789 0114           SAN     INTTY2-*-1          SKIP IF TTY INPUT SELECTED
2233  078A C809  INTTY1   LDA*    TTEMP
2234  078B E809           LDQ*    TTEMP+1
2235  078C 0000           SLS     0                   REGISTER DISPLAY/ENTRY.
2236  078D 1CF3           JMP*    (INTTY)             EXIT WITH NEW REGS.
2237  078E E091  INTTY2   LDQ-    TSACTV
2238  078F C2AF           LDA-    TSTJP-1,Q         GET ACTIVE STOP-JUMP WORD
2239  0790 A073           AND-    BIT08               LOOK FOR OMIT TYPEOUTS
2240  0791 0106           SAZ     TELAQ-*-1           SKIP IF NOT SET TO TTY PACKAGE
2241  0792 18F7           JMP*    INTTY1              USE REGISTER DISPLAYS
2242  0793 0001  TTEMP    NUM     1
2243  0794 0001  ENDMON1  NUM     1
2244  0795 0002           NUM     2
2245  0796 0003           NUM     3
2246  0797 0004           NUM     4
2247                      ********************************************************************
2248                      *                                                                  *
2249                      *                  TELETYPE INPUT ROUTINE                          *
2250                      *                  EXPECTS TO BE ENTERED WITH A+Q                  *
2251                      *                  CONTAINING PARAMETERS TO BE CHANGED             *
2252                      *                  UPON EXIT A + Q WILL HAVE OPERATORS             *
2253                      *                  REACTION TO PARAMETERS OFFERED                  *
2254                      *                  INPUT MAY BE IN                                 *
2255                      *                    HEX- INDICATED BY NO PREFEX                   *
2256                      *                    DEC- PREFEXED BY N, WITH ANY COMBINATION OF 0-9 *
2257                      *                    BIT- PREFEXED BY S- IE S,1,12,15  ETC         *
2258                      *                                                                  *
2259                      ********************************************************************
```

```
2260  0798 C0FF   TELAQ   LDA-     I
2261  0799 6808           STA*     EXITEX+4
2262  079A 5800           RTJ      MES2
      079B 00EA
2263  079C 0844           CLR      A
2264  079D 6800           STA      SETPFG
      079E 011F
2265  079F 1827           JMP*     MES1
2266  07A0 5409   EXITEX  RTJ-     (TTYBZY)
2267  07A1 0844           CLR      A                    LF/CR  TO TTY
2268  07A2 54C5           RTJ-     (TTOTTI)
2269  07A3 C000           LDA-     0
2270  07A4 0000           NUM      0                    (ENTRY I)
2271  07A5 60FF           STA-     I                    RESTORE ENTRY I
2272  07A6 C800           LDA      SETPFG
      07A7 0116
2273  07A8 0102           SAZ      2
2274  07A9 1800           JMP      SETPGO
      07AA 00FB
2275  07AB E8E8           LDQ*     TTEMP+1              NEW Q VALUE
2276  07AC C8E6   EXTEX1  LDA*     TTEMP
2277  07AD 1CD3           JMP*     (INTTY)
2278  07AE 0844   POINT   CLR      A                    SET POINTER TO A
2279  07AF 60FF           STA-     I
2280  07B0 5802   EXREAD  RTJ*     READ                 GET FIRST CHAR
2281  07B1 181F           JMP*     ANYL
2282  07B2 0001   READ    NUM      1                    TTY READ CHAR
2283  07B3 E000           LDQ      =N$91
      07B4 0091
2284  07B5 C074           LDA-     BIT09           SELECT READ MODE
2285  07B6 5409           RTJ- (TTYBZY)            WAIT FOR NOT BUST
2286  07B7 03FE           OUT      -1
2287  07B8 02FE   STAT    INP      -1                   STATUS INP
2288  07B9 A06E           AND-     BIT03
2289  07BA 0101           SAZ      1                    BUSY^
2290  07BB 18FC           JMP*     STAT                 YES
2291  07BC 0DFE           INQ      -1                   NO
2292  07BD 0800           NOP
2293  07BE 02FE           INP      -1                   INP DATA
2294  07BF A000           AND      =N$7F           CLEAR POSSIBLE PARITY BIT
      07C0 007F
2295  07C1 68D5           STA*     TTEMP+4         SAVE DATA
2296  07C2 09A4           INA      -$58            CK FOR RUBOUT CHARACTER
2297  07C3 0122           SAP      MES1            YES- SO SKIP
2298  07C4 0958           INA      $58
2299  07C5 1CEC           JMP*     (READ)               EXIT REWD
2300  07C6 5409   MES1    RTJ-     (TTYBZY)
2301  07C7 0844           CLR      A
2302  07C8 6800           STA      SETPFG
      07C9 00F4
2303  07CA C000           LDA      =XBELL
      07CB 0804
2304  07CC 0C02           ENQ      2
```

```
2305  07CD 5800          RTJ     TTYPE          TYPEOUT BELL, QUESTION MARK, SPACES
      07CE FD47
2306  07CF 18DE          JMP*    POINT               GO TO EXEC POINTER RESET
2307  07D0 09F2  ANYL    INA     -$D
2308  07D1 0111           SAN    ANYL1-*-1           =CR
2309  07D2 18CD          JMP*    EXITEX         CR HAS BEEN DECTED
2310  07D3 09DD  ANYL1   INA     -$22
2311  07D4 0112          SAN     ANYL2
2312  07D5 D0FF          RAO-    I                   SLASH DETECTED
2313  07D6 18D9          JMP*    EXREAD              GO TO EXEC FOR ANOTHER CGAR
2314  07D7 09E7  ANYL2   INA     -$18
2315  07D8 0122          SAP     ANYL3-*-1
2316  07D9 C8BD          LDA*    TTEMP+4
2317  07DA 182C          JMP*    HEX            HEX NUMBER TO BE PROCESSED
2318  07DB 09F8  ANYL3   INA     -7
2319  07DC 0111          SAN     ANYL4
2320  07DD 1845          JMP*    DEC
2321  07DE 09FD  ANYL4   INA     -2             SET P ADDRESS CHECK
2322  07DF 0112          SAN     ANYL5
2323  07E0 1800          JMP     SETP
      07E1 00C0
2324  07E2 09FC  ANYL5   INA     -3
2325  07E3 0101          SAZ     ANYL6-*-1
2326  07E4 1814          JMP*    ER1            INVALID REQUEST
2327  07E5 1869  ANYL6   JMP*    BIT            SET BIT TO BE PROCESSED



2329  07E6 0001  SPCK    NUM     1                   CHECK FOR  / OR CR
2330  07E7 09CF          INA     -$30
2331  07E8 0132           SAM    SPCK1A-*-1          GO CHECK FOR COMMA
2332  07E9 0930          INA     $30                 RESTORE CHAR
2333  07EA 1CF8          JMP*    (SPCK)              RETURN CHAR IS NOT  /"CR
2334  07EB 0904  SPCK1A   INA    4
2335  07EC 0112           SAN    SPCK1-*-1           CHEHK FOR COMHA
2336  07ED 09FB          INA     -4
2337  07EE 18FA           JMP*   SPCK+3
2338  07EF D8F6  SPCK1   RAO*    SPCK
2339  07F0 09FC          INA     -3
2340  07F1 0111          SAN     SPCK2-*-1           CHECK FOR  /
2341  07F2 1CF3          JMP*    (SPCK)              CHAR IS A  /
2342  07F3 D8F2  SPCK2   RAO*    SPCK
2343  07F4 0922           INA    $22
2344  07F5 0101          SAZ     SPCK3-*-1
2345  07F6 1802          JMP*    ER1
2346  07F7 1CEE  SPCK3   JMP*    (SPCK)              CR. DETECTED EXIT



2348  07F8 C000  ER1     LDA     =XERMES
      07F9 07FE
```

```
2349  07FA 0C07          ENQ     7
2350  07FB 5800          RTJ     TTYPE
      07FC FD19
2351  07FD 1880          JMP*    POINT           RESTART AT EXPOINTER
2352  07FE 0D0A  ERMES   NUM     $0D0A
2353  07FF 4552          ALF     3,ERROR
      0800 524F
      0801 5220
2354  0802 0D0A          NUM     $0D0A
2355  0803 2020          NUM     $2020
2356  0804 073F  BELL    NUM     $73F
2357  0805 2020          NUM     $2020


2359  0806 0842  HEX     CLR     Q
2360  0807 4900          STQ     TTEMP,I
      0808 FF8A
2361  0809 1807          JMP*    HEXWD
2362  080A 58A7  HEXRD   RTJ*    READ            GET FIRST HEX CHARACTER
2363  080B 5800          RTJ     SPCK            CK FOR CR OR SLASH
      080C FFD9
2364  080D 1803          JMP*    HEXWD
2365  080E 1810          JMP*    HEXSL               SLASH WAS DETECTED
2366  080F 1811          JMP*    HEXCR               CR. DETECTED READY EXIT
2367  0810 E000  HEXWD    LDQ     =N$3030
      0811 3030
2368  0812 B000           EOR     =N$3000
      0813 3000
2369  0814 5800          RTJ     CONHEX
      0815 00A9
2370  0816 18E1           JMP*    ER1                 INVALID CHAR RETU  HERE BY CONV
2371  0817 E900        LDQ  TTEMP,I        LOAD PREVIOUS ITTERATION
      0818 FF7A
2372  0819 0FCC          ALS     12
2373  081A 0FE4          LLS     4               MOVE CHARACTER INTO WORD
2374  081B 4900          STQ     TTEMP,I
      081C FF76
2375  081D 18EC          JMP*    HEXRD
2376  081E D0FF  HEXSL   RAO-    I                   CHANGE POINTER TO  Q
2377  081F 1890          JMP*    EXREAD              GO BACK TO EXEC READ
2378  0820 1800  HEXCR  JMP  EXITEX
      0821 FF7E
2379  0822 588F  DEC     RTJ*    READ
2380  0823 58C2          RTJ*    SPCK
2381  0824 1820          JMP*    DWDCON
2382  0825 1814          JMP*    DECSL
2383  0826 C827  DECCR   LDA*    DTEMP               DEC CR DETECTED
2384  0827 542B          RTJ-    (ASCDEC)            ASCII TO DECIMAL CONVERSION
2385  0828 18CF          JMP*    ER1
2386  0829 6900          STA     TTEMP,I
      082A FF68
2387  082B 1800          JMP     EXITEX
      082C FF73
```

```
2388  082D 0001  DECWD   NUM     1
2389  082E E000           LDQ     =N$3030
      082F 3030
2390  0830 B000           EOR     =N$3000
      0831 3000
2391  0832 542A           RTJ-    (ASCHEX)
2392  0833 18C4           JMP*    ER1             INVALID CHAR RETURN HERE BY CONV
2393  0834 E819           LDQ*    DTEMP
2394  0835 0FA4           QLS     4
2395  0836 0874           EAQ     A               PACK WORD
2396  0837 6816           STA*    DTEMP
2397  0838 1CF4           JMP*    (DECWD)
2398  0839 C814  DECSL    LDA*    DTEMP
2399  083A 542B           RTJ-    (ASCDEC)
2400  083B 18BC           JMP*    ER1             INVALID CHAR RETURN HERE BY CONV
2401  083C 6900           STA     TTEMP,I
      083D FF55
2402  083E C0FF           LDA-    I               CHECK POINTER
2403  083F 0102           SAZ     2
2404  0840 1800           JMP     EXITEX          IF POINTER WAS A  Q  EXIT
      0841 FF5E
2405  0842 D0FF  DECSL1   RAO-    I               CHANGE POINTER IF AT A
2406  0843 18D8           JMP*    HEXSL+1         GO TO EXEC REAC
2407  0844 0842  DWDCON   CLR     Q
2408  0845 4808           STQ*    DTEMP           CLR DEC TEMPORARY
2409  0846 58E6  DWD      RTJ*    DECWD           ASSEMBLE WORD
2410  0847 5800           RTJ     READ            GET ANOTHER WORD
      0848 FF69
2411  0849 589C           RTJ*    SPCK            CHECK WORD FOR /"CR.
2412  084A 18FB           JMP*    DWD             GET ANOTHER WORD
2413  084B 18ED           JMP*    DECSL           PROSSES SLASH
2414  084C 18D9           JMP*    DECCR           PROSSES CR
2415  084D 0007  DTEMP    NUM     7               DECIMAL TEMP STORAGE
2416  084E 5800  BIT      RTJ     READ          BBBB   BIT INPUT CONTROL   BBBBBBBB
      084F FF62
2417  0850 5895           RTJ*    SPCK            CHECK FOR CHAR
2418  0851 1803           JMP*    BWDCON
2419  0852 18A5           JMP*    ER1
2420  0853 18CC           JMP*    HEXCR
2421  0854 0842  BWDCON   CLR     Q
2422  0855 48F7           STQ*    DTEMP           CLEAR DTEMP
2423  0856 4900           STQ     TTEMP,I
      0857 FF3B
2424  0858 09D3           INA     -$2C
2425  0859 0111           SAN     1                  COMMA DETECTED
2426  085A 18F4           JMP*    BIT+1           YES- GET ANOTHER CHARACTER
2427  085B 09FB  BASM1    INA     -4                 NO
2428  085C 0121           SAP     1                  CJECK OF LESS THAN CEC
2429  085D 189A           JMP*    ER1                YES
2430  085E 09F5           INA     -10                NO CHECK IF GREATER THAN DEC
2431  085F 0131           SAM     1
2432  0860 1897           JMP*    ER1                YES
2433  0861 093A           INA     $3A                NO RESUME CHAR
```

```
2434  0862 58CA          RTJ*    DECWD          HAVE CHAR CONVERTED AND PACKED
2435  0863 5800  BASM2    RTJ     READ           GET ANOTHER CHAR
      0864 FF4D
2436  0865 5880          RTJ*    SPCK           CHECK FOR (CR) OR (/)
2437  0866 1804          JMP*    BASM           RETURN HERE IF NOT
2438  0867 1808          JMP*    BSL            SLASH DETECTED
2439  0868 580D          RTJ*    BITS           CR DETECTED PROCESS LASR DIGIT
2440  0869 18B6          JMP*    HEXCR
2441  086A 09D3  BASM    INA     -$2C
2442  086B 0112          SAN     2              CHECK FOR COMMA
2443  086C 5809          RTJ*    BITS           YES ADD A BIT TO WORD
2444  086D 18F5          JMP*    BASM2          GET ANOTHER CHAT
2445  086E 18EC          JMP*    BASM1
2446  086F 5806  BSL     RTJ*    BITS
2447  0870 C0FF          LDA-    I              CHECK POINTER
2448  0871 0111          SAN     1
2449  0872 D0FF          RAO-    I              MOVE POINTER OT Q IF WAS AT  A.
2450  0873 1800          JMP     EXREAD         JMP TO EXEC READ
      0874 FF3B
2451  0875 0003  BITS    NUM     3
2452  0876 C8D6          LDA*    DTEMP          BRING UP FROM DTEMP
2453  0877 542B          RTJ-    (ASCDEC)     ASCII TO DEC CONVERSION
2454  0878 1808          JMP*    BITERR         NOT A LEGAL NUMBER
2455  0879 0822          TRA     Q
2456  087A 0844          CLR     A
2457  087B 68D1          STA*    DTEMP
2458  087C CA00          LDA     BIT00,Q
      087D F7ED
2459  087E 8900          EOR     TTEMP,I        COMBINE WITH EXISTING SET
      087F FF13
2460  0880 6900          STA     TTEMP,I
      0881 FF11
2461  0882 1CF2          JMP*    (BITS)         EXIT BITS
2462  0883 1800  BITERR  JMP     ER1
      0884 FF73
2463  0885 0000  MES2    NUM     0              REPORT STORED PARAMETERS
2464  0886 C800          LDA     TTEMP
      0887 FF0B
2465  0888 540A          RTJ-    (HEXASC)
2466  0889 4811          STQ*    TMES+1
2467  088A 6811          STA*    TMES+2
2468  088B C800          LDA     TTEMP+1
      088C FF07
2469  088D 540A          RTJ-    (HEXASC)
2470  088E 4811          STQ*    TMES+6
2471  088F 6811          STA*    TMES+7
2472  0890 5409          RTJ-    (TTYBZY)
2473  0891 C000          LDA     =XTMES
      0892 0899
2474  0893 E000          LDQ     =N$8008
      0894 8008
2475  0895 5800          RTJ     TTYPE
      0896 FC7F
```

```
2476  0897 1800          JMP       MES1
      0898 FF2D
2477  0899 000A  TMES     NUM       $000A
2478  089A 0000          NUM       0
2479  089B 0000          NUM        0
2480  089C 202F          NUM        $202F
2481  089D 2020          NUM       $2020
2482  089E 0000          NUM       0
2483  089F 0000          NUM        0
2484  08A0 2020          NUM       $2020
2485  08A1 0804  SETP     SET       A
2486  08A2 681B          STA*      SETPFG
2487  08A3 1800        JMP  EXREAD
      08A4 FF0B
2488  08A5 C800  SETPGO   LDA       TTEMP
      08A6 FEEC
2489  08A7 6816          STA*      SETPFG
2490  08A8 E000          LDQ       =XFLGSMR-1
      08A9 025E
2491  08AA 0844          CLR      A
2492  08AB 6201          STA-      1,Q              CLEAR ROUTINE ACTIVE FLAGS
2493  08AC 6202          STA-       2,Q             IN INTERRUPT ERROR REPORTED
2494  08AD 6203          STA-      3,Q
2495  08AE E000          LDQ       =XREPORT-1
      08AF 0245
2496  08B0 C201          LDA-      1,Q
2497  08B1 0106          SAZ       SETP0
2498  08B2 C000          LDA       =XSETP0
      08B3 08B8
2499  08B4 6800          STA       RPTRTN
      08B5 F9A5
2500  08B6 1800          JMP       RPT10
      08B7 F99E
2501  08B8 C800  SETP0    LDA       SETMASK          SSTABLISH MASK REGISTER
      08B9 F788
2502  08BA 0821          TRA       M                WHEN USING P OPTION
2503  08BB 0846          CLR       A,Q
2504  08BC 1400          JMP-      (0)
2505  08BD 0000  SETPFG   NUM       0
2506                     ********************************************************************************
2507                     *****    CONVERT ASCII TO HEXADECIMAL NUMBER                                  *****
2508                     *        ENTER WITH (QA)= FOUR ASCII CHARACTERS                                *
2509                     *        EXIT WITH (Q) =0 AND (A) = HEX EQUIV AT P+2                           *
2510                     *        EXIT AT P+1 IF ONE OF THE ASCII CHARACTERS NOT A THRU F               *
2511                     *                                                                              *
2512                     ********************************************************************************
2513  08BE 0000  CONHEX   NUM       0
2514  08BF 60CA          STA-      COMUSE              SAVE LOWER TWO CHAR
2515  08C0 0FE8          LLS       8
2516  08C1 5818          RTJ*      ASCIHEX             CONVERT UPPER ASCII CHAR TO HEX
2517  08C2 1816          JMP*      ILLASC              ILLEGAL ASCII CHAR FOUND
2518  08C3 0FC4          ALS       4
2519  08C4 60CB          STA-      COMUSE+1            SAVE CONVERTED CODE
```

```
2520  08C5 0FE8          LLS       8
2521  08C6 5813          RTJ*      ASCIHEX              CONVERT SECOND CHAR TO HEX
2522  08C7 1811          JMP*      ILLASC               ILLEGAL ASCII CHAR FOUND
2523  08C8 B0CB          EOR-      COMUSE+1
2524  08C9 0FC4          ALS       4
2525  08CA 60CB          STA-      COMUSE+1             BUILD CONVERTED NUM
2526  08CB E0CA          LDQ-      COMUSE               LOAD LOWER TWO CHAR
2527  08CC 0FE8          LLS       8
2528  08CD 580C          RTJ*      ASCIHEX              CONVERT THIRD CHAR TO HEX
2529  08CE 180A          JMP*      ILLASC               ILLEGAL ASCII CHAR FOUND
2530  08CF B0CB          EOR-      COMUSE+1
2531  08D0 0FC4          ALS       4
2532  08D1 60CB          STA-      COMUSE+1             BUILD WORD
2533  08D2 0FE8          LLS       8
2534  08D3 5806          RTJ*      ASCIHEX              CONVERT LOWER CHAR TO HEX
2535  08D4 1804          JMP*      ILLASC               ILLEGAL ASCII CHAR FOUND
2536  08D5 B0CB          EOR-      COMUSE+1
2537  08D6 D8E7          RAO*      CONHEX
2538  08D7 0842          CLR       Q
2539  08D8 1CE5  ILLASC  JMP*      (CONHEX)
2540  08D9 0000  ASCIHEX NUM       0
2541  08DA A08A          AND-      H007F                REMOVE PARITY
2542  08DB 09CF          INA       -$30                 CHECK LOWER LIMIT
2543  08DC 0139          SAM       ASC5-*-1             LESS THAN $30
2544  08DD 09F5          INA       -$A             NO- IS IT ABOVE $39
2545  08DE 0135          SAM       ASC5-*-3        NO- SO OK
2546  08DF 09F8          INA       -7              IS IT BELOW $41
2547  08E0 0135          SAM       ASC5            YES, THEN ERROR
2548  08E1 09F9          INA       -6              NO - SO IS IT ABOVE $46
2549  08E2 0123          SAP       ASC5            YES- THEN ERROR
2550  08E3 0906          INA       6
2551  08E4 090A          INA       $A                  $39 AND $41
2552  08E5 D8F3          RAO*      ASCIHEX
2553  08E6 1CF2  ASC5    JMP*      (ASCIHEX)
2554             ********************************************************************
2555             *                                                                  *
2556             *         CONVERT HEX CODE TO A DECIMAAL NUMBER                    *
2557             *         ENTER THIS ROUTINE WITH (A) = HEX TO BE CONVERTED        *
2558             *       EXIT AT P+2 WITH DECIMAL NUMBER IN A                       *
2559             *        EXIT AT P+1 IF ILLEGAL DECIMAL NUMBER INPUTTED            *
2560             *                                                                  *
2561             ********************************************************************
2562  08E7 0000  CONDEC  NUM       0
2563  08E8 60CA          STA-      COMUSE               SAVE HEX NUMBER
2564  08E9 0842  CHKLEG  CLR       Q
2565  08EA 0FE4          LLS       4
2566  08EB 0DF5          INQ       -$A
2567  08EC 0162          SQP       DECILL-*-1
2568  08ED 0102          SAZ       LEGDEC-*-1
2569  08EE 18FA          JMP*      CHKLEG
2570  08EF 1816  DECILL  JMP*      ILLDEC
2571  08F0 C0CA  LEGDEC  LDA-      COMUSE               LOAD HEX NUM TO CONVERT
2572  08F1 A07D          AND-      H000F
```

```
2573  08F2 60CB          STA-    CONUSE+1        SAVE LOWER HEX NUM
2574  08F3 C0CA          LDA-    CONUSE
2575  08F4 A07E          AND-    H00F0           SAVE 2ND LOWER HEX NUM
2576  08F5 0FCC          ALS     12
2577  08F6 2810          MUI*    DEC1            MULT 2ND DIGIT TIMES 10
2578  08F7 80CB          ADD-    CONUSE+1        TOTAL DEC EQUIV OF LOWER TWO
2579  08F8 60CB          STA-    CONUSE+1        SAVE PARTIAL CONVERSION
2580  08F9 C0CA          LDA-    CONUSE          LOAD HEX NUMBER
2581  08FA A07F          AND-    H0F00           SAVE 3RD DIGIT
2582  08FB 0FC8          ALS     8
2583  08FC 2808          MUI*    DEC2            MULT HTIRD NUM BY TEN SQ
2584  08FD 80CB          ADD-    CONUSE+1        TOTAL DEC EQUIV OF LOWER 3
2585  08FE 60CB          STA-    CONUSE+1
2586  08FF C0CA          LDA-    CONUSE          LOAD HEX NUMBER
2587  0900 A080          AND-    HF000           SAVE UPPER DIGIT
2588  0901 0FC4          ALS     4
2589  0902 2806          MUI*    DEC3            MULT UPPER DIGIT BY 10 CUBE
2590  0903 80CB          ADD-    CONUSE+1
2591  0904 D8E2          RAO*    CONDEC
2592  0905 1CE1 ILLDEC   JMP*    (CONDEC)
2593  0906 000A DEC1     NUM     $A              TEN
2594  0907 0064 DEC2     NUM     $64             TEN SQUARED
2595  0908 03E8 DEC3     NUM     $3E8            TEN CUBED
2596  0909 0909 TTYEND   ADC     *
```

```
2598                ********************************************************************
2599                *                                                                  *
2600                *                        PRINTER OUTPUT ROUTINE                    *
2601                *                                                                  *
2602                ********************************************************************

2604  090A 5857  DR42     RTJ*    PRTBSY          WAIT FOR PRINTER NOT BUSY
2605  090B C800           LDA     ADDR            ADDR OF BUFFER START
      090C FC98
2606  090D 0113           SAN     DR42A
2607  090E 5862           RTJ*    SPC42           HERE IF ONLY FORMAT REQ, DO SPACE
2608  090F 1800  DR42EX   JMP     MESSA3          EXIT
      0910 FC5D
2609  0911 CC00  DR42A    LDA     (ADDR)          GET CHARACTER
      0912 FC92
2610  0913 6846           STA*    DR42T1          SAVE
2611  0914 A800           AND     H7F00           REMOVE PARITY BIT LOWER CHARACTER
      0915 F772
2612  0916 6844           STA*    DR42T3
2613  0917 B000           EOR     =N$0A00         CK FOR LF
      0918 0A00
2614  0919 0118           SAN     DR42AC          SKIP IF NO
2615  091A 5842           RTJ*    PRTFNC          DO PRINT, SINGLE SPACE
2616  091B C83E  DR42AB   LDA*    DR42T1          GET BUFFER WORD
2617  091C A800           AND     H007F           REMOVE UPPER CHAR
      091D F76C
2618  091E B800           EOR     BIT13           CHANGE TO A SPACE
      091F F758
2619  0920 6839           STA*    DR42T1
2620  0921 1807           JMP*    DR42AD
2621  0922 C838  DR42AC   LDA*    DR42T3
2622  0923 B000           EOR     =N$0D00         CK FOR CR IN UPPER CHAR
      0924 0D00
2623  0925 0112           SAN     DR42AD          SKIP IF NO
2624  0926 5844           RTJ*    PRT42             PRINT
2625  0927 18F3           JMP*    DR42AB
2626  0928 5839  DR42AD   RTJ*    PRTBSY            WAIT FOR NOT BUSY
2627  0929 C830  DR42B    LDA*    DR42T1            RESTORE WORD
2628  092A A800           AND     H007F           SAVE ONLY LOWER CHAR
      092B F75E
2629  092C 682E           STA*    DR42T3
2630  092D 09F5           INA     -$A               CHECK FOR LINE FEED
2631  092E 0106           SAZ     DR42BB          SKIP IF YES
2632  092F 09FC           INA     -3                CK FOR CARR RETURN
2633  0930 0112           SAN     DR42BA          SKIP IF NO
2634  0931 5839           RTJ*    PRT42             PRINT
2635  0932 1808           JMP*    DR42E
2636  0933 5817  DR42BA   RTJ*    PRTBFR          OUTPUT WORD TO BUFFER
2637  0934 1809           JMP*    DR42E
2638  0935 C824  DR42BB   LDA*    DR42T1          RESTORE WORD
2639  0936 A800           AND     H7F00           REMOVE LF CHAR
      0937 F750
```

```
2640  0938 B800          EOR       BIT05          REPLACE IT WITH A SPACE
      0939 F736
2641  093A 681F          STA*      DR42T1
2642  093B 580F          RTJ*      PRTBFR         OUTPUT WORD TO BUFFER
2643  093C 5820          RTJ*      PRTFNC         DO PRINT, SINGLE SPACE
2644  093D D800  DR42E    RAO       CNTNUM         INCREASE WORD COUNT
      093E FC67
2645  093F D800          RAO       ADDR           INCREASE WORD ADDR
      0940 FC64
2646  0941 C800          LDA       CNTNUM
      0942 FC63
2647  0943 0101          SAZ       DR42EA         SKIP OUT WHEN DONE
2648  0944 18CC          JMP*      DR42A
2649  0945 C800  DR42EA   LDA       TTYMSG         COMPLETED BUFFER,CK PARTIAL FLAG
      0946 FC62
2650  0947 0111          SAN       1              SKIP IF CALL ONLY PART OF MSG
2651  0948 5822          RTJ*      PRT42              DO PRINT
2652  0949 18C5          JMP*      DR42EX             RETURN TO CALLER


2654  094A 0000  PRTBFR   NUM       0              OUTPUT WORD
2655  094B E810          LDQ*      PRTEQU         PRINTER EQUIP
2656  094C 00FE          INQ       -1
2657  094D C80C          LDA*      DR42T1         DATA WORD-MODIFIED IF NECESSARY
2658  094E 0302          OUT       PRTREJ-*
2659  094F 1CFA          JMP*      (PRTBFR)       EXIT IF REPLY
2660  0950 18FD  PRTREJ   JMP*      *-2            INT REJ
2661  0951 18FC          JMP*      *-3            EXT REJ


2663  0952 0000  PRTCLR   NUM       0              CLR PRINTER
2664  0953 E808          LDQ*      PRTEQU
2665  0954 0A01          ENA       1
2666  0955 0302          OUT       CLRREJ-*
2667  0956 1CFB          JMP*      (PRTCLR)       EXIT IF REPLY
2668  0957 18FD  CLRREJ   JMP*      *-2            INT REJ
2669  0958 18FC          JMP*      *-3            EXT REJ


2671  0959 0000  DR42T1   NUM       0              DATA WORD TO PRINTER
2672  095A 0000  DR42T3   NUM       0
2673  095B 0201  PRTEQU NUM  $0201          LINE PRINTER EQUIPMENT ADDRESS


2675  095C 0000  PRTFNC NUM   0
2676  095D 580D          RTJ*  PRT42          GO PRINT THE LINE
2677  095E 5803          RTJ*  PRTBSY         WAIT NOT BUSY
2678  095F 5811          RTJ*  SPC42          SPACE ONE LINE
2679  0960 1CFB          JMP* (PRTFNC)
```

```
2681  0961 0000  PRTBSY NUM   0                        WAIT NOT BUSY
2682  0962 E8F8          LDQ*  PRTEQU
2683  0963 0D02            INQ       2
2684  0964 02FE          INP  -1
2685  0965 A800            AND       BIT01
      0966 F705
2686  0967 0101          SAZ   1
2687  0968 18FB            JMP*      *-4
2688  0969 1CF7          JMP* (PRTBSY)


2690  096A 0000  PRT42  NUM   0                        PRINT A LINE
2691  096B E8EF          LDQ*  PRTEQU
2692  096C 0D02            INQ       2
2693  096D 0A01          ENA   1
2694  096E 03FE          OUT   -1
2695  096F 1CFA          JMP* (PRT42)


2697  0970 0000  SPC42  NUM   0                        SINGLE SPACE
2698  0971 E8E9          LDQ*  PRTEQU
2699  0972 0D02            INQ       2
2700  0973 0A02          ENA   2
2701  0974 03FE          OUT   -1
2702  0975 1CFA          JMP* (SPC42)
2703  0976 0977  PRTEND    ADC       *+1
```

```
2705                ********************************************************************************
2706                *                                                                              *
2707                *                    MBS OVERLAY CALL ROUTINE                                  *
2708                *                                                                              *
2709                ********************************************************************************
2710  0977 5805   LDOVLY   RTJ*       OCALL8
2711  0978 180A            JMP*       PPMON
2712  0979 0A1A            ENA        OLLERR
2713  097A 5428            RTJ-       (SMERROR)
2714  097B 18FB            JMP*       LDOVLY

2716  097C 0000   OCALL8   NUM        0
2717  097D 0A09            ENA        9
2718  097E 5408            RTJ-       (OVRLAY)
2719  097F 1CFC            JMP*       (OCALL8)
2720  0980 D8FB            RAO*       OCALL8
2721  0981 1CFA            JMP*       (OCALL8)

2723  0982 540F   PPMON    RTJ-       (MONPP)              SET MONITOR PROTECT PATTERN
2724  0983 0C12   PTYPE    ENQ        HEADF-HEADG+1
2725  0984 C000            LDA        =XHEADG
      0985 0989
2726  0986 5408            RTJ-       (TYPEOUT)
2727  0987 1400            JMP+       SMSTART
      0988 02C0

2729  0989 8D0A   HEADG    NUM        $8D0A
2730  098A 5345            ALF        X,SET PP - CLEAR STOP TO RUN PROT.X              PTC2
      098B 5420
      098C 5050
      098D 202D
      098E 2043
      098F 4C45
      0990 4152
      0991 2053
      0992 544F
      0993 5020
      0994 544F
      0995 2052
      0996 554E
      0997 2050
      0998 524F
      0999 542E
2731  099A 8D0A   HEADF    NUM        $8D0A
2732                ********************************************************************************
2733                *                                                                              *
2734                *                    BEGIN OVERLAY FOR MBS SUBROUTINES                         *
2735                *                                                                              *
2736                ********************************************************************************
```

```
2738  099B 0000  MBSOLY   NUM       0


2741                   *************************************************************************
2742                   *
2743                   *                         INITIALIZE SMM17
2744                   *                THESE LOCATIONS WILL BE DESTROYED WHEN THE
2745                   *                FIRST TEST IS LOADED
2746                   *
2747                   *************************************************************************


2749  099C 0801  INSMM17  SET       M               SET ALL BITS IN M REG
2750  099D 080C           TRM       A
2751  099E A083           AND-      HFFF0             REMOVE BITS FROM 4 BIT REG
2752  099F 0102           SAZ       IN0               ZERO A INDICATES 4 BIT M REG
2753  09A0 E076           LDQ-      BIT11                 MASK IS 16 BITS.
2754  09A1 4049           STQ-      INFORM
2755  09A2 807D  IN0      EOR-      H000F           EQUALS NOW FFFF OR 000F
2756  09A3 A042           AND-      SETMASK         (ALLOW PRESTORED DISABLES)
2757  09A4 0864           TCA       A
2758  09A5 E800        LDQ   PRTEQU       GET PRINTER ADDRESS
      09A6 FF84
2759  09A7 0191           SWN       1                         IF SWITCH SET AFTER 2ND SMM
2760  09A8 0000           NUM       0                          PARAMETER STOP, WILL STOP HERE
2761  09A9 0864           TCA       A                          WITH AREG DISPLAYING DISABLED
2762  09AA 08AD           LAM       A,M                        INTERRUPTS. SET/CLR AS DESIRED.
2763  09AB 6042           STA-      SETMASK                   (=1ST CHANCE FOR SMM HAND-CHANGE
2764  09AC 0814        TRQ   A
2765  09AD A000        AND   =N$7F80
      09AE 7F80
2766  09AF 0901           INA       1       DIRECTOR FUNCTION AND STATUS
2767  09B0 6800        STA   PRTEQU       RESTORE PRINTER ADDRESS
      09B1 FFA9
2768  09B2 0846        CLR   A,Q
2769  09B3 C400           LDA+      PASSMM                    FETCH SMM PARAMETER FROM QL.
      09B4 0FDD
2770  09B5 6400           STA+      IN10                      FORCE
      09B6 0A48
2771  09B7 0ADF           ENA       -$20                            NON-INTERRUPT
2772  09B8 A400           AND+      IN10                                         MODE
      09B9 0A48
2773  09BA 0920           INA       $20                                                TYPEOUT
2774  09BB 6056           STA-      SMMCNT
2775  09BC C400           LDA+      PASSJ                     STOP/JUMP WORD FROM QL.
      09BD 0FDE
```

```
2776  09BE 6043          STA-    STJP          (FOR SMM HEADING MSG.)
2777  09BF 0CF5          ENQ     -10
2778  09C0 48FF          STQ-    I
2779  09C1 E1BA  INITSJ  LDQ-    MSTJP,I       STORE STOP/JUMP PARAMETER
2780  09C2 0151          SQN     PRESTRD-*-1      FROM INITIALIZATION
2781  09C3 61BA          STA-    MSTJP,I             IN INDIVIDUAL,
2782  09C4 D0FF  PRESTRD RAO-    I                      NON-PRESTORED,
2783  09C5 E0FF          LDQ-    I                        TEST PARAMETER TABLE.
2784  09C6 0141          SQZ     LDEQ-*-2      MASTER PRESTORED IN QL, NOT SMM.
2785  09C7 18F9          JMP*    INITSJ
2786  09C8 60BA          STA-    MSTJP
2787  09C9 E400  LDEQ    LDQ+    PASEQ         EQUIPMENT ADDRESS FROM QL.
      09CA 8FDF
2788  09CB 4057          STQ-    EQUIP
2789  09CC C0BA          LDA-    MSTJP
2790  09CD A073          AND-    BIT08
2791  09CE 0101          SAZ     1          SKIP IF OK TO TYPEOUT
2792  09CF 1814          JMP*    IN3        JJUMP TO OMIT ALL TYPEOUTS

2794  09D0 E000          LDQ     =N$91         CHECK FOR PRESENCE OF TTY.
      09D1 0091
2795  09D2 0A01          ENA     1
2796  09D3 0302  IN2A    OUT     IN2B-*-1      EXTERNAL REJECT
2797  09D4 1803          JMP*    IN2C          REPLY
2798  09D5 180E          JMP*    IN3           INTERNAL REJECT - TTY NOT AVAIL
2799  09D6 18FC  IN2B    JMP*    IN2A          REPEAT FUNCTION
2800  09D7 C073  IN2C    LDA-    BIT08         SELECT WRITE MODE
2801  09D8 03FE          OUT     -1
2802  09D9 0DFE          INQ     -1
2803  09DA 0AFF          ENA     -0
2804  09DB 03FE          OUT     -1
2805  09DC 03FE          OUT     -1            OUTPUT 2 RUBOUT CODES
2806  09DD 0D01          INQ     1
2807  09DE 02FE  IN2D    INP     -1            STATUS
2808  09DF A06C          AND-    BIT01         CHECK FOR BUSY
2809  09E0 0101          SAZ     1
2810  09E1 18FC          JMP*    IN2D          RECHECK STATUS
2811  09E2 180F          JMP*    IN4
2812  09E3 0CF5  IN3     ENQ     -10
2813  09E4 C2BA  IN3A    LDA-    MSTJP,Q       IF TTY NOT PRESENT,
2814  09E5 A000          AND     =N-$108       SET OMIT TYPEOUT AND
      09E6 FEF7
2815  09E7 8000          ADD     =N$108        STOP ON ERROR  BIT
      09E8 0108
2816  09E9 62BA          STA-    MSTJP,Q       IN EACH TABLE ENTRY.
2817  09EA 0142          SQZ     IN3B-*-1
2818  09EB 0D01          INQ     1
2819  09EC 18F7          JMP*    IN3A
2820  09ED 6043  IN3B    STA-    STJP          (FOR SMM HEADING MSG.)
2821  09EE 0A8F          ENA     -$40          CLEAR SELECT TTY DISPLAY/ENTRY
2822  09EF A859          AND*    IN10                 BIT IN SMM PARAMETER.
2823  09F0 6858          STA*    IN10
2824  09F1 E000  IN4     LDQ     =XLASMBS
      09F2 0F01
```

```
2825  09F3 C855          LDA*    IN10
2826  09F4 0FC7          ALS     7                 MBS SEL TO BIT 15
2827  09F5 0121          SAP     1                 SKIP IF NOT
2828  09F6 188D          JMP*    IN4C
2829  09F7 E000          LDQ     =XPRTEND
      09F8 0976
2830  09F9 0FCE          ALS     14                L. P. SEL TO BIT 15
2831  09FA 0121          SAP     1                 SKIP IF NOT
2832  09FB 1808          JMP*    IN4C
2833  09FC E000          LDQ     =XTTYEND
      09FD 0909
2834  09FE 0FC4          ALS     4                 TTY SEL TO BIT 15
2835  09FF 0121          SAP     1                 SKIP IF NOT
2836  0A00 1803          JMP*    IN4C
2837  0A01 E000          LDQ     =XENDMON1
      0A02 0794
2838  0A03 4044  IN4C    STQ-    LASTVALUE
2839  0A04 C844          LDA*    IN10
2840  0A05 0FC4          ALS     4
2841  0A06 0C0F          ENQ     $F
2842  0A07 08B6          LAQ     A,Q
2843  0A08 0DFC          INQ     -MT               CHECK SELECTED LOADER TYPE.
2844  0A09 014B          SQZ     TOHEAD-*-1        (MT LDR ASSEMBLED IN MONITOR)
2845  0A0A 60FD  LDLDR1  STA-    I-2
2846  0A0B C000          LDA     =XLDLDR2
      0A0C 0A10
2847  0A0D 6025          STA-    INTX
2848  0A0E 1400          JMP+    PRELDR+3          OVERLAY APPROPRIATE RBD LOADER.
      0A0F 0EA3
2849  0A10 C0FD  LDLDR2  LDA-    I-2
2850  0A11 B800  LDLDR3  EOR     MTUNIT+1          CHECK LOADER TYPE
      0A12 FC95
2851  0A13 0101          SAZ     TOHEAD-*-1
2852  0A14 18F6          JMP*    LDLDR1+1
2853  0A15 0C2A  TOHEAD  ENQ     HEADB-HEADING+1                                PTC2
2854  0A16 C000          LDA     =XHEADING
      0A17 0AF5
2855  0A18 5408          RTJ-    (TYPEOUT)         PRINT SHM17 V3.0.
2856  0A19 0700  IN5     CPB     0
2857  0A1A 0800          NOP     0
2858  0A1B 01FB          SNF     IN1-*-1           (IF PROTECT FAULT GENERATED,
2859  0A1C 0C12          ENQ     HEADD-HEADB+1        INFORM OPERATOR OF NEED
2860  0A1D 0A0C          ENA     $C                TO DISABLE MANUAL CONTROLS
2861  0A1E A056          AND-    SHKCNT
2862  0A1F 09FB          INA     -4                CHECK FOR SC1700
2863  0A20 0101          SAZ     1                 SKIP IF NOT SC1700
2864  0A21 0C08          ENQ     HEADC-HEADB+1
2865  0A22 C000          LDA     =XHEADB
      0A23 0B1E
2866  0A24 5408          RTJ-    (TYPEOUT)
2867  0A25 0000          SLS     0
2868  0A26 18F2          JMP*    IN5               TRY AGAIN.
2869  0A27 C047  IN1     LDA-    LDLCORE           DETERMINE CORE SIZE, BK0
```

```
2870  0A28 6447          STA-    (LDLCORE)
2871  0A29 9077          SUB-    BIT12           $1000
2872  0A2A 6047          STA-    LDLCORE
2873  0A2B 0131          SAM     IN2-*-1
2874  0A2C 18FA          JMP*    IN1
2875  0A2D C487  IN2     LDA-    (H7FFF)
2876  0A2E 6047          STA-    LDLCORE         LOADER LAST CORE, BK0
2877  0A2F A080          AND-    HF000           MASK OUT CORE SIZE
2878  0A30 B049          EOR-    INFORM
2879  0A31 6049          STA-    INFORM          STORE IN INFORMATION WORD

2881  0A32 C048  BKCHK1  LDA-    LDL1COR         DETERMINE CORE SIZE, BK1.
2882  0A33 6448          STA-    (LDL1COR)
2883  0A34 E447          LDQ-    (LDLCORE)       LAST ADR OF BK0 WILL NOW BE
2884  0A35 0176          SQM     BKCHK3-*-1          NEGATIVE IF BK1 NOT PRESENT.
2885  0A36 9077          SUB-    BIT12           $1000
2886  0A37 0122          SAP     BKCHK2-*-1      FINNISHED UPPER BANK
2887  0A38 6048          STA-    LDL1COR
2888  0A39 18F8          JMP*    BKCHK1          NO
2889  0A3A C47C  BKCHK2  LDA-    (HFFFF)
2890  0A3B 1802          JMP*    BKCHK4
2891  0A3C C047  BKCHK3  LDA-    LDLCORE
2892  0A3D 6048  BKCHK4  STA-    LDL1COR
2893  0A3E 9000          SUB     =N130           STOPX BUFFER AREA,
      0A3F 0082
2894  0A40 09DF          INA     -$20            CONSOLE AUTOLOAD AREA.
2895  0A41 60E1          STA-    STOPBFR     STOPX AND RBD LOADER
2896  0A42 09E1          INA     -160+130        SHARE SAME BUFFER
2897  0A43 6810          STA*    IN13B+1         SAVE INBI1 VALUE
2898  0A44 C000          LDA     =XIN13A         PREPARE FOR LIB LIST ABORT
      0A45 0A4E
2899  0A46 6025          STA-    INTX                            VIA MC-RESTART.
2900  0A47 C000          LDA-    0               RESTORE SMMCNT INTERRUPT
2901  0A48 0000  IN10    NUM     0               MODE AFTER HEADING TYPEOUT.
2902  0A49 6056          STA-    SMMCNT
2903  0A4A A068          AND-    BIT00
2904  0A4B E044          LDQ-    LASTVALUE
2905  0A4C 0105          SAZ     IN13B-*-1
2906  0A4D 1812          JMP*    LLCONT          DO LIBRARY LIST.
2907  0A4E 0AFE  IN13A   ENA     -1              (LIB LIST ABORTION ENTRY HERE)
2908  0A4F A049          AND-    INFORM
2909  0A50 6049          STA-    INFORM
2910  0A51 1842          JMP*    FLGEND+1
2911  0A52 C000  IN13B   LDA-    0               P+1 HAS BEEN PLUGGED
2912  0A53 0000          NUM     0               WITH INBI1 VALUE
2913  0A54 6046          STA-    INBI1           SET UP RBD INP-BFR FWA
2914  0A55 C000          LDA     =XMCINIT        PREPARE FOR MC RESTART.
      0A56 0284
2915  0A57 6025          STA-    INTX
2916  0A58 C056          LDA-    SMMCNT
2917  0A59 A073          AND-    BIT08
2918  0A5A 0102          SAZ     IN13C-*-1
2919  0A5B 1800          JMP     LOOVLY
      0A5C FF1A
```

```
0A5D 1400   IN13C   JMP+     SMSTART
0A5E 02C0


                    ******************************************************************
                    *                                                                *
                    *                  LIBRARY LIST OPERATION                        *
                    *                PREPARES B1 FOR LOAD CONTROL                    *
                    *                 CHECKS B6 FOR LOAD ERRORS                      *
                    *                                                                *
                    ******************************************************************

0A5F C008   LLCONT  LDA      =XLASMBS
0A60 0F01
0A61 6046           STA-     INBI1               INCREASE BFR AREA FOR QL, SMM
0A62 6044           STA-     LASTVALUE           (FOR DP LIB LIST)
0A63 48FB           STQ*     LLCONT              SAVE ORIGNINAL VALUE
0A64 0AFF           ENA      -0
0A65 60BC           STA-     B1                  FLAG LIB LIST OPERATION
0A66 C056           LDA-     SMMCNT
0A67 B06B           EOR-     BIT00
0A68 6056           STA-     SMMCNT            REMOVE LIB LIST SELECT
0A69 A080           AND-     HF000
0A6A 0FC4           ALS      4
0A6B 09FC           INA      -MT
0A6C 0121           SAP      1
0A6D 182D           JMP*     SETTERM
0A6E 0103           SAZ      LL1-*-1             IS LOADER DISK
0A6F 09FC           INA     -3                 IS DEVICE 6 OR ABOVE             JU
0A70 0121           SAP     LL1-*-1            POS IS YES                       JU
0A71 1825           JMP*     LLTRM1                YES  GO TYPEOUT  BINQL
0A72 C0C6   LL1     LDA-     RMDFLG                NO
0A73 0101           SAZ      LL2-*-1             HAS DISK REACHED END OF FILE
0A74 181E           JMP*     FLGEND                YES  TERMINATE LIBRARY LIST
0A75 0846   LL2     CLR      A,Q                   NO
0A76 60BE           STA-     B3
0A77 60BF           STA-     B4
0A78 60C1           STA-     B6
0A79 60C2           STA-     B7
0A7A 5400           RTJ+     LOADER
0A7B 06A8
0A7C C446           LDA-     (INBI1)             RBD BLOCK ID
0A7D 60BD           STA-     B2                  (FLAG PREVIOUS LOADER ENTRY)
0A7E B000           EOR-     0
0A7F 2A48   ALFXH   ALF      1,*H
0A80 011A           SAN      NOTXH-*-1           SKIP IF NOT HEX CORRECTION BLOCK
0A81 0C02           ENQ      2                   REPORT PROGRAM CORRECTION ADDRS.
0A82 C646           LDA-     (INBI1),Q
0A83 540A           RTJ-     (HEXASC)
0A84 5409           RTJ-     (TTYBZY)            WAIT BUSY MESSAGE ROUTINE.
```

```
2966  0A85 486E          STQ*    HEADING-2
2967  0A86 686E          STA*    HEADING-1
2968  0A87 C000          LDA     =XLLMSG4
      0A88 0AEB
2969  0A89 0C0A          ENQ     HEADING-LLMSG4
2970  0A8A 183C          JMP*    CKLLER-1
2971  0A8B B8F3  NOTXH    EOR*    ALFXH
2972  0A8C 8000          EOR     =N$2050
      0A8D 2050
2973  0A8E 0842          CLR     Q
2974  0A8F 010E          SAZ     LLNAM-*-1           SKIP ON NAM BLOCKS
2975  0A90 8FE3          LLS     3
2976  0A91 010B          SAZ     CONTLL-*-1          A ZERO = RBD TYPE BLOCK
2977  0A92 0113  FLGEND   SAN     LLTERM-*
2978  0A93 C8CB          LDA*    LLCONT
2979  0A94 6044          STA-    LASTVALUE           RESTORE SYSTEM VALUE.
2980  0A95 188C  LLTERM   JMP*    IN13B
2981  0A96 C000  LLTRM1   LDA     =XLLMSG2
      0A97 0ADD
2982  0A98 0C04          ENQ     LLMSG3-LLMSG2
2983  0A99 5408          RTJ-    (TYPEOUT)
2984  0A9A C000  SETTERM  LDA-    0
2985  0A9B 0800          NOP     0                   SET LIB LIST TERMINATE
2986  0A9C 68F5          STA*    FLGEND                   ON 2ND BINARY QL ENCOUNTER.
2987  0A9D 182A  CONTLL   JMP*    CKLLER              CHECK FOR ERRS AND CONTINUE
2988  0A9E 5409  LLNAM    RTJ-    (TTYBZY)            WAIT COMPLETION OF LAST TYPEOUT.
2989  0A9F 8C06          ENQ     6                   SAVE TEST ID, REVISION DATE.
2990  0AA0 C646          LDA-    (INBI1),Q
2991  0AA1 6840          STA*    LLMSG3
2992  0AA2 0DFE          INQ     -1
2993  0AA3 C646          LDA-    (INBI1),Q
2994  0AA4 0DFE          INQ     -1
2995  0AA5 E646          LDQ-    (INBI1),Q
2996  0AA6 A082          AND-    HFF00
2997  0AA7 0920          INA     $20
2998  0AA8 0FF8          LLS     24
2999  0AA9 4839          STQ*    NAMWD5
3000  0AAA 6839          STA*    NAMWD6
3001  0AAB 0182          SWS     DATEPL-*-1          SKIP = INCLUDE REV DATE + LENGTH
3002  0AAC 0C04          ENQ     DATE01-LLMSG3+1
3003  0AAD 1817          JMP*    LLLINE
3004  0AAE 0C03  DATEPL   ENQ     3
3005  0AAF C646          LDA-    (INBI1),Q
3006  0AB0 540A          RTJ-    (HEXASC)
3007  0AB1 4837          STQ*    PL+1
3008  0AB2 6837          STA*    PL+2
3009  0AB3 0C0A          ENQ     10
3010  0AB4 40FF          STQ-    I
3011  0AB5 C646          LDA-    (INBI1),Q
3012  0AB6 E08B          LDQ-    H2020
3013  0AB7 0FE8          LLS     8
3014  0AB8 482C          STQ*    DATE01
3015  0AB9 0FE8          LLS     8
```

```
3016  0ABA D0FF          RAO-    I
3017  0ABB C546          LDA-    (INBI1),I
3018  0ABC 0FE8          LLS     8
3019  0ABD 4828          STQ*    DATE23
3020  0ABE 0FE8          LLS     8
3021  0ABF D0FF          RAO-    I
3022  0AC0 C546          LDA-    (INBI1),I
3023  0AC1 0FE8          LLS     8
3024  0AC2 4824          STQ*    DATE45
3025  0AC3 0C0A          ENQ     LLMSG4-LLMSG3
3026  0AC4 C000 LLLINE   LDA     =XLLMSG3-1
      0AC5 0AE0
3027  0AC6 5408          RTJ-    (TYPEOUT)
3028  0AC7 C0BE CKLLER   LDA-    B3              CHECK LOAD ERROR FLAG.
3029  0AC8 010C          SAZ     JLL1-*-1
3030  0AC9 680E          STA*    ERCODE
3031  0ACA C0BF          LDA-    B4
3032  0ACB 680E          STA*    STOPA3
3033  0ACC C0C1          LDA-    B6
3034  0ACD 680D          STA*    STOPQ3
3035  0ACE C446          LDA-    (INBI1)
3036  0ACF 680C          STA*    STOPA4
3037  0AD0 0C02          ENQ     2
3038  0AD1 C646          LDA-    (INBI1),Q
3039  0AD2 680A          STA*    STOPQ4
3040  0AD3 0844          CLR     A
3041  0AD4 5402          RTJ-    (STOP)          LOADER FAULTS DURING LIB LIST
3042  0AD5 189C JLL1     JMP*    LL1               WILL INCLUDE A4 AND Q4 INFO-
3043  0AD6 0028 LLERID   NUM     $0028               A4=1ST RECORD WORD (BLOCK ID
3044  0AD7 0000 ERCODE   NUM     0                     IF RBD FORMATED RECORD)
3045  0AD8 0AD4 CALLAD   ADC     JLL1-1              Q4=3RD WORD (PROGRAM ADDR.
3046  0AD9 0000 STOPA3   NUM     0                     IF RBDBLK)
3047  0ADA 0000 STOPQ3   NUM     0
3048  0ADB 0000 STOPA4   NUM     0
3049  0ADC 0000 STOPQ4   NUM     0
3050  0ADD 4249 LLMSG2   ALF     X,BIN QLX
      0ADE 4E20
      0ADF 514C
3051  0AE0 8D0A          NUM     $8D0A
3052  0AE1 2020 LLMSG3   ALF     1,
3053  0AE2 2020 NAMWD5   NUM     $2020
3054  0AE3 2020 NAMWD6   NUM     $2020
3055  0AE4 0000 DATE01   NUM     0
3056  0AE5 0000 DATE23   NUM     0
3057  0AE6 0000 DATE45   NUM     0
3058  0AE7 2020 PL       ALF     3,
      0AE8 2020
      0AE9 2020
3059  0AEA 2020          ALF     1,
3060  0AEB 8D0A LLMSG4   NUM     $8D0A
3061  0AEC 2050          ALF     X, PROG MOD AT P    X
      0AED 524F
      0AEE 4720
      0AEF 4D4F
```

```
                0AF0 4420
                0AF1 4154
                0AF2 2050
                0AF3 2020
                0AF4 2020
3062            0AF5 8D0A   HEADING  NUM       $8D0A
3063            0AF6 8D0A            NUM       $8D0A
3064            0AF7 534D            ALF       X,SMM17 X
                0AF8 4D31
                0AF9 3720
3065            0AFA 2056            ALF       X, VR. 3.1-1 INCREMENTAL RELEASE X
                0AFB 522E
                0AFC 2033
                0AFD 2E31
                0AFE 2D31
                0AFF 2049
                0B00 4E43
                0B01 5245
                0B02 4045
                0B03 4E54
                0B04 414C
                0B05 2052
                0B06 454C
                0B07 4541
                0B08 5345
                0B09 2020
3066            0B0A 4350            ALF       X,CP2FX
                0B0B 3246
3067            0B0C 800A            NUM       $8D0A
3068            0B0D 434F            ALF       X,COPYRIGHT CONTROL DATA CORP. 1974X
                0B0E 5059
                0B0F 5249
                0B10 4748
                0B11 5420
                0B12 434F
                0B13 4E54
                0B14 524F
                0B15 4C20
                0B16 4441
                0B17 5441
                0B18 2043
                0B19 4F52
                0B1A 502E
                0B1B 2031
                0B1C 3937
                0B1D 3420
3069            0B1E 0D0A   HEADB    NUM       $0D0A
3070            0B1F 434C            ALF       X,CLR PROT SW.X
                0B20 5220
                0B21 5052
                0B22 4F54
                0B23 2053
                0B24 572E
```

```
3071  0825 800A   HEADC   NUM       $800A
3072  0826 434C           ALF       X,CLR AUTOLOAD PROT.X
      0827 5220
      0828 4155
      0829 544F
      082A 4C4F
      082B 4144
      082C 2050
      082D 524F
      082E 542E
3073  082F 800A   HEADD   NUM       $800A
```

```
3075                ********************************************************************************
3076                *                                                                              *
3077                *                          FINAL  RBD  LOADERS                                 *
3078                *                                                                              *
3079                *    THE ORG STATEMENTS AT THE BEGINNING OF EACH LOADER FLAGS THE               *
3080                *    EDITING ROUTINE TO INSERT OVERLAY BLOCKS ON INITIAL ASSEMBLY              *
3081                *    PRODUCT BINARY EDITING.  THE MAG TAPE LOADER IS ASSEMBLED IN              *
3082                *    THE SMM LOAD CONTROLLER AND CAN BE OVERLAYED ON REQUEST AT SMM            *
3083                *    LOAD TIME.  CONSEQUENTLY, NONE OF THESE MAY BE LONGER THAN THE            *
3084                *    ALLOTTED AREA AT                                                          *
3085      06A7              ORG       MTUNIT                                                     *
3086                *                                                                              *
3087                ********************************************************************************

3089  06A7 0000   PTCNT     NUM       0                    (COMPLEMENT HEX WORD COUNT)
3090  06A8 0001   PT1LDR    NUM       1                    PAPER TAPE LOADER TYPE
3091  06A9 5409             RTJ-      (TTYBZY)             (WAIT SOFTWARE TTY BUSY SWITCH)
3092  06AA 0500             IIN       0                    DISABLE INTERRUPTS DURING RECORD
3093  06AB E057             LDQ-      EQUIP
3094  06AC C078             LDA-      BIT13
3095  06AD 03FC             OUT       PT1LDR-*+2           FUNCTION 1713 TTS.
3096  06AE 0844   PT00      CLR       A
3097  06AF 60FF             STA-      I
3098  06B0 582E             RTJ*      RPTF                 READ FRAME X.
3099  06B1 0FC8   PT01      ALS       8
3100  06B2 6446             STA-      (INBI1)
3101  06B3 5828             RTJ*      RPTF                 READ FRAME X+1.
3102  06B4 68F2             STA*      PTCNT                ASSUME FRAMES = 1ST BLOCK WORD.
3103  06B5 5829             RTJ*      RPTF                 READ FRAME X+2.
3104  06B6 0FC8             ALS       8
3105  06B7 6446   PT02      STA-      (INBI1)
3106  06B8 5826             RTJ*      RPTF                 READ FRAME X+3.
3107  06B9 C8ED             LDA*      PTCNT
3108  06BA 0903             INA       3                    CHECK FIRST WORD
3109  06BB 012B             SAP       PT03-*-1                AGAINST RBD
3110  06BC 0939             INA       60-3                       BLOCK LENGTH
3111  06BD 0139             SAM       PT03-*-1                         BOUNDRIES.
3112  06BE C446             LDA-      (INBI1)              CHECK SECOND WORD
3113  06BF A000             AND       =N$1FFF                 TO BE A LEGAL
      06C0 1FFF
3114  06C1 09AF             INA       -$50                               RBD BLOCK ID.
3115  06C2 0109             SAZ       PT04-*-1             AZERO = CHECKS SATISFIED.
3116  06C3 C000             LDA-      0
3117  06C4 2A48             ALF       1,*H                 CHECK FOR HEX-CORRECTION BLOCK.
3118  06C5 8446             EOR-      (INBI1)
3119  06C6 0105             SAZ       PT04-*-1             AZERO = CHECKS SATISFIED.
3120  06C7 E8DF   PT03      LDQ*      PTCNT                IF EITHER CHECK NOT SATISFIED,
3121  06C8 C446             LDA-      (INBI1)                 SHIFT DATA ONE FRAME
3122  06C9 0FE8             LLS       8                          USE NEXT FRAME
3123  06CA 48DC             STQ*      PTCNT                         AS END OF WORD 2,
3124  06CB 18EB             JMP*      PT02                              AND REPEAT CHECKS.
3125  06CC D0FF   PT04      RAO-      I
```

```
3126  06CD 5811          RTJ*    RPTF            INPUT RECORD OF LENGTH
3127  06CE 0FC8          ALS     8                SPECIFIED BY FIRST WORD,
3128  06CF 6546          STA-    (INBI1),I          PLUS THE TRAILING CHECKSUM.
3129  06D0 580E          RTJ*    RPTF
3130  06D1 E0FF          LDQ-    I
3131  06D2 F8D4          ADQ*    PTCNT
3132  06D3 0141          SQZ     PT05-*-1         (QZERO = END OF RECORD + CKSM)
3133  06D4 18F7          JMP*    PT04
3134  06D5 88D1  PT05    ADD*    PTCNT
3135  06D6 E0FF          LDQ-    I
3136  06D7 0DFE  PT06    INQ     -1
3137  06D8 8646          ADD-    (INBI1),Q        CALCULATE CHECKSUM.
3138  06D9 0141          SQZ     PT07-*-1
3139  06DA 18FC          JMP*    PT06
3140  06DB 0101  PT07    SAZ     PT08-*-1         VERIFY CHECKSUM CORRECT.
3141  06DC 0A13          ENA     CKSMER           (ERROR CODE)
3142  06DD 1818  PT08    JMP*    PTERR+1

3144  06DE 0000  RPTF    NUM     0                PAPER TAPE INPUT ROUTINE.
3145  06DF 0800          NOP     0
3146  06E0 E057  RPTF00  LDQ-    EQUIP
3147  06E1 02FE          INP     -1               INPUT STATUS-
3148  06E2 0FCA          ALS     10
3149  06E3 013C          SAM     RPTF03-*-1       CHECK ALARM STATUS, SKIP IF SET.
3150  06E4 0FC2          ALS     2
3151  06E5 0135          SAM     RPTF02-*-1       CHECK DATA STATUS, SKIP IF SET.
3152  06E6 0FC2          ALS     2                CHECK BUSY.  NOT BUSY=
3153  06E7 0132          SAM     RPTF01-*-1         1711/12/13 DATA HOLD REG EMPTY
3154  06E8 0A20          ENA     $20                1721/77 START MOTION INACTIVE.
3155  06E9 03FE          OUT     -1               FUNCTION START MOTION.
3156  06EA 18F5  RPTF01  JMP*    RPTF00           AWAIT DATA STATUS.
3157  06EB 0DFE  RPTF02  INQ     -1
3158  06EC C546          LDA-    (INBI1),I
3159  06ED 02F1          INP     RPTF00-*-1       INPUT DATA
3160  06EE 6546          STA-    (INBI1),I
3161  06EF 1CEE          JMP*    (RPTF)
3162  06F0 0FC6  RPTF03  ALS     6                ALARM STATUS DETECTED.
3163  06F1 0822          TRA     Q
3164  06F2 C8EB          LDA*    RPTF             RESTORE STATUS IN QREG.
3165  06F3 9000          SUB     =XPT01             HANG ON STATUS
      06F4 06B1
3166  06F5 0111          SAN     PTERR-*-1            UNTIL MANUALLY CLEARED
3167  06F6 18E9          JMP*    RPTF00                 IF FROM FIRST FRAME INPUT.
3168  06F7 0A14  PTERR   ENA     PTALARM          (ERROR CODE)
3169  06F8 608E          STA-    B3
3170  06F9 408F          STQ-    B4
3171  06FA E057          LDQ-    EQUIP
3172  06FB 0A40          ENA     $40
3173  06FC 0300          OUT     0                FUNCTION 1721/77 STOP MOTION.
3174  06FD 0400          EIN     0                ENABLE INTERRUPTS.
3175  06FE 0CFE          ENQ     -1
3176  06FF C8A7          LDA*    PTCNT
3177  0700 6646          STA-    (INBI1),Q        STORE NEG WD CNT IN BFR.
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3178  0701 1CA6          JMP*    (PT1LDR)


3180       06A7          ORG     MTUNIT
3181  06A7 0000  CR      NUM     0
3182  06A8 0002  CR1LOR  NUM     2                       CARD READER LOADER TYPE
3183  06A9 E057  CR00    LDQ-    EQUIP       (INT REJ)
3184  06AA 02FE          INP     -1          (EXT REJ)   INPUT STATUS-
3185  06AB 0138          SAM     CR01-*-1                CHECK 405 MOTOR POWER ON.
3186  06AC 0FCF          ALS     15
3187  06AD 0126          SAP     CR01-*-1                CHECK READY.
3188  06AE 0FCF          ALS     15
3189  06AF 0134          SAM     CR01-*-1                CHECK NOT BUSY.
3190  06B0 0FCE          ALS     14
3191  06B1 0138          SAM     CR03-*-1                DATA STATUS HERE INDICATES 405.
3192  06B2 0FCB          ALS     11
3193  06B3 0121          SAP     CR02-*-1                CHECK ERROR (HANG IN THS LOOP
3194  06B4 18F4  CR01    JMP*    CR00                    FOR RETRY AFTER FAILURE AT CR14)
3195  06B5 0A9F  CR02    ENA     -$60
3196  06B6 A057          AND-    EQUIP
3197  06B7 0920          INA     $20                     ENSURE BIT05 SET IN
3198  06B8 6057          STA-    EQUIP                         EQUIPMENT ADDRESS FOR 430.
3199  06B9 0822          TRA     Q
3200  06BA C000          LDA     =N$81
      06BB 0081
3201  06BC 03FE          OUT     -1                      FUNCTION 430 CARD FEED.
3202  06BD 0844  CR03    CLR     A
3203  06BE 60FF          STA-    I                       CLEAR BUFFER INDEX.
3204  06BF 0500          IIN     0                       DISABLE INTERRUPTS DURING RECORD
3205  06C0 E057  CR04    LDQ-    EQUIP
3206  06C1 00FE          INQ     -1
3207  06C2 0204  CR05    INP     CR08-*-1                INPUT DATA.
3208  06C3 6546  CR06    STA-    (INBI1),I
3209  06C4 00FF  CR07    RAO-    I
3210  06C5 18FC          JMP*    CR05
3211  06C6 0B00  NOP     NOP     0           (INT REJ)
3212  06C7 E057  CR08    LDQ-    EQUIP       (EXT REJ)
3213  06C8 02FE          INP     -1                      INPUT STATUS.
3214  06C9 0FCB          ALS     11
3215  06CA 013F          SAM     CR15-*-1                CHECK END-OF-OPERATION.
3216  06CB 0FCF  CR11    ALS     15
3217  06CC 0129          SAP     CR12-*-1                CHECK FOR ALARM-
3218  06CD 0FC8          ALS     8                        ALARM PRESENT.
3219  06CE 0137          SAM     CR12-*-1                CHECK 405 HOPPER EMPTY-
3220  06CF 0FCE          ALS     14                       NOT CAUSE OF ALARM. RESTORE
3221  06D0 E0BF          LDQ-    B4                        STATUS WORD,
3222  06D1 0151          SQN     1                           CHECK FOR PREVIOUSLY FLAGGED
3223  06D2 60BF          STA-    B4                            ALARM, SAVE 1ST BAD STATUS
3224  06D3 E057          LDQ-    EQUIP
3225  06D4 0FCF          ALS     15
3226  06D5 0121          SAP     CR13-*-1                CHECK READY STATUS-
3227  06D6 18E9  CR12    JMP*    CR04                    READER READY, FINISH CARD INPUT.
3228  06D7 0FCF  CR13    ALS     15
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3229  06D8 0123          SAP     CR16-*-1          CHECK BUSY STATUS.
3230  06D9 18ED          JMP*    CR08              WAIT NOT BUSY FOR PROPER OFFSET.
3231  06DA C0FF  CR15    LDA-    I
3232  06DB 60BE          STA-    B3                SAVE COLUMN COUNT.
3233  06DC 0400  CR16    EIN     0                 ENABLE INTERRUPTS.
3234  06DD C046          LDA-    INBI1
3235  06DE 09FD          INA     -2
3236  06DF 60BB          STA-    B0
3237  06E0 60BD          STA-    B2
3238  06E1 0A02          ENA     2
3239  06E2 60FF          STA-    I
3240  06E3 E5BB  CR17    LDQ-    (B0),I            (COLUMN 1+4X)
3241  06E4 D0FF          RAO-    I
3242  06E5 C5BB          LDA-    (B0),I            (COLUMN 2+4X)
3243  06E6 0FC4          ALS     4
3244  06E7 0FE4          LLS     4
3245  06E8 44BB          STQ-    (B0)              WORD 1+3X.
3246  06E9 D0BB          RAO-    B0
3247  06EA 0642          CLR     Q
3248  06EB 0FE4          LLS     4
3249  06EC B5BB          EOR-    (B0),I            (COLUMN 3+4X)
3250  06ED 0FEC          LLS     12
3251  06EE 44BB          STQ-    (B0)              WORD 2+3X.
3252  06EF D0BB          RAO-    B0
3253  06F0 B5BB          EOR-    (B0),I            (COLUMN 4+4X)
3254  06F1 64BB          STA-    (B0)              WORD 3+3X.
3255  06F2 D0BB          RAO-    B0
3256  06F3 C0FF          LDA-    I
3257  06F4 09E9          INA     -22
3258  06F5 0101          SAZ     CR18-*-1          BUFFER PACKED-
3259  06F6 18EC          JMP*    CR17              NO. RECYCLE.
3260  06F7 0CF0  CR18    ENQ     -2
3261  06F8 C646          LDA-    (INBI1),Q         CHECK FOR NON-RBD CARD
3262  06F9 A081          AND-    H00FF                       (QL BINARY)
3263  06FA 09AF          INA     -$50
3264  06FB 0101          SAZ     CRFLGS-*-1
3265  06FC 1CAB          JMP*    (CR1LDR)          NOT BINARY, EXIT LOADER.
3266  06FD E0BF  CRFLGS  LDQ-    B4
3267  06FE 0A15          ENA     CRALARM           (ERROR CODE)
3268  06FF 0156          SQN     CREXIT-*-1        CHECK ALARM FLAG.
3269  0700 E0BE          LDQ-    B3                OK.
3270  0701 0A50          ENA     80
3271  0702 0874          EAQ     A
3272  0703 0103          SAZ     CR21-*-1          CHECK COLUMN COUNT.
3273  0704 40BF          STQ-    B4                IMPROPER END-OF-OPERATION.
3274  0705 0A16          ENA     CREOP             (ERROR CODE)
3275  0706 1808  CREXIT  JMP*    CR24
3276  0707 0C3B  CR21    ENQ     59
3277  0708 66BD  CR22    ADD-    (B2),Q            CALCULATE CHECKSUM.
3278  0709 0142          SQZ     CR23-*-1
3279  070A 0DFE          INQ     -1
3280  070B 18FC          JMP*    CR22
3281  070C 0101  CR23    SAZ     CR24-*-1          SKIP IF CHECKSUM CORRECT.
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3282  070D 0A13          ENA     CKSMER          (ERROR CODE)
3283  070E 60BE  CR24    STA-    B3              FLAG ERROR FOR SMM.
3284  070F 1C98          JMP*    (CR1LDR)        EXIT LOADER                PTC2


3286       06A7          ORG     MTUNIT
3287  06A7 0000  UNIT    NUM     0
3288  06A8 0004  DP1LDR  NUM     4               DISK PACK LOADER TYPE
3289  06A9 E057  DP01    LDQ-    EQUIP
3290  06AA C8FC          LDA*    UNIT
3291  06AB 0FC9          ALS     9
3292  06AC 8073          ADD-    BIT08
3293  06AD 03FB          OUT     DP01-*          SELECT UNIT.
3294  06AE C08C          LDA-    B1
3295  06AF 0107          SAZ     DP02-*-2        SKIP=TEST LOADING  (NOT SEARCH).
3296  06B0 B07C          EOR-    HFFFF
3297  06B1 0106          SAZ     DP02-*-1        ALLOW LISTING OF PRODR. MODS.
3298  06B2 C827          LDA*    DPNAML
3299  06B3 0842          CLR     Q
3300  06B4 0103          SAZ     DP02-*-1        SKIP IF PREVIOUS READ NOT NAMBLK
3301  06B5 4824          STQ*    DPNAML
3302  06B6 1803          JMP*    DP02A                       SPEED UP SEARCH.
3303  06B7 6822          STA*    DPNAML
3304  06B8 0A10  DP02    ENA     $10             (BYPASS QUICK LOOK BINARY)
3305  06B9 6822  DP02A   STA*    DPADR           REWIND FILE TO SMM
3306  06BA 584E          RTJ*    LDADR                 ON FIRST SUBROUTINE ENTRY.
3307  06BB C000          LDA-    0
3308  06BC 1806          VFD     N8/$18,X8/JMPDIF    MODIFY DP02 INSTRUCTION
3309  06BD 68FA          STA*    DP02                      FOR SUBSEQUENT PASSES.
3310  06BE 0C39  DP03    ENQ     57              (BUFFER TO INCLUDE EOF MARKER)
3311  06BF 4088          STQ-    B0
3312  06C0 581C          RTJ*    DPRDWR          READ DATA.
3313  06C1 1806          JMP*    DP10            OPERATION OK.   (NO ALARM)
3314       0006          EQU     JMPDIF(DP03-DP02)

3316  06C2 D0C1  DPRDERR RAO-    B6              RETURN HERE ON ALARM.
3317  06C3 C0C1          LDA-    B6              (ERROR COUNT)
3318  06C4 09CD          INA     -50
3319  06C5 010E          SAZ     DP11-*-1        AZERO = ABORT.
3320  06C6 1832  DP04    JMP*    DP09            RETRY OPERATION 50 TIMES

3322  06C7 C446  DP10    LDA-    (INBI1)         CHECK BLOCK TYPE-
3323  06C8 B812          EOR*    H2050
3324  06C9 0113          SAN     DP10A-*-1       SKIP IF NOT NAMBLK.
3325  06CA E046          LDQ-    INBI1
3326  06CB C201          LDA-    1,Q
3327  06CC 680D          STA*    DPNAML          SAVE NEXT NAMBLK SECADDR
3328  06CD 0C39  DP10A   ENQ     57              (MAXIMUM RBD RECORD LENGTH)
3329  06CE C646          LDA-    (INBI1),Q       CHECK (LWA+1) FOR
3330  06CF 0114          SAN     DP11-*-1              SMM EOIT END-OF-FILE FLAG.
3331  06D0 C000          LDA-    0               RESET REWIND
3332  06D1 0A10          ENA     $10                   ON NEXT SUBROUTINE ENTRY.
3333  06D2 60C6          STA-    RWOFLG          SET DISK EOF FLAG
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3334  06D3 68E4          STA*    DP02
3335  06D4 C0BF  DP11    LDA-    B4              ERROR FLAG.
3336  06D5 0102          SAZ     DP12-*-1
3337  06D6 0A18          ENA     DPALARM         (ERROR CODE)
3338  06D7 60BE          STA-    B3              FLAG ERROR TO LDR CALLER.
3339  06D8 1CCF  DP12    JMP*    (DP1LDR)        EXIT LOADER.

3341  06D9 0000  DPNAML  NUM     0
3342  06DA 2050  H2050   NUM     $2050
3343  06DB 0000  DPADR   NUM     0


3345  06DC 0000  DPRDWR  NUM     0               DISK PACK READ/WRITE ROUTINE.
3346  06DD E057          LDQ-    EQUIP
3347  06DE 0001          INQ     1
3348  06DF 0B00          NOP     0
3349  06E0 02FE          INP     -1              INPUT ADDRESS STATUS (FOR RETRY)
3350  06E1 68F9          STA*    DPADR
3351  06E2 C046  CDDOVLY LDA-    IN8I1           PREPARE BUFFER ADDRESS
3352  06E3 E0B8          LDQ-    B0
3353  06E4 0832          AAQ     Q
3354  06E5 09FE          INA     -1
3355  06E6 60B8          STA-    B0
3356  06E7 0D01          INQ     1
3357  06E8 44B8          STQ-    (B0)            STORE BUFFER LWA+1 IN FWA-1.
3358  06E9 E057  DP08    LDQ-    EQUIP
3359  06EA 0D03  INQX    INQ     3
3360  06EB 0814          TRQ     A
3361  06EC A080          AND-    HF000
3362  06ED 0102          SAZ     ADQX-*
3363  06EE F000          ADQ-    0
3364  06EF 17FC  ADQX    NUM     $17FC
3365  06F0 C0B8          LDA-    B0
3366  06F1 03FE          OUT     -1              READ DATA.
3367  06F2 5808          RTJ*    CKDPAL          CHECK ALARM STATUS.
3368  06F3 1CE8          JMP*    (DPRDWR)
3369  06F4 E077          LDQ-    BIT12           RETURN HERE FROM
3370  06F5 08B2          LAQ     Q                       STATUS IF ALARM SET.
3371  06F6 0143          SQZ     DPERR-*-1       CHECK DEFECTIVE TRACK FLAG.
3372  06F7 D8E3          RAO*    DPADR           IF SET, INCREASE TO NEXT SECTOR
3373  06F8 5810  DP09    RTJ*    LDADR
3374  06F9 18EF          JMP*    DP08
3375  06FA 60BF  DPERR   STA-    B4              ERROR FLAG = LAST FAILING STATUS
3376  06FB 0C01          ENQ     1
3377  06FC 1EDF          JMP*    (DPRDWR),Q      EXIT TO CALLERS ERROR ROUTINE.


3379  06FD 0000  CKDPAL  NUM     0
3380  06FE E057          LDQ-    EQUIP
3381  06FF 02FE          INP     -1              INPUT STATUS.
3382  0700 0FCE          ALS     14
3383  0701 0121          SAP     1               CHECK BUSY-
3384  0702 18F8          JMP*    CKDPAL+1        WAIT NOT BUSY.
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3385  0703 0FCC          ALS       12
3386  0704 0122          SAP       NODPAL-*-1          CHECK ALARM-
3387  0705 D8F7          RAO*      CKDPAL              RETURN TO P+2 ON ALARM.
3388  0706 0FC6          ALS       6                   RESTORE STATUS WORD.
3389  0707 1CF5  NODPAL  JMP*      (CKDPAL)

3391  0708 0000  LDADR   NUM       0                   LOAD ADDRESS ROUTINE.
3392  0709 C8D1          LDA*      DPADR
3393  070A E057          LDQ-      EQUIP
3394  070B 0D01          INQ       1
3395  070C 0800          NOP       0
3396  070D 03FE          OUT       -1                  POSITION FILE.
3397  070E 58EE          RTJ*      CKDPAL              CHECK ALARM STATUS.
3398  070F 1CF8          JMP*      (LDADR)             (NO ALARM)
3399  0710 0FC4          ALS       4                   RECEIVED ALARM.
3400  0711 0121          SAP       LDADR1-*-1          CHECK FOR ILLEGAL ADDRESS.
3401  0712 D8C8          RAO*      DPADR               INCREASE ADDRESS IF ILLEGAL,
3402  0713 18F5  LDADR1  JMP*      LDADR+1             REPEAT FUNCTION.
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```
3405                ********************  CDD DISK DRIVER OVERLAY  ************************
3406                *
3407                *
3408        06A7            ORG     MTUNIT
3409  06A7  0000   CDUNIT   NUM     0
3410  06A8  0005   CD1LDR   NUM     5                       CARTRIDGE DISK LOADER TYPE
3411  06A9  E057   CDP01    LDQ-    EQUIP
3412  06AA  C8FC           LDA*    CDUNIT
3413  06AB  0FC9           ALS     9
3414  06AC  8073           ADD-    BIT08
3415  06AD  03FB           OUT     CDP01-*                 SELECT UNIT
3416  06AE  C0BC           LDA-    B1
3417  06AF  0107           SAZ     CDP02-*-2               SKIP = TEST LOADING (NOT SEARCH)
3418  06B0  B07C           EOR-    HFFFF
3419  06B1  0106           SAZ     CDP02-*-1               ALLOW LISTING OF PRODR. MOD.
3420  06B2  C827           LDA*    CDPNAM
3421  06B3  0842           CLR     Q
3422  06B4  0103           SAZ     CDP02-*-1               SKIP IF PREVIOUS READ NOT NAMBLK
3423  06B5  4824           STQ*    CDPNAM
3424  06B6  1803           JMP*    CDP02A                  SPEED UP SEARCH
3425  06B7  6822           STA*    CDPNAM
3426  06B8  0A10   CDP02    ENA     $10                     (BYPASS QUICK LOOK BINARY)
3427  06B9  6822   CDP02A   STA*    CDPADR                  REWIND FILE TO SMM
3428  06BA  584C           RTJ*    CDLDADR                  ON FIRST SUBROUTINE ENTRY
3429  06BB  C000           LDA-    0
3430  06BC  1806           VFD     N8/$18,X8/CJMPDF        MODIFY CDP02 INSTRUCTION
3431  06BD  60FA           STA*    CDP02                    FOR SUBSEQUENT PASSES
3432  06BE  0C39   CDP03    ENQ     57                      (BUFFER TO INCLUDE EOF MARKER)
3433  06BF  4088           STQ-    B0
3434  06C0  581C           RTJ*    CDRDWR                  READ DATA
3435  06C1  1806           JMP*    CDP10                   OPERATION OK. (NO ALARM)
3436        0006           EQU     CJMPDF(CDP03-CDP02)

3438  06C2  D8C1   CDPRDER  RAO-    B6                      RETURN HERE ON ALARM
3439  06C3  C0C1           LDA-    B6                      (ERROR COUNT)
3440  06C4  09CD           INA     -50
3441  06C5  010E           SAZ     CDP11-*-1               AZERO = ABORT
3442  06C6  1829   CDP04    JMP*    CD09                    RETRY OPERATION 50 TIMES
3443  06C7  C446   CDP10    LDA-    (INBI1)                 CHECK BLOCK TYPE
3444  06C8  B812           EOR*    CH2050
3445  06C9  0113           SAN     CDP10A-*-1              SKIP IF NOT NAMBLK
3446  06CA  E046           LDQ-    INBI1
3447  06CB  C201           LDA-    1,Q
3448  06CC  680D           STA*    CDPNAM                  SAVE NEXT NAMBLK SECADDR
3449  06CD  0C39   CDP10A   ENQ     57                      (MAXIMUM RBD RECORD LENGTH)
3450  06CE  C646           LDA-    (INBI1),Q               CHECK (LWA+1) FOR
3451  06CF  0114           SAN     CDP11-*-1                SMM EDIT END OF FILE FLAG
3452  06D0  C000           LDA-    0                       RESET REWIND
3453  06D1  0A10           ENA     $10                      ON NEXT SUBROUTINE ENTRY
3454  06D2  60C6           STA-    RWDFLG                  SET DISK EOF FLAG
3455  06D3  68E4           STA*    CDP02
3456  06D4  C0BF   CDP11    LDA-    B4                      ERROR FLAG
3457  06D5  0102           SAZ     CDP12-*-1
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3458  06D6 0A19          ENA     CDPALM          (ERROR CODE)
3459  06D7 608E          STA-    B3              FLAG ERROR TO LDR CALLER
3460  06D8 1CCF  CDP12   JMP*    (CD1LDR)        EXIT

3462  06D9 0000  CDPNAM  NUM     0
3463  06DA 2050  CH2050  NUM     $2050
3464  06DB 0000  CDPADR  NUM     0


3466  06DC 0000  CDRDWR  NUM     0               CART. DISK READ/WRITE ROUTINE
3467  06DD E057          LDQ-    EQUIP
3468  06DE 0001          INQ     1
3469  06DF 0800          NOP     0
3470  06E0 02FE          INP     -1              INPUT ADDRESS STATUS (FOR RETRY)
3471  06E1 68F9          STA*    CDPADR
3472  06E2 0DFD          INQ     -2
3473  06E3 C0B8          LDA-    B0
3474  06E4 0901          INA     1               BUFFER LENGTH FOR 1739
3475  06E5 03FE          OUT     -1              LOAD BUFFER LENGTH
3476  06E6 E057  CD08    LDQ-    EQUIP
3477  06E7 0D03          INQ     3
3478  06E8 C046          LDA-    INBI1
3479  06E9 03FE          OUT     -1
3480  06EA 5808          RTJ*    CKCDAL
3481  06EB 1CF0          JMP*    (CDRDWR)
3482  06EC 608F  CDERR   STA-    84
3483  06ED 0C01          ENQ     1
3484  06EE 1EED          JMP*    (CDRDWR),Q
3485  06EF 5817  CD09    RTJ*    CDLDADR
3486  06F0 0DFE          INQ     -1
3487  06F1 18F1          JMP*    CD08-3          RECOVERY


3489  06F2 0000  CKCDAL  NUM     0
3490  06F3 E057          LDQ-    EQUIP
3491  06F4 02FE          INP     -1
3492  06F5 6000          STA-    0
3493  06F6 0000  CDSTAT  NUM     0
3494  06F7 0FCE          ALS     14
3495  06F8 0121          SAP     1
3496  06F9 18F9          JMP*    CKCDAL+1
3497  06FA 0FCC          ALS     12
3498  06FB 0129          SAP     NOCDAL-*-1
3499  06FC D8F5          RAO*    CKCDAL
3500  06FD 0DFE          INQ     -1
3501  06FE 02FE          INP     -1              RESTORE DRIVE ON ALARM
3502  06FF 0D01          INQ     1
3503  0700 02FE  CD09A   INP     -1
3504  0701 0FCE          ALS     14
3505  0702 0121          SAP     CD09B-*-1       WAIT BUSY TO DROP
3506  0703 18FC          JMP*    CD09A
3507  0704 C8F1  CD09B   LDA*    CDSTAT
3508  0705 1CEC  NOCDAL  JMP*    (CKCDAL)
```

```
3510  0706 0000  CDLDADR  NUM     0
3511  0707 E057           LDQ-    EQUIP
3512  0708 0D01           INQ     1
3513  0709 0A00           ENA     0
3514  070A 03FE           OUT     -1
3515  070B 0DFE           INQ     -1
3516  070C 02FE  LDADR3   INP     -1
3517  070D A06F           AND-    BIT04               WAIT FOR EOP
3518  070E 0111           SAN     1
3519  070F 18FC           JMP*    LDADR3
3520  0710 0D04           INQ     4                   FILE ADDRESS STATUS
3521  0711 02FE           INP     -1                  GET ACTUAL FILE ADDRESS
3522  0712 A07D           AND-    H000F               CHECK FOR SEEK COMPLETE BITS ***
3523  0713 6000           STA-    0
3524  0714 0000  F33      0       0                   ZERO FOR 1739
3525  0715 C000           LDA-    0
3526  0716 180F           VFD     N8/$18,X8/CJMP
3527  0717 68F1           STA*    CDLDADR+3
3528  0718 C8FB  F33GO    LDA*    F33
3529       000F           EQU     CJMP(F33GO-CDLDADR-3)
3530  0719 0104           SAZ     4                   SKIP IF 1739
3531  071A C8C0           LDA*    CDFADR               MUST BE A 1733-2          ***
3532  071B A000           AND     =N$FFDF                                       ***
      071C FFDF
3533  071D 181C           JMP*    CDEXT                                         ***
3534  071E 0DFC           INQ     -3
3535  071F 0800           NOP     0
3536  0720 02FE           INP     -1                  GET CYLINDER POSITION
3537  0721 A082           AND-    HFF00
3538  0722 6000           STA-    0
3539  0723 0000  CDCUAD   NUM     0
3540  0724 C886           LDA*    CDFADR
3541  0725 0C1F           ENQ     $1F
3542  0726 08B2           LAQ     Q
3543  0727 0DE2           INQ     -$1D
3544  0728 0172           SQM     CDLDA2-*-1          IS SECTOR ADDRESS ILLEGAL (1739)
3545  0729 8072           ADD-    BIT07                 YES  INCREMENT CYLINDER/HEAD
3546  072A 0CE2           ENQ     -$1D                       ZERO SECTOR ADDRESS
3547  072B 0D1D  CDLDA2   INQ     $1D
3548  072C A000           AND     =N$FF80
      072D FF80
3549  072E 0874           EAQ     A
3550  072F E081           LDQ-    H00FF
3551  0730 08B2           LAQ     Q                                             ***
3552  0731 A082           AND-    HFF00                                         ***
3553  0732 4000           STQ-    0                                             ***
3554  0733 0000  CDNWHS   NUM     0                                             ***
3555  0734 98EE           SUB*    CDCUAD
3556  0735 0122           SAP     2                   SKIP IF FORWARD SEEK
3557  0736 0864           TCA     A                   COMPLEMENT CYL ADDRESS
3558  0737 0920           INA     $20                 SET BIT 5 REVERSE SEEK
```

```
3559  0738 B8FA          EOR*    CDNWHS          PUT IN THE HEAD AND SECT    ***
3560  0739 E057  CDEXT    LDQ-    EQUIP                                       ***
3561  073A 0D01          INQ     1                                           ***
3562  073B 03FE          OUT     -1
3563  073C 5885          RTJ*    CKCDAL
3564  073D 1CC8          JMP*    (CDLOADR)
3565  073E 0FC5          ALS     5               CHECK FOR ADRS ERROR
3566  073F 0121          SAP     CDAD1-*-1
3567  0740 D89A          RAO*    CDPADR
3568  0741 18C5  CDAD1   JMP*    CDLDADR+1


3570       06A8          ORG     MTUNIT+1
3571             *
3572             *                               INSERT LOADER TYPE 6 HERE
3573             *
3574  06A8 0006          NUM     6
3575  06A9 18FF          NUM     $18FF


3577       06A8          ORG     MTUNIT+1
3578             *
3579             *                               INSERT LOADER TYPE 7 HERE
3580             *
3581  06A8 0007          NUM     7
3582  06A9 18FF          NUM     $18FF


3584             ****************************** 8000 MAGTAPE LOADER OVERLAY ***********JU
3585       06A7          ORG     MTUNIT                                              JU
3586             *                                                                   JU
3587  06A7 0000  MT8UN   0       0               UNIT NUMBER
3588  06A8 0008  MT8LDR  ADC     MT8             ENTRY(DEVICE TYPE)                  JU
3589  06A9 C057          LDA-    EQUIP           GET HES
3590  06AA A083          AND-    HFFF0           MASK DIRECTOR BITS
3591  06AB 0908          INA     8
3592  06AC 0822          TRA     Q
3593  06AD C8F9          LDA*    MT8UN           GET UNIT NR
3594  06AE 09F8          INA     -4
3595  06AF 0136          SAM     MT8LDX-*-1      MINUS IS LEGSL (0-3)
3596  0680 C8F6          LDA*    MT8UN
3597  0681 60BF          STA-    B4              TO ERROR B-BOX
3598  0682 0A17          ENA     MTPE            ERROR CODE(ILLEGAL UNIT)
3599  0683 60BE          STA-    B3
3600  0684 60C2          STA-    B7              TERMINATE FLAG
3601  0685 1CF2          JMP*    (MT8LDR)        EXIT DRIVER
3602  0686 0904  MT8LDX  INA     4
3603  0687 0FC8          ALS     8
3604  0688 8000          ADD     =N$1442         UNIT 0 MODE 0
      06B9 1442
3605  068A 03FE          OUT     -1              SELECT UNIT
3606  068B 6813          STA*    MT8L1           SAVE SELECT CODE
3607  068C 0DF7          INQ     -8
```

```
3608  068D 02FE          INP     -1              GET STATUS
3609  068E 0FCF          ALS     15              CHECKREADY
3610  068F 0131          SAM     MT8LDY-*-1
3611  06C0 18FC          JMP*    *-3             NOT READY, WAIT
3612  06C1 02FE MT8LDY   INP     -1              RESTATUS(DELAY FOR 7/9 TRACK)
3613  06C2 A079          AND-    BIT14
3614  06C3 680C          STA*    MT89TR          ZERO IS
3615  06C4 0D08          INQ     8               7 TRACK
3616  06C5 0103          SAZ     MT8L2-*-1       SKIP FOR 7 TRACK
3617  06C6 C808          LDA*    MT8L1           GET SELECT FUNCTION
3618  06C7 0910          INA     $10             SELECT MODE 1
3619  06C8 03FE          OUT     -1              FOR 9 TRACK
3620  06C9 C0BC MT8L2    LDA-    B1
3621  06CA 0125          SAP     MT8L3-*-1       MINUS IS LIST
3622  06CB C0BD          LDA-    B2
3623  06CC 0113          SAN     MT8L3-*-1       ZERO ON FIRST PASS LIST
3624  06CD 1822          JMP*    MT8LRW          FIRST PASS LIST$ REWIND TAPE
3625  06CE 0000 MT8L1    0       0               HOLDS SELECT FUNCTION
3626  06CF 0000 MT89TR   0       0               ZERO IS SEVEN TRACK
3627  06D0 C046 MT8L3    LDA-    INBI1           RBD BUFFER FWA ($XF3F)
3628  06D1 09FD          INA     -2
3629  06D2 60B8          STA-    B0              FWA-2
3630  06D3 C81C          LDA*    MT8LRW          READ COMTROL WORD($C000)
3631  06D4 64B8          STA-    (B0)            INTO FWA-2
3632  06D5 D0B8          RAO-    B0              FWA-1
3633  06D6 C0B8          LDA-    B0
3634  06D7 8000          ADD     =N$A0           LENGTH
      06D8 00A0
3635  06D9 64B8          STA-    (B0)            LWA INTO FWA-1
3636  06DA 8901          INA     1               LWA+1
3637  06DB 60FF          STA-    I
3638  06DC C07A          LDA-    BIT15           $8000
3639  06DD 64FF          STA-    (I)             TERMINATE FUNCTION INTO LWA+1
3640  06DE 0DF7          INQ     -8
3641  06DF 02FE MT8L5    INP     -1              GET STATUS
3642  06E0 A06C          AND-    BIT01           CHECK BUSY
3643  06E1 0101          SAZ     MT8L4-*-1
3644  06E2 18FC          JMP*    MT8L5           HANG ON BUSY
3645  06E3 C0B8 MT8L4    LDA-    B0              FWA-1
3646  06E4 09FE          INA     -1              FWA-2
3647  06E5 0B00          NOP     0
3648  06E6 03FE          OUT     -1              START BUFFER,FWA-2 IN A
3649  06E7 02FE MT8L6    INP     -1              GET STATUS
3650  06E8 0131          SAM     MT8L7-*-1       MINUS IS EOP
3651  06E9 18FD          JMP*    MT8L6           WAIT FOR EOP
3652  06EA 6000 MT8L7    STA-    0
3653  06EB 0000          0       0               HOLDS STATUS
3654  06EC A075          AND-    BIT10           CHECK FOR FILEMARK
3655  06ED 0105          SAZ     MT8LB-*-1       ZERO MEANS NO EOF
3656  06EE 0D08          INQ     8
3657  06EF C000 MT8LRW   LDA     =N$2700         REWIND TO
      06F0 2700
3658  06F1 03FE          OUT     -1              LOADPOINT
```

```
3659  06F2 18DD  MT8L8   JMP*    MT8L3          READ RECORD
3660  06F3 C8F7  MT8LB   LDA*    MT8L7+1        GET STATUS BACK
3661  06F4 A000          AND     =N$1EC         LP/EOT/ILL/LD/PF/PE/
      06F5 01EC
3662  06F6 010F          SAZ     MT8LC-*-1      ZERO= NO ERROR
3663  06F7 D0C1          RAO-    B6             UPDATE ERROR COUNT
3664  06F8 0A17          ENA     MTPE           ERROR CODE
3665  06F9 60BE          STA-    B3             INTO B-BOX
3666  06FA C8F0          LDA*    MT8L7+1        ERROR STATUS
3667  06FB 60BF          STA-    B4             INTO B-BOX
3668  06FC C0C1          LDA-    B6
3669  06FD 09F7          INA     -8
3670  06FE 0105          SAZ     MT8LD-*-1      ERROR 7 TIMES EXIT
3671  06FF C000          LDA     =N$2600        BACKSPACE FUNCTION
      0700 2600
3672  0701 0D08          INQ     8
3673  0702 03FE          OUT     -1             BACKSPACE ON ERROR
3674  0703 18EE          JMP*    MT8L8          AND REPEAT READ
3675  0704 0A17  MT8LD   ENA     MTPE
3676  0705 60C2          STA-    B7             TERMINATE FLAG
3677  0706 C8C8  MT8LC   LDA*    MT89TR         GET TRACK BIT
3678  0707 0101          SAZ     MT8LE-*-1      SKIP FOR 7 TRACK
3679  0708 1C9F  MT8L11  JMP*    (MT8LDR)       EXIT LOADER


3681  0709 C046  MT8LE   LDA-    IN8I1          FWA OF INPUT DATA
3682  070A 6088          STA-    B0
3683  070B 60FF          STA-    I
3684  070C 093C          INA     60
3685  070D 60BD          STA-    B2             MAX. BUFFER ADDR.
3686  070E 0842  MT8LF   CLR     Q              STORE 8 FRAMES IN
3687               *                            3COMPUTER WORDS
3688  070F C488          LDA-    (B0)           FRAME 1
3689  0710 0FE6          LLS     6
3690  0711 D088          RAO-    B0
3691  0712 B488          EOR-    (B0)           FRAME 2
3692  0713 0FE8          LLS     8
3693  0714 D088          RAO-    B0
3694  0715 C488          LDA-    (B0)           FRAME 3
3695  0716 0FC2          ALS     2
3696  0717 0FE4          LLS     4
3697  0718 44FF          STQ-    (I)            WORD 1
3698  0719 D0FF          RAO-    I
3699  071A 0842          CLR     Q
3700  071B D088          RAO-    B0
3701  071C B488          EOR-    (B0)           FRAME 4
3702  071D 0FE6          LLS     6
3703  071E D088          RAO-    B0
3704  071F B488          EOR-    (B0)           FRAME 5
3705  0720 0FE6          LLS     6
3706  0721 D088          RAO-    B0
3707  0722 B488          EOR-    (B0)           FRAME 6
3708  0723 0FE4          LLS     4
```

```
3709  0724 44FF          STQ-    (I)              WORD 2
3710  0725 D0FF          RAO-    I
3711  0726 0FE2          LLS     2
3712  0727 D0B8          RAO-    B0
3713  0728 B4B8          EOR-    (B0)             FRAME 7
3714  0729 0FE6          LLS     6
3715  072A D0B8          RAO-    B0
3716  072B B4B8          EOR-    (B0)             FRAME 8
3717  072C 0FE8          LLS     8
3718  072D 44FF          STQ-    (I)              WORD 3
3719  072E D0FF          RAO-    I
3720  072F C0FF          LDA-    I
3721  0730 B0B2          EOR-    B2
3722  0731 0102          SAZ     MT8L10-*-1       SKIP IF COMPLETE
3723  0732 D0B8          RAO-    B0
3724  0733 18DA          JMP*    MT8LF            CONTINUE
3725  0734 18D3 MT8L10   JMP*    MT8L11           EXIT CONVERSION
3726                     *                                                  JU


3729       06A8          ORG     MTUNIT+1
3730                     *
3731                     *       DUMMY OVERLAY TO AID MBS LOAD
3732                     *
3733  06A8 0008          NUM     8
3734  06A9 18FF          NUM     $18FF


3736       00CA          ORG     COMUSE           THIS ORG IS TO FORCE OVERLAY
3737  00CA 0000          NUM     0                 BLOCK FOR MBS OVERLAY
3738       099B          ORG     MBSOLY
```

```
3740            ********************************************************************************
3741            *                                                                              *
3742            *                    BEGIN MBS SUBROUTINES                                     *
3743            *                                                                              *
3744            ********************************************************************************


3746  099B 0000 INE000  NUM     0
3747  099C C0FF         LDA-    I
3748  099D 0106         SAZ     PROC0-*-1           NOT REQUESTED-SKIP MBS CHECK
3749  099E 0901         INA     1
3750  099F 0111         SAN     1                   SKIP IF NOT MBS INT
3751  09A0 1811         JMP*    PROC2A
3752  09A1 0142         SQZ     PROC0-*-1           DONT STACK LINE 0 INTS
3753  09A2 C034         LDA-    HOG2                 NO  DID MBS LOCK OUT SMM
3754  09A3 0111         SAN     PROC2B-*-1            INTS
3755  09A4 1CF6 PROC0   JMP*    (INE000)            CONTINUE
3756  09A5 0814 PROC2B  TRQ     A                    YES STACK THE EXIT STATE
3757  09A6 D42D         RAO-    (ADINST)              VALUE AND PROCESS ROUTINE
3758  09A7 E42D         LDQ-    (ADINST)              ADDRESS
3759  09A8 662D         STA-    (ADINST),Q
3760  09A9 0F42         ARS     2
3761  09AA 0822         TRA     Q
3762  09AB C0FF         LDA-    I
3763  09AC 6A00         STA     INT003-1,Q
      09AD 0082
3764  09AE 0FA2 PROC9   QLS     2
3765  09AF 1400         JMP+    EXITL
      09B0 01B9
3766  09B1 0F22 PROC2A  QRS     2
3767  09B2 CA00         LDA     INT002-1,Q          START MBS INT SYS
      09B3 009D
3768  09B4 B07A         EOR-    BIT15               ADD FLAG TO INT TIMER LOCATION
3769  09B5 6A00         STA     INT002-1,Q
      09B6 009A
3770  09B7 602E         STA-    INTFLG              SET INT OCCURED FLAG
3771  09B8 C091         LDA-     TSACTV
3772  09B9 6876         STA*    INT005
3773  09BA CA00         LDA     INT004-1,Q          MAKE SURE THE TEST
      09BB 0083
3774  09BC 6091         STA-    TSACTV                TABLE POINTER IS CORRECT
3775  09BD 541F         RTJ-    (FWAEI)             POSITION ERR FILE TO I
3776  09BE 4127         STQ-    LINENO,I            SAVE FOR ERR MSG
3777  09BF D03B         RAO-    TK64                UPDATE 64US CLOCK
3778  09C0 C143         LDA-    RBIT,I
3779  09C1 0113         SAN     PROC10-*-1          SKIP FOR RECOGNIZE INT BIT
3780  09C2 C86D         LDA*    INT005              RESTORE THE POINTER
3781  09C3 6091         STA-    TSACTV                AND EXIT
3782  09C4 18E9         JMP*    PROC9                 THROUGH MONITOR
3783  09C5 0AFE PROC10  ENA     -1
```

```
3784  09C6 A049          AND-    INFORM
3785  09C7 6049          STA-    INFORM
3786  09C8 1800          JMP     RIE013          GO PROCESS MBS INTERRUPT
      09C9 0136
3787                     *                       CONVERT THE BINARY POSITION
3788  09CA 0000  INE025  NUM     0                 INTO A HEX NUMBER AND FIND
3789  09CB 681C          STA*    INE059+1          THE INTERRUPT LINE USED
3790  09CC C437          LDA-    (CALLPT)        GET INT.SELECT WORD
3791  09CD 0C0F          ENQ     $F              START BIT COUNT AT 15
3792  09CE 60C1  INE027  STA-    B6
3793  09CF 40C0          STQ-    B5
3794  09D0 0138          SAM     INE031-*-1      BIT ON-SKIP
3795  09D1 0106          SAZ     INE030-*-1      ALL BITS DONE
3796  09D2 C0C1  INE029  LDA-    B6              UPDATE
3797  09D3 E0C0          LDQ-    B5                BIT
3798  09D4 A087          AND-    H7FFF             POSITION
3799  09D5 0FC1          ALS     1                 AND BIT
3800  09D6 0DFE          INQ     -1                COUNT
3801  09D7 18F6          JMP*    INE027          LOOP
3802  09D8 1CF1  INE030  JMP*    (INE025)
3803                     *
3804                     *                       COMPARE THE BIT POSITION
3805                     *                         SELECTED WITH THE BITS
3806                     *                         IN THE INTERRUPT LINE
3807                     *                         TABLE TO DETERMINE THE
3808  09D9 E107  INE031  LDQ-    ILT,I           GET THE INT.TABLE,IN THE FORM
3809  09DA 0FE4  INE054  LLS     4                 BTBT  B=BIT NUMBER
3810  09DB A07D          AND-    H000F                   T=TRAPNUMBER
3811  09DC B0C0          EOR-    B5
3812  09DD 0106          SAZ     INE056-*-1      IF THE SELECTED BIT
3813  09DE 0FE8          LLS     8                 NUMBER COMPARES
3814  09DF A07D          AND-    H000F             WITH B,THEN
3815  09E0 B0C0          EOR-    B5                USE T AS THE
3816  09E1 0102          SAZ     INE056-*-1        TRAP NUMBER
3817  09E2 E108          LDQ-    ILT+1,I
3818  09E3 18F6          JMP*    INE054
3819  09E4 0FF4  INE056  LLS     20
3820  09E5 408C  INE057  STQ-    B1
3821  09E6 1400  INE059  JMP+    0               GO TO SPECIFIED PROCESS ROUTINE
      09E7 0000

3823                     ********************************************************************
3824                     *                                                                  *
3825                     *       MULTILPEX CONTROL ROUTINE.  DETERMINE IF OK TO TRADE.  IF OK *
3826                     *       CHECK FOR SMM17 INTERRUPTS WAITING TO BE PROCESSED ON      *
3827                     *       1ST IN 1ST OUT BASIS.  MOVE INTS TO TOP OF STACK.          *
3828                     *                                                                  *
3829                     ********************************************************************

3831  09E8 0000  HOG1    NUM     0               HOG FLAG                    PTC2
```

```
3832  09E9 0000  MPE000  NUM     *
3833  09EA 0CF0          ENQ     -2              GET ADDRESS OF
3834  09EB CEF0          LDA*    (MPE000),Q        CALL TO
3835  09EC 6037          STA-    CALLPT            MONITOR
3836  09ED C035          LDA-    ILO             IS INT LOCK-OUT ON
3837  09EE 0101          SAZ     MPE005-*-1        NO-SKIP
3838  09EF 1CF9          JMP*    (MPE000)        EXIT
3839  09F0 C8F7  MPE005  LDA*    HOG1            IS HOG FLAG SET
3840  09F1 0103          SAZ     MPE007-*-1      0 = NO
3841  09F2 0844          CLR     A               1=YES
3842  09F3 68F4          STA*    HOG1            CLEAR IT                    PTC2
3843  09F4 1CF4          JMP*    (MPE000)        CONTINUE
3844  09F5 541F  MPE007  RTJ-    (FWAEI)         POSITION ERR FILE TO I
3845  09F6 C8F2          LDA*    MPE000
3846  09F7 6142          STA-    MPXRTN,I        SAVE RETURN ADDRESS
3847  09F8 C037          LDA-    CALLPT
3848  09F9 6141          STA-    CALLP,I         CALLERS ADDR TO ERR FILE
3849                *                            CHECK FOR SMM17 STACKED
3850                *                              INTERRUPTS
3851  09FA C838          LDA*    INTSTK          ARE ANY WAITING
3852  09FB 011A          SAN     MPE025-*-1      YES-SKIP
3853  09FC C834          LDA*    MPXCNT          LOOK AT TRADE SWITCH
3854  09FD 0FC1          ALS     1                 TO DETERMINE IF
3855  09FE 6832          STA*    MPXCNT            ITS TRADE TIME
3856  09FF 0131          SAM     MPE020-*-1        YES-SKIP
3857  0A00 1CE8          JMP*    (MPE000)          NO-EXIT
3858  0A01 541E  MPE020  RTJ-    (FWAI)
3859  0A02 C000          LDA     =XMPE015
      0A03 0A29
3860  0A04 6105          STA-    MUXRTA,I
3861  0A05 5401          RTJ-    (CONTROL)       GO TRADE
3862  0A06 E82D  MPE025  LDQ*    INT000          GET CURRENT EXIT STATE
3863  0A07 4144          STQ-    TSCOML,I          VALUE
3864  0A08 C07A          LDA-    BIT15           SET UP LENGTH
3865  0A09 9829          SUB*    INTSTK            OF STACK
3866  0A0A 6827          STA*    STKLGH
3867  0A0B 01B0          SNO     0               CLEAR POSSIBLE OVERFLOW
3868  0A0C 0C01          ENQ     1               MOVE STACK
3869  0A0D CA26  MPE035  LDA*    INT000,Q          UP ONE
3870  0A0E 0DFE          INQ     -1               SLOT
3871  0A0F 6A24          STA*    INT000,Q
3872  0A10 C822          LDA*    INTSTK        DECREMENT THE STACK
3873  0A11 09FE          INA     -1
3874  0A12 6820          STA*    INTSTK
3875  0A13 D81E          RAO*    STKLGH          CHECK FOR LAST
3876  0A14 01A2          SOV     MPE030-*-1        MOVE
3877  0A15 0D02          INQ     2               NOT FINISHED GET
3878  0A16 18F6          JMP*    MPE035            NEXT
3879  0A17 E144  MPE030  LDQ-    TSCOML,I        GET EXIT STATE VALUE FROM
3880  0A18 0F22          QRS     2                 TEMP CELL
3881  0A19 CA46          LDA*    INT003-1,Q      GO TO TESTS INT PROCESSOR
3882  0A1A 60FF          STA-    I                 THROUGH INT ROUTINE
3883  0A1B C26B          LDA-    BIT00,Q         REPLACE MASK BIT FOR
```

```
3884  0A1C 086C          EAM     A                 THIS LINE ONLY
3885  0A1D 0FA2          QLS     2
3886  0A1E 6600          STA+    REG+2,Q           IN SAVE AREA
      0A1F 0142
3887  0A20 4400          STQ+    PROC2+1           REPLACE THE DELTA VALIE
      0A21 01A7
3888  0A22 0814          TRQ     A                 AND SMM INT. PROCESSOR RETURN
3889  0A23 8000          ADD     =N$103            ADDRESS FOR STACKED SMM
      0A24 0103
3890  0A25 6400          STA+     PROCESS          INTERRUPTS
      0A26 0181
3891  0A27 1400          JMP+    PROC              GO TO  SMM CONTROL
      0A28 019E
3892  0A29 541F  MPE015  RTJ-    (FHAEI)           POSITION CURRENT ERRFLE TO I
3893  0A2A C142          LDA-    MPXRTN,I          REPLACE MULTIPLEX EXIT
3894  0A2B 68BD          STA*    MPE000              ADDRESS
3895  0A2C C141          LDA-    CALLP,I           REPLACE ADDR OF
3896  0A2D 6037          STA-    CALLPT              CALLER
3897  0A2E 1C8A  MPE010  JMP*    (MPE000)          CONTINUE
3898  0A2F 0000  INT005  NUM     *                 LAST TSACTV WHEN INT OCCURRED
3899  0A30 5555  MPXCNT  NUM     $5555
3900  0A31 0000  STKLGH  NUM     *                 8000-LENGTH
3901  0A32 0000  INTSTK  NUM     *                 NO OF ENTRIES IN STACK
3902  0A33 0000  INT000  NUM     *                 EXIT STATE VALU HIGHEST PRIOR
3903  0A34 0000          NUM     *
3904  0A35 8000          NUM     *
3905  0A36 0000          NUM     *
3906  0A37 0000          NUM     *
3907  0A38 0000          NUM     *
3908  0A39 0000          NUM     *
3909  0A3A 0000          NUM     *
3910  0A3B 0000          NUM     *
3911  0A3C 0000          NUM     *
3912  0A3D 0000          NUM     *
3913  0A3E 0000          NUM     *
3914  0A3F 0000          NUM     *
3915  0A40 0000          NUM     *
3916  0A41 0000          NUM     *
3917  0A42 0000  INT001  NUM     0                 INTERRUPT TIMER ,TRAP1
3918  0A43 0000          NUM     0                 INTERRUPT TIMER ,TRAP 2
3919  0A44 0000          NUM     0                 INTERRUPT TIMER ,TRAP 3
3920  0A45 0000          NUM     0                 INTERRUPT TIMER ,TRAP 4
3921  0A46 0000          NUM     0                 INTERRUPT TIMER ,TRAP 5
3922  0A47 0000          NUM     0                 INTERRUPT TIMER ,TRAP 6
3923  0A48 0000          NUM     0                 INTERRUPT TIMER ,TRAP 7
3924  0A49 0000          NUM     0                 INTERRUPT TIMER ,TRAP 8
3925  0A4A 0000          NUM     0                 INTERRUPT TIMER ,TRAP 9
3926  0A4B 0000          NUM     0                 INTERRUPT TIMER ,TRAP 10
3927  0A4C 0000          NUM     0                 INTERRUPT TIMER ,TRAP 11
3928  0A4D 0000          NUM     0                 INTERRUPT TIMER ,TRAP 12
3929  0A4E 0000          NUM     0                 INTERRUPT TIMER ,TRAP 13
3930  0A4F 0000          NUM     0                 INTERRUPT TIMER ,TRAP 14
3931  0A50 0000          NUM     0                 INTERRUPT TIMER ,TRAP 15
```

```
3932                    *                                   INT.PROCESSOR ADDRESS TABLE
3933  0A51 0000  INT002  NUM       0                       TRAP 1      SYSTEM TIMER
3934  0A52 0000          NUM       0                       TRAP 2
3935  0A53 0000          NUM       0                       TRAP 3
3936  0A54 0000          NUM       0                       TRAP 4
3937  0A55 0000          NUM       0                       TRAP 5
3938  0A56 0000          NUM       0                       TRAP 6
3939  0A57 0000          NUM       0                       TRAP 7
3940  0A58 0000          NUM       0                       TRAP 8
3941  0A59 0000          NUM       0                       TRAP 9
3942  0A5A 0000          NUM       0                       TRAP 10
3943  0A5B 0000          NUM       0                       TRAP 11
3944  0A5C 0000          NUM       0                       TRAP 12
3945  0A5D 0000          NUM       0                       TRAP 13
3946  0A5E 0000          NUM       0                       TRAP 14
3947  0A5F 0000          NUM       0                       TRAP 15
3948                    *                                   PROCESS ADDRESS TABLES
3949  0A60 0000  INT003  NUM       0                       TRAP 1
3950  0A61 0000          NUM       0                       TRAP 2
3951  0A62 0000          NUM       0                       TRAP 3
3952  0A63 0000          NUM       0                       TRAP 4
3953  0A64 0000          NUM       0                       TRAP 5
3954  0A65 0000          NUM       0                       TRAP 6
3955  0A66 0000          NUM       0                       TRAP 7
3956  0A67 0000          NUM       0                       TRAP 8
3957  0A68 0000          NUM       0                       TRAP 9
3958  0A69 0000          NUM       0                       TRAP 10
3959  0A6A 0000          NUM       0                       TRAP 11
3960  0A6B 0000          NUM       0                       TRAP 12
3961  0A6C 0000          NUM       0                       TRAP 13
3962  0A6D 0000          NUM       0                       TRAP 14
3963  0A6E 0000          NUM       0                       TRAP 15

3965                    *                   TEST ACTIVE POINTER TABLE
3966                    *
3967  0A6F 0000  INT004  NUM       0                       TRAP 1
3968  0A70 0000          NUM       0                            2
3969  0A71 0000          NUM       0                            3
3970  0A72 0000          NUM       0                            4
3971  0A73 0000          NUM       0                            5
3972  0A74 0000          NUM       0                            6
3973  0A75 0000          NUM       0                            7
3974  0A76 0000          NUM       0                            8
3975  0A77 0000          NUM       0                            9
3976  0A78 0000          NUM       0                           10
3977  0A79 0000          NUM       0                           11
3978  0A7A 0000          NUM       0                           12
3979  0A7B 0000          NUM       0                           13
3980  0A7C 0000          NUM       0                           14
3981  0A7D 0000          NUM       0                           15
```

```
3983                    *                                DESELECT INTERRUPT-INTERRUPT BIT
3984                    *                                  IN STATUS WORD GIVEN IN CALL
3985  0A7E 0000 DSE060  NUM      0
3986  0A7F C8FE         LDA*     DSE000                  GET CALL
3987  0A80 6037         STA-     CALLPT                    ADDRESS
3988  0A81 C000         LDA      =XDSE010                GIVE THE PROCESSING ADDRESS
      0A82 0A8E
3989  0A83 541F         RTJ-     (FWAEI)                 POS CURRENT ERR FILE TO I
3990  0A84 5800         RTJ      INE025                    TO THE SELECT ROUTINE
      0A85 FF44
3991  0A86 D03A         RAO-     TK32                    UPDATE 32   USEC COUNTER
3992  0A87 0844         CLR      A                       CLEAR
3993  0A88 6035         STA-     ILO                       INTERRUPT LOCKOUT
3994  0A89 6143         STA-     RBIT,I                    RECOGNIZE INT
3995  0A8A 6127         STA-     LINENO,I                  AND LINE NO.
3996  0A8B 6034         STA-     HOG2                    ALLOW SMM17 INTS
3997  0A8C 0C01         ENQ      1                       RETURN TO
3998  0A8D 1637         JMP-     (CALLPT),Q                CALLER
3999  0A8E 0A00 DSE010  ENA      0                       CLEAR THIS TRAPS TABLES
4000  0A8F 6AB1         STA*     INT001-1,Q                TIMER (HARDWARE)
4001  0A90 6ABF         STA*     INT002-1,Q                SYSTEM TIMER (OVERLOAD)
4002  0A91 6ACD         STA*     INT003-1,Q                PROCESS ADDRESS
4003  0A92 0FA2         QLS      2                       SET SMM PROCESS ADDRESS
4004  0A93 6600         STA+     LV0ADR,Q                     TO ZERO.
      0A94 0103
4005  0A95 0F22         QRS      2
4006  0A96 C26B         LDA-     BIT00,Q                 RESTORE THE MASK BIT
4007  0A97 0869         EAM      M
4008  0A98 1800         JMP      INE029                  GO BACK FOR NEXT SELECTION
      0A99 FF38
4009                    *                                SELECT THIS INTERRUPT-BIT
4010                    *                                  IN STATUS WORD GIVEN IN CALL
4011  0A9A 0000 SIE000  NUM      0
4012  0A9B C8FE         LDA*     SIE000                  GET CALL
4013  0A9C 6037         STA-     CALLPT                    ADDRESS
4014  0A9D 0C01         ENQ      1                         TIME
4015  0A9E C637         LDA-     (CALLPT),Q              GET TIME EXPECTED
4016  0A9F 681A         STA*     SIE010+1                  TO SHOW ERR TIME
4017  0AA0 0C02         ENQ      2                       MOVE PROCESS
4018  0AA1 C637         LDA-     (CALLPT),Q                ADDRESS
4019  0AA2 681A         STA*     SIE012+1
4020  0AA3 541F         RTJ-     (FWAEI)                 POS CURRENT ERR FILE TO I
4021  0AA4 0C03         ENQ      3                       GET INTERRUPT DATA IN BTBT
4022  0AA5 E637         LDQ-     (CALLPT),Q                FORM
4023  0AA6 0DFE         INQ      -1                        B=BIT POSITION IN STATUS
4024  0AA7 C201         LDA-     1,Q                         ONE WORD
4025  0AA8 6107         STA-     ILT,I                     T=TRAP NO.
4026  0AA9 C202         LDA-     2,Q                     SAVE IN TESTS ERROR FILE
4027  0AAA 6108         STA-     ILT+1,I
4028  0AAB 0842         CLR      Q                       INITIALIZE INT
4029  0AAC 40BD         STQ-     B2                        WORD
4030  0AAD C000         LDA      =XSIE010                GIVE THE PROCESSING
      0AAE 0AB8
```

```
4031  0AAF 5800          RTJ     INE025          ADDRESS TO SELECT ROUTINE
      0AB0 FF19
4032  0AB1 C0BD          LDA-    B2              SAVE INTERRUPT
4033  0AB2 6119          STA-    ITLINS,I          WORD FOR ERR MSG
4034  0AB3 0844          CLR     A               CLEAR
4035  0AB4 6035          STA-    ILO               INTERRUPT LOCKOUT
4036  0AB5 D03A          RAO-    TK32            UPDATE 32   USEC COUNTER
4037  0AB6 0C04          ENQ     4               ALL DONE
4038  0AB7 1637          JMP-    (CALLPT),Q        EXIT
4039  0AB8 C000  SIE010  LDA     =N$0            MOVE TIME OF ERR
      0AB9 0000
4040  0ABA 6A95          STA*    INT002-1,Q        TO TABLE
4041  0ABB C000  SIE012  LDA     =N$0            PUT PROCESS
      0ABC 0000
4042  0ABD 6AA1          STA*    INT003-1,Q        ADDR IN TABLES
4043  0ABE C091          LDA-    TSACTV          USE THIS VALUE FOR
4044  0ABF 6AAE          STA*    INT004-1,Q        INTERRUPT PROCESSING
4045  0AC0 0814          TRQ     A                 BUILD
4046  0AC1 B0BD          EOR-    B2              INTERRUPT
4047  0AC2 0FC4          ALS     4                 WORD
4048  0AC3 60BD          STA-    B2
4049  0AC4 0C0F          ENQ     $F
4050  0AC5 C0BC          LDA-    B1              CONVERT HEX CHAR
4051  0AC6 08B2          LAQ     Q               TO INT LINE
4052  0AC7 C26B          LDA-    BIT00,Q         NOW HAVE LINE NO.
4053  0AC8 E101          LDQ-    WEST1,I         EQUIP ADDRESS
4054  0AC9 5404          RTJ-    (REQIT)         PROCESS ADDRESS=-1
4055  0ACA FFFE          NUM     -1
4056  0ACB 541F          RTJ-    (FWAEI)         POS CURRENT ERR FILE TO I
4057  0ACC 1800          JMP     INE029          GO BACK FOR NEXT SELECTION
      0ACD FF04
4058                     *                       RECOGNIZE INTERRUPT
4059                     *
4060  0ACE 0000  RIE000  NUM     0               GET CALL
4061  0ACF C8FE          LDA*    RIE000            ADDRESS
4062  0AD0 D03A          RAO-    TK32            UPDATE 32US COUNTER
4063  0AD1 6037          STA-    CALLPT
4064  0AD2 0C01          ENQ     1               STACK SMM17 INTERRUPTS
4065  0AD3 4034          STQ-    HOG2
4066  0AD4 541F          RTJ-    (FWAEI)         POSITION FOR CURRENT ERROR BLK I
4067  0AD5 6141          STA-    CALLP,I         SAVE CALLERS ADDRESS
4068  0AD6 D143          RAO-    RBIT,I          SET RECOGNIZE BIT
4069  0AD7 080C          TRM     A               SAVE MASK FOR
4070  0AD8 6125          STA-    IMR,I             ERR MSG
4071  0AD9 5415          RTJ-    (CLOCK)         SAMPLE THE TIME
4072  0ADA C437          LDA-    (CALLPT)        SET TIME
4073  0ADB 611A          STA-    XTIME,I           INFO
4074  0ADC 6118          STA-    TIMER,I           INTEST AREA
4075  0ADD E127  RIE006  LDQ-    LINENO,I        HAS INTERRUPT OCCURED
4076  0ADE D03A          RAO-    TK32            UPDATE 32US CLOCK
4077  0ADF 0141          SQZ     RIE008-*-1
4078  0AE0 181F          JMP*    RIE013          YES
4079  0AE1 D037  RIE008  RAO-    CALLPT          ADJUST CALLPT
```

```
4080  0AE2 5800          RTJ      IOE050              COPY STATUS
      0AE3 00EE
4081  0AE4 5800          RTJ      IOE200              CHECK STATUS
      0AE5 014A
4082  0AE6 0822          TRA      Q
4083  0AE7 0AFE          ENA      -1                  RESET
4084  0AE8 8037          ADD-     CALLPT                CALL
4085  0AE9 6037          STA-     CALLPT                 POINT
4086  0AEA 0142          SQZ      RIE007-*-1          TO TIMER IF NO
4087  0AEB 0A03          ENA      3                   STATUS
4088  0AEC 1810          JMP*     RIE012                ERROR
4089  0AED 5415  RIE007  RTJ-     (CLOCK)             GET THE
4090  0AEE 0864          TCA      A                     ELAPSED
4091  0AEF 8118          ADD-     TIMER,I               TIME AND
4092  0AF0 6118          STA-     TIMER,I               DECREMENT TIMER
4093  0AF1 0139          SAM      RIE011-*-1          TO TIME ERROR
4094  0AF2 C000          LDA      =XRIE009            SET UP TO TRADE
      0AF3 0AF7
4095  0AF4 541E          RTJ-     (FWAI)              SET RETURN
4096  0AF5 6105          STA-     MUXRTA,I              ENTRY POINT
4097  0AF6 5401          RTJ-     (CONTROL)           GO TRADE
4098  0AF7 541F  RIE009  RTJ-     (FWAEI)             POSITION FOR CURRENT ERROR BLK I
4099  0AF8 C141          LDA-     CALLP,I             RESTORE
4100  0AF9 6037          STA-     CALLPT                CALL POINT
4101  0AFA 18E2          JMP*     RIE006              LOOP UNTIL INTERRUPT
4102  0AFB 0A04  RIE011  ENA      4                   SET TIME ERR CODE
4103  0AFC 0C07  RIE012  ENQ      7                     AND
4104  0AFD 1800          JMP      REE004              EXIT
      0AFE 0179
4105  0AFF 4035  RIE013  STQ-     ILO                 SET INT LOCKOUT
4106               *                                    NO MORE INTERRUPTS WILL
4107               *                                    BE PROCESSED UNTIL SELIN
4108               *                                    OR DSELIN EXECUTED
4109               *                                 GET INTERRUPT PROCESS ROUTINE
4110  0B00 EA00          LDQ      INT003-1,Q            ADDRESS
      0B01 FF5D
4111  0B02 C102          LDA-     HEST2,I             SET UP NORMAL RETURN
4112  0B03 0112          SAN      RIE015-*-1            FOR TESTS
4113  0B04 0A08          ENA      8                     INTERRUPT
4114  0B05 1802          JMP*     RIE020                PROCESSOR
4115  0B06 0A0A  RIE015  ENA      10
4116  0B07 8141  RIE020  ADD-     CALLP,I
4117  0B08 541E          RTJ-     (FWAI)
4118  0B09 6105          STA-     MUXRTA,I            FOR MUX RETURN
4119  0B0A C000          LDA      =XRIE025
      0B0B 0B0F
4120  0B0C 667B          STA-     (H0000),Q           RETURN HERE FROM TEST INT PROC
4121  0B0D 0400          EIN      0
4122  0B0E 1201          JMP-     1,Q                 GO PROCESS INT


4124               ********************************************************************************
4125               *                                                                              *
```

```
4126                *       RETURN FROM TEST INTERRUPT PROCESSOR.  IF INTERRUPT OCCURED   *
4127                *         WHEN THIS TEST DID NOT HAVE CONTROL RETURN TO INTERRUPTED   *
4128                *         TEST OTHERWISE RETURN TO TEST.                              *
4129                *                                                                     *
4130                ***********************************************************************

4132  0B0F 0B00  RIE025  NOP       0                  REQUIRED FOR PROTECT PROCESSOR
4133  0B10 541F          RTJ-      (FWAEI)            GET FWA OF ERROR BLK TO I-REG
4134  0B11 C107          LDA-      ILT,I              GET THE LINE NO.
4135  0B12 0F48          ARS       8
4136  0B13 A07D          AND-      H000F
4137  0B14 0822          TRA       Q                  NOW HAVE THE LINE NO.
4138  0B15 CA00          LDA       INT004-1,Q         DETERMINE WHO HAD CONTROL
      0B16 FF57
4139  0B17 B800          EOR       INT005
      0B18 FF16
4140  0B19 0106          SAZ       RIE030-*-1         SKIP FOR TEST
4141  0B1A C800          LDA       INT005
      0B1B FF13
4142  0B1C 6091          STA-      TSACTV
4143  0B1D 0FA2          QLS       2                  FORM THE DELTA VALUE
4144  0B1E 1400          JMP+      EXITL              RETURN TO INTERRUPTED TEST
      0B1F 0189
4145  0B20 541E  RIE030  RTJ-      (FWAI)
4146  0B21 E105          LDQ-      MUXRTA,I           GO TO NORMAL RETURN FOR
4147  0B22 167B          JMP-      (H0000),Q            RINT CALL

4149  0B23 0000  HGE000  NUM       0                  SET THE HOG FLAG-ALLOWS
4150  0B24 0A01          ENA       1                    CONTINOUS PROCESSING
4151  0B25 6800          STA       HOG1                 OF MON CALLS                PTC2
      0B26 FEC1
4152  0B27 6034          STA-      HOG2               STACK SMM17 INTS
4153  0B28 1CFA          JMP*      (HGE000)           (PRE-PROCESSING OF HOW INT
4154                *                                   STILL OCCURS)

4156                ***********************************************************************
4157                *                                                                     *
4158                *                     FUNCTION ROUTINE                                *
4159                *                                                                     *
4160                ***********************************************************************

4162  0B29 0000  FNE000  NUM       0
4163  0B2A 5426          RTJ-      (MPX)
4164  0B2B 541F          RTJ-      (FWAEI)            POSITION FOR CURRENT ERROR BLK I
4165  0B2C C000          LDA       =AFN               SET FN
      0B2D 464E
4166  0B2E 611D          STA-      LOPER,I              INTO LAST OPERATION
4167  0B2F E037          LDQ-      CALLPT             GET CALL ADDRESS
4168  0B30 C202          LDA-      2,Q                TIMER VALUE TO A
```

```
4169  0831 0124          SAP     FNE002-*-1          TEST FOR NON-PROTECTED I/O
4170  0832 E000          LDQ     =XIOE135            ADDRESS OF I/O INSTRUCTION
      0833 0C0F
4171  0834 0700          CPB     0                     CLEAR ITS PROTECT BIT
4172  0835 A087          AND-    H7FFF               DELETE BIT 15 OF TIME PARAM
4173  0836 611A FNE002   STA-    XTIME,I             SET TIME IN ERR MESSAGE
4174  0837 6118          STA-    TIMER,I
4175  0838 5415          RTJ-    (CLOCK)             SAMPLE TIME
4176  0839 E037          LDQ-    CALLPT
4177  083A C201          LDA-    1,Q                 EXAMINE THE        * RJ 2X=HNG
4178  083B 60BC          STA-    B1                    RESPONSE CONTROL * RJ 1X=ERR
4179  083C 0C00          ENQ     0                     AND STUFF        * RJ 0X=CNT
4180  083D 0FE4          LLS     4                     THE              *
4181  083E EA4E          LDQ*    IOT001,Q              JUMPS ON         * RP X2=HNG
4182  083F 4850          STQ*    IOT002                REPLY            * RP X1=ERR
4183  0840 0C00          ENQ     0                     AND              * RP X0=CNT
4184  0841 0FE4          LLS     4                     REJECT
4185  0842 EA4A          LDQ*    IOT001,Q
4186  0843 484D          STQ*    IOT002+1
4187  0844 C0BC          LDA-    B1                  GET THE DIRECTOR BITS FOR THIS
4188  0845 A08A          AND-    H007F                 FUNCTION AND ADD ON
4189  0846 8106          ADD-    WE,I                  THE W E PORTION
4190  0847 E437          LDQ-    (CALLPT)            GET THE ACTUAL FUNCTION CODE
4191  0848 0FF0          LLS     16                  SWAP A AND Q
4192  0849 611F          STA-    LOPERA,I            SET LAST OPERATION (A)
4193  084A 4120          STQ-    LOPERQ,I            SET LAST OPERATION (Q)
4194  084B 5818          RTJ*    FNE015              CHECK FOR 17X6 OPERATION
4195  084C 5800          RTJ     IOE100              SET UP OUTPUT
      084D 00AD
4196  084E 5800 FNE005   RTJ     IOE130              EXECUTE OUTPUT
      084F 00BF
4197  0850 411E          STQ-    LOPRSP,I
4198  0851 E08C          LDQ-    B1                  SAVE THE RESPONSE CODE
4199  0852 408D          STQ-    B2                   (RP=2,ER=1,IR=0)
4200  0853 E037          LDQ-    CALLPT              GET TIMER VALUE
4201  0854 C202          LDA-    2,Q                   BIT 15 FOR NON-PROTECTED I/O
4202  0855 0123          SAP     FNE007-*-1          SKIP IF BIT NOT SET
4203  0856 E000          LDQ     =XIOE135            I/O INSTRUCTION ADDRESS
      0857 0C0F
4204  0858 0600          SPB     0                     RESET PROTECT BIT
4205  0859 0C01 FNE007   ENQ     1
4206  085A C637          LDA-    (CALLPT),Q          DOES CALLER WANT STATUS
4207  085B 0131          SAM     FNE010-*-1          NO-SKIP
4208  085C 5875          RTJ*    IOE050              COPY THE STATUS
4209  085D E08D FNE010   LDQ-    B2                  CONVERT RESPONSE CODE TO
4210  085E 0F21          QRS     1                       0=RJ   1=RP
4211  085F D03C          RAO-    TK128               UPDATE 128  USEC COUNTER
4212  0860 EA2F          LDQ*    IOT002,Q
4213  0861 1600          JMP+    0,Q                 BRANCH ON RESPONSE
      0862 0000
4214  0863 0000 FNE015   NUM     *
4215  0864 0C03          ENQ     3
4216  0865 C637          LDA-    (CALLPT),Q          DOES CALLER WANT 17X6
```

```
4217  0866 0112          SAN      FNE016-*-1          YES-SKIP
4218  0867 E120          LDQ-     LOPERQ,I              NO
4219  0868 1805          JMP*     FNE017
4220  0869 E106  FNE016  LDQ-     WE,I                SET UP FOR FN/TERM XFER
4221  086A F076          ADQ-     BIT11
4222  086B 0123          SAP      FNE018-*-1
4223  086C 4120          STQ-     LOPERQ,I            THIS IS A FUNCTION REQUEST
4224  086D C11F  FNE017  LDA-     LOPERA,I
4225  086E 1CF4          JMP*     (FNE015)
4226  086F 0FC2  FNE018  ALS      2
4227  0870 0125          SAP      FNE019-*-1
4228  0871 C11F          LDA-     LOPERA,I            THIS IS A TERMINATE REQUEST
4229  0872 4120          STQ-     LOPERQ,I
4230  0873 5800          RTJ      IOE120              SET UP FOR INPUT
      0874 0090
4231  0875 18D8          JMP*     FNE005              DO THE INPUT
4232  0876 C106  FNE019  LDA-     WE,I
4233  0877 9076          SUB-     BIT11
4234  0878 0822          TRA      Q                   THIS IS A 1716 BUFFERED
4235  0879 4120          STQ-     LOPERQ,I              TRANSFER REQUEST
4236  087A 18F2          JMP*     FNE017
4237               *                                 ENTER HANG ON RESPONSE
4238               *
4239               *                                 DECREMENT THE MSEC TIMER
4240               *                                   (CALCULATE USECS IN LAST LOOP)
4241  087B 5415  FNE020  RTJ-     (CLOCK)             GET THE CURRENT CLOCK
4242  087C 0864          TCA      A                   DECREMENT
4243  087D 8118          ADD-     TIMER,I               THE
4244  087E 6118          STA-     TIMER,I               TIMER
4245  087F 0134          SAM      FNE030-*-1          SKIP IF ERROR
4246  0880 C11F          LDA-     LOPERA,I            GET THE OPERATION
4247  0881 E120          LDQ-     LOPERQ,I              CODES AND
4248  0882 D038          RAO-     TK64                UPDATE 64   USEC COUNTER
4249  0883 18CA          JMP*     FNE005                HANG
4250  0884 0A01  FNE030  ENA      1                   TIME ERROR (CODE 1)
4251  0885 1802          JMP*     FNE036
4252  0886 0A02  FNE034  ENA      2                   RESPONSE ERROR (CODE 2)
4253  0887 0C04  FNE036  ENQ      4                   EXIT TO
4254  0888 610F          STA-     MNTERR,I              USER AT
4255  0889 1637          JMP-     (CALLPT),Q            ERROR RETURN
4256  088A 0C05  FNE038  ENQ      5                   EXIT TO
4257  088B 1637          JMP-     (CALLPT),Q            USER AT NORMAL RETURN
4258  088C 088A  IOT001  ADC      FNE038              CONTINUE ADDR    (CNT)
4259  088D 0886          ADC      FNE034              ERROR ADDR       (ERR)
4260  088E 087B          ADC      FNE020              HANG ADDRR       (HNG)
4261  088F 0000  IOT002  NUM      *                   REJECT BRANCH INSTRUCTION
4262  0890 0000          NUM      *                   REPLY BRANCH INSTRUCTION

4264               ************************************************************
4265               *                                                          *
4266               *                  MONITOR STATUS                          *
4267               *                                                          *
```

```
                      ***************************************************************************

0B91 0000   MNE000   NUM      0                  MONITOR STATUS
0B92 5426            RTJ-     (MPX)
0B93 541F            RTJ-     (FWAEI)            POSITION FOR CURRENT ERROR BLK I
0B94 C437            LDA-     (CALLPT)           SET THE TIMER
0B95 611A            STA-     XTIME,I              INTO THE ERROR MESSAGE
0B96 611B            STA-     TIMER,I              TIME LIMIT
0B97 5415            RTJ-     (CLOCK)            GET THE CURRENT CLOCK
0B98 D03A            RAO-     TK32               UPDATE 32US COUNTER
0B99 D037   MNE006   RAO-     CALLPT             ADJUST CALL POINT SO STATUS
0B9A D037            RAO-     CALLPT               ROUTINE CAN FIND THE PARAMETER
0B9B 5836            RTJ*     IOE050             COPY THE STATUS
0B9C 5800            RTJ      IOE200             CHECK THE STATUS
0B9D 0092
0B9E 60BE            STA-     B3                 SAVE THE CHECK RESULT
0B9F 0CFD            ENQ      -2                 RESET
0BA0 F037            ADQ-     CALLPT               THE
0BA1 4037            STQ-     CALLPT                CALL POINT
0BA2 0A00            ENA      0                                     Q     A
0BA3 E201            LDQ-     1,Q                GET STATUS         0CBS  0000
0BA4 411C            STQ-     STCNTL,I           SAVE STATUS CONTROL WORD
0BA5 0FE8            LLS      8                    CONTROL WORD     BS00  000C
0BA6 60BC            STA-     B1                   C=CONDITION 1 OR 0
0BA7 0A00            ENA      0                    B=BIT NUMBER
                    **** THE FOLLOWING INST IS ONLY GOOD FOR ST1-ST2- CHANST
0BA8 0FE4            LLS      4                  S=STATUS TYPE
0BA9 60BD            STA-     B2                                    S000  000B
0BAA 0FA4            QLS      4                                     000S  000B
0BAB C331            LDA-     ST1,B              GET THE STATUS WORD
0BAC E0BC            LDQ-     B1                   COMPLIMENT THE STATUS
0BAD 827B            EOR-     H0000,Q                       IF C=1
0BAE E0BD            LDQ-     B2                 MASK OUT ALL BUT THE
0BAF A26B            AND-     BIT00,Q              CONTROL BIT
0BB0 D03B            RAO-     TK64               UPDATE 64  USEC COUNTER
0BB1 011D            SAN      MNE016-*-1         ZERO SAYS HANG (CONDITION MET)
0BB2 C0BE            LDA-     B3                 SO LOOK FOR STATUS ERROR
0BB3 0118            SAN      MNE012-*-1         ZERO SAYS STATUS OK
0BB4 5415            RTJ-     (CLOCK)            SO CHECK FOR TIMER EXPIRED
0BB5 0864            TCA      A                  DECREMENT TIMER
0BB6 811B            ADD-     TIMER,I              IF EXPIERED
0BB7 611B            STA-     TIMER,I              GO TO ERROR
0BB8 0131            SAM      MNE010-*-1
0BB9 18DF            JMP*     MNE006             LOOP
0BBA 0A00   MNE010   ENA      0                  STATUS TIME ERROR
0BBB 1802            JMP*     MNE014
0BBC 0A03   MNE012   ENA      3                  STATUS ERROR CODE 3
0BBD 0C08   MNE014   ENQ      8                  ERROR RETURN
0BBE 1802            JMP*     MNE018
0BBF 0C09   MNE016   ENQ      9                  NORMAL RETURN
0BC0 60BF   MNE018   STA-     B4
0BC1 C10A            LDA-     HACT,I             CHECK DSA ACTIVE FLAG
```

```
0BC2 0107          SAZ     MNE020-*-1             NO-SKIP
0BC3 0844          CLR     A                      YES-CLEAR IT
0BC4 610A          STA-    HACT,I
0BC5 C02F          LDA-    IOACT                  REDUCE NO. OF DSA USERS
0BC6 09FE          INA     -1
0BC7 602F          STA-    IOACT                  WAS THIS THE LAST USER
0BC8 0111          SAN     MNE020-*-1
0BC9 6030          STA-    NULL                     YES-ALLOW A/Q READ/WRITE REQ
0BCA C08F  MNE020  LDA-    B4
0BCB 1800          JMP     REE004                 EXIT MONITOR STATUS
0BCC 00AB

                   ********************************************************************
                   *                                                                  *
                   *                COPY ALL STATUS AS DETERMINED BY ADDRESSES        *
                   *                IN THE ERROR/OPERATION FILE.                      *
                   *                                                                  *
                   ********************************************************************

0BCD 4952  IOT000  ALF     1,IR                   RESPONSE MNEMONICS
0BCE 4552          ALF     1,ER
0BCF 5250          ALF     1,RP
0BD0 524A          ALF     1,RJ
0BD1 0000  IOE050  NUM     0                      COPY STATUS
0BD2 E101          LDQ-    WEST1,I                GET THE EQUIP STATUS 1 ADDRESS
0BD3 5831          RTJ*    IOE120                 SET UP FOR INPUT
0BD4 583A          RTJ*    IOE130                 INPUT STATUS
0BD5 6131          STA-    ST1,I                  STORE THE STATUS
0BD6 4129          STQ-    ST1RSP,I               STORE THE RESPONSE
0BD7 E102          LDQ-    WEST2,I                GET THE EQUIP STATUS 2 ADDRESS
0BD8 D03B          RAO-    TK64                   UPDATE 64US COUNTER
0BD9 0151          SQN     IOE053-*-1             YES-SKIP
0BDA 1812          JMP*    IOE055                 NONE-JUMP
0BDB 5833  IOE053  RTJ*    IOE130                 INPUT STATUS
0BDC 6133          STA-    ST2,I                  STORE THE STATUS
0BDD 412B          STQ-    ST2RSP,I               STORE THE RESPONSE
0BDE D03A          RAO-    TK32                   UPDATE 32US COUNTER
0BDF E103          LDQ-    WEST3,I                GET EQUIP 3 STATUS ADDRESS
0BE0 D03A          RAO-    TK32                   UPDATE 32US COUNTER
0BE1 014A          SQZ     IOE055-*-1             NONE-SKIP
0BE2 582C          RTJ*    IOE130                 INPUT STATUS
0BE3 6135          STA-    CHST,I                 STORE THE STATUS
0BE4 412D          STQ-    CHRSP,I                STORE THE RESPONSE
0BE5 E104          LDQ-    WEST4,I                GET EQUIP 4 STATUS ADDRESS
0BE6 D03A          RAO-    TK32                   UPDATE 32US COUNTER
0BE7 014F          SQZ     IOE058-*-1             NONE-SKIP
0BE8 5826          RTJ*    IOE130                 INPUT STATUS
0BE9 6136          STA-    CHADR,I                STORE THE STATUS
0BEA 412E          STQ-    CHARSP,I               STORE THE RESPONSE
0BEB 1CE5          JMP*    (IOE050)               EXIT AFTER 4TH STATUS
0BEC E105  IOE055  LDQ-    WECHST,I               GET THE ADDRESS OF THE CHANNEL
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4369  0BED 0149          SQZ      IOE058-*-1          NONE SKIP
4370  0BEE D038          RAO-     TK64                UPDATE 64US COUNTER
4371  0BEF 581F          RTJ*     IOE130              INPUT STATUS
4372  0BF0 6135          STA-     CHST,I              STORE THE STATUS
4373  0BF1 4120          STQ-     CHRSP,I             STORE THE RESPONSE
4374  0BF2 E105          LDQ-     WECHST,I            SET UP TO
4375  0BF3 F076          ADQ-     BIT11                 COPY THE CURRENT
4376  0BF4 581A          RTJ*     IOE130              INPUT STATUS
4377  0BF5 6136          STA-     CHADR,I             STORE THE ADDRESS
4378  0BF6 412E          STQ-     CHARSP,I            STORE THE RESPONSE
4379  0BF7 1CD9  IOE058  JMP*     (IOE050)            EXIT
4380  0BF8 0000          NUM      0                   REPLY  BRANCH INSTRUCTION
4381  0BF9 0000  IOT003  NUM      0                   ERR FLAG
4382  0BFA 0000  IOE100  NUM      *                   THIS IS AN OUTPUT REQUEST
4383  0BFB 6123          STA-     LINSTA,I            (A) TO ERROR MESSAGE
4384  0BFC C000          LDA      =AOT                SET LAST INSTRUCTION
      0BFD 4F54
4385  0BFE 6121          STA-     LINST,I               INTO ERR MESSAGE
4386  0BFF C000          LDA-     0                   FORM OUTPUT INSTRUCTION
4387  0C00 030A          VFD      N8/$03,X8/INTREJ
4388  0C01 680E          STA*     IOE135                WITH REJECT INFORMATION
4389  0C02 C123          LDA-     LINSTA,I            GET DATA FOR I/O CALL
4390  0C03 1CF6          JMP*     (IOE100)            EXIT
4391  0C04 0000  IOE120  NUM      *                   THIS AN INPUT REQUEST
4392  0C05 C000          LDA      =AIN                SET LAST INSTRUCTION
      0C06 494E
4393  0C07 6121          STA-     LINST,I               INTO ERROR MESSAGE
4394  0C08 C000          LDA-     0                   FORM INPUT INSTRUCTION
4395  0C09 020A          VFD      N8/$02,X8/INTREJ
4396  0C0A 6805          STA*     IOE135                WITH REJECT INFORMATION
4397  0C0B 0844          CLR      A
4398  0C0C 6123          STA-     LINSTA,I            SET (A) TO ERROR MESSAGE
4399  0C0D 1CF6          JMP*     (IOE120)            EXIT

4401                ************************************************************
4402                *                                                          *
4403                *       THIS IS THE ONLY ROUTINE THAT CAN EXECUTE          *
4404                *       INPUT/OUTPUT INSTRUCTIONS.  THE I/O INSTRUCTION IS *
4405                *       FORMED BY EITHER IOE100 OR IOE120.                 *
4406                *                                                          *
4407                ************************************************************


4409  0C0E 0000  IOE130  NUM      *
4410  0C0F 0000  IOE135  NUM      *                   EXECUTE I/O INSTRUCTION
4411  0C10 1800  IOE140  JMP      IOE145              DEVICE REPLY
      0C11 0001
4412                *                                 READ/WRITE OVERLAYS IOE140+1
4413                *                                 FOR FAST RETURN
4414  0C12 4124  IOE145  STQ-     LINSTQ,I            (Q) TO ERROR MESSAGE
4415  0C13 0C02          ENQ      2                   GET RESPONSE NUMBER AND
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4416  0C14 5816  IOE165  RTJ*    IOE170              SET NMENONIC IN ERR MSG
4417  0C15 1CF8          JMP*    (IOE130)          EXIT
4418  0C16 4124  IOE150  STQ-    LINSTQ,I          (Q) TO ERROR MESSAGE
4419  0C17 0C00          ENQ     0                 INT REJECT NUMBER
4420  0C18 18FB          JMP*    IOE165
4421  0C19 18FC          JMP*    IOE150            INT REJECT *** DEVICE NOT HERE
4422  0C1A 180D  IOE155  JMP*    IOE160            EXT REJECT *** HERE NOT READY
4423               *                               READ/WRITE OVERLAYS IOE155
4424               *                                 WITH STA- IODATA TO ENABLE
4425               *                                 MILLISEC COUNTER
4426  0C1B D03F          RAO-    IOTM1             INCREMENT FAST CLOCK
4427  0C1C 01A1          SOV     IOE156-*-1          SKIP ON 1 MILLISEC
4428  0C1D 18F1          JMP*    IOE135            KEEP TRYING
4429  0C1E D041  IOE156  RAO-    IOTM3             INCREMENT SLOW CLOCK
4430  0C1F 01A4          SOV     IOE157-*-1        SKIP ON TIME OUT ERR
4431  0C20 C040          LDA-    IOTM2             REFRESH FAST
4432  0C21 603F          STA-    IOTM1               CLOCK
4433  0C22 C03E          LDA-    IODATA            GET DATA AND
4434  0C23 18E8          JMP*    IOE135            REPEAT I/O
4435  0C24 C000  IOE157  LDA-    0                 SET ERROR ADDRESS
4436  0C25 0000  IOT004  ADC     0                   FOR TIME OUT
4437  0C26 68E7          STA*    IOE130
4438  0C27 4124  IOE160  STQ-    LINSTQ,I          (Q) TO ERROR MESSAGE
4439  0C28 0C01          ENQ     1                 EXT REJECT NUMBER
4440  0C29 18EA          JMP*    IOE165
4441  0C2A 0000  IOE170  NUM     *
4442  0C2B 40BC          STQ-    B1                SAVE RESPONSE NUMBER
4443  0C2C EAA0          LDQ*    IOT000,Q          SET RESPONSE NMENONIC
4444  0C2D 4122          STQ-    LINRSP,I            TO ERR MESSAGE
4445  0C2E 1CFB          JMP*    (IOE170)
4446       000A          EQU     INTREJ(IOE155-IOE135-1)
4447       7FF4          EQU     IOPF(IOE135-IOE155)



4450  0C2F 0000  IOE200  NUM     0                 CHECK STATUS
4451  0C30 0A00          ENA     0                 CLEAR THE
4452  0C31 68C7          STA*    IOT003              ERROR SWITCH
4453  0C32 C105          LDA-    WECHST,I          IS THERE A CHANNEL
4454  0C33 0113          SAN     IOE202-*-1        YES-SKIP
4455  0C34 C103          LDA-    WEST3,I           IS THERE A STATUS 3
4456  0C35 0111          SAN     IOE202-*-1        YES-SKIP
4457  0C36 181D          JMP*    IOE208            NO-JUMP
4458  0C37 E037  IOE202  LDQ-    CALLPT            YES-CALCULATE EXPECTED CHAN STAT
4459  0C38 D03A          RAO-    TK32              UPDATE 32   USEC COUNTER
4460  0C39 C202          LDA-    2,Q               GET THE MASK
4461  0C3A E203          LDQ-    3,Q               GET THE VALUE
4462  0C3B 0882          LAQ     Q                 CALCULATE THE
4463  0C3C 0864          TCA     A                   EXPECTED STATUS BY
4464  0C3D A135          AND-    CHST,I              USING THE MASK,VALUE
4465  0C3E 0874          EAQ     A                   AND ACTUAL STATUS
4466  0C3F 613D          STA-    XCHST,I           STORE EXPECTED STATUS
```

```
4467  0C40 B135          EOR-    CHST,I          DOES EXPECTED EQUAL ACTUAL
4468  0C41 0101          SAZ     IOE204-*-1      YES-SKIP
4469  0C42 D886          RAO*    IOT003          NO-SET ERR FLAG
4470  0C43 C105  IOE204  LDA-    WECHST,I        CHECK AGAIN FOR CHANNEL
4471  0C44 0112          SAN     IOE206-*-1      YES-SKIP
4472  0C45 C104          LDA-    WEST4,I         IS THERE A STATUS 4
4473  0C46 010C          SAZ     IOE208-*-1      NO-SKIP
4474  0C47 E037  IOE206  LDQ-    CALLPT          CALCULATE EXPECTED STATUS
4475  0C48 D039          RAO-    TK16            UPDATE 16   USEC COUNTER
4476  0C49 C204          LDA-    4,Q             GET THE MASK
4477  0C4A E205          LDQ-    5,Q             GET THE VALUE
4478  0C4B 08B2          LAQ     Q               CALCULATE THE
4479  0C4C 0864          TCA     A                 EXPECTED ADDRESS BY
4480  0C4D A136          AND-    CHADR,I           USING THE MASK,VALUE
4481  0C4E 0874          EAQ     A                 AND ACTUAL ADDRESS
4482  0C4F 613E          STA-    XCHADR,I        STORE EXPECTED ADDRESS
4483  0C50 B136          EOR-    CHADR,I         DOES EXPECTED EQUAL ACTUAL
4484  0C51 0101          SAZ     IOE208-*-1      YES-SKIP
4485  0C52 D8A6          RAO*    IOT003          NO-SET ERR FLAG
4486  0C53 C102  IOE208  LDA-    WEST2,I         IS THERE A STATUS 2
4487  0C54 010C          SAZ     IOE212-*-1      NO-SKIP
4488  0C55 D03A          RAO-    TK32            UPDATE 32   USEC COUNTER
4489  0C56 E037          LDQ-    CALLPT          YES-CALCULATE EXPECTED STATUS
4490  0C57 C206          LDA-    6,Q             GET THE MASK
4491  0C58 E207          LDQ-    7,Q             GET THE VALUE
4492  0C59 08B2          LAQ     Q               CALCULATE THE
4493  0C5A 0864          TCA     A                 EXPECTED STATUS BY
4494  0C5B A133          AND-    ST2,I             USING THE MASK,VALUE
4495  0C5C 0874          EAQ     A                 AND ACTUAL STATUS
4496  0C5D 613B          STA-    XST2,I          STORE EXPECTED STATUS
4497  0C5E B133          EOR-    ST2,I           DOES EXPECTED EQUAL ACTUAL
4498  0C5F 0101          SAZ     IOE212-*-1      YES-SKIP
4499  0C60 D898          RAO*    IOT003          NO-SET ERR FLAG
4500  0C61 E037  IOE212  LDQ-    CALLPT          CALCULATE EXPECTED STATUS 1
4501  0C62 D03A          RAO-    TK32            UPDATE 32   USEC COUNTER
4502  0C63 C437          LDA-    (CALLPT)        GET THE MASK
4503  0C64 E201          LDQ-    1,Q             GET THE VALUE
4504  0C65 08B2          LAQ     Q               CALCULATE THE
4505  0C66 0864          TCA     A                 EXPECTED STATUS BY
4506  0C67 A131          AND-    ST1,I             USING THE MASK,VALUE
4507  0C68 0874          EAQ     A                 AND ACTUAL STATUS
4508  0C69 6139          STA-    XST1,I          STORE EXPECTED STATUS
4509  0C6A B131          EOR-    ST1,I           DOES ACTUAL EQUAL EXPECTED
4510  0C6B 0101          SAZ     IOE214-*-1      YES-SKIP
4511  0C6C D88C          RAO*    IOT003          NO-SET THE ERR FLAG
4512  0C6D C88B  IOE214  LDA*    IOT003          LOAD THE ERROR FLAG
4513  0C6E 1CC0          JMP*    (IOE200)          AND EXIT
4514  0C6F 0000  REE000  NUM     0               RECHECK STATUS
4515  0C70 5426          RTJ-    (MPX)
4516  0C71 541F          RTJ-    (FWAEI)         POSITION FOR CURRENT ERROR BLK I
4517  0C72 58BC  REE002  RTJ*    IOE200          CHECK THE STATUS
4518                     *                         RETURN (A)=0=NO ERRS
4519  0C73 0C07          ENQ     7               NORMAL RETURN TO BE
```

```
0C74 0102            SAZ     REE004-*-1         USED IF A=0
0C75 0A03            ENA     3                  STATUS ERROR CODE 3
0C76 0C06            ENQ     6                  ERROR RETURN
0C77 610F  REE004    STA-    MNTERR,I           SAVE ERROR CODE
0C78 C102            LDA-    WEST2,I            IF THERE IS A
0C79 0101            SAZ     REE005-*-1           STATUS 2
0C7A 0D02            INQ     2                    ADJUST RETURN
0C7B C10F  REE005    LDA-    MNTERR,I             ADDRES
0C7C D03A            RAO-    TK32               UPDATE 32  USEC COUNTER
0C7D 1637  REE006    JMP-    (CALLPT),Q         EXIT
0C7E 0000  CKE000    NUM     0                  COPY AND CHECK STATUS
0C7F 5426            RTJ-    (MPX)
0C80 541F            RTJ-    (FWAEI)            POSITION FOR CURRENT ERROR BLK I
0C81 5800            RTJ     IOE050             COPY STATUS
0C82 FF4E
0C83 18EE            JMP*    REE002             GO TO RE-CHECK ROUTINE



                     ******************************************************************
                     *                                                                *
                     *                    ERROR ROUTINE                               *
                     *         THIS ROUTINE SETS UP THE SMM ERROR CALL                *
                     *         FOR ALL MBS I/O DETECTED ERRORS.  THE ERROR DATA IS    *
                     *         PICKED UP FROM THE TESTS ERROR FILE.                   *
                     *                                                                *
                     ******************************************************************

0C84 0000  ERE000    NUM     *
0C85 E000            LDQ     =XERE045-1
0C86 0D26
0C87 C073            LDA-    BIT08              CHECK OMIT TYPEOUTS
0C88 5406            RTJ-    (JUMP)
0C89 1201            JMP-    1,Q                YES CALL JUMP ROUTINE
0C8A 541F            RTJ-    (FWAEI)            POSITION CURRENT ERR FILE
0C8B E10F            LDQ-    MNTERR,I           GET CONTINUE ADDRESS
0C8C CA1D            LDA*    ERT004,Q             BASED ON MBS
0C8D 6818            STA*    ERT005               ERROR CODE
0C8E 0814            TRQ     A
0C8F 0842            CLR     Q                  RE-INITIALIZE POINTER
0C90 5863            RTJ*    ERE025             MAKE MBS CODE 1ST ENTRY
0C91 C11D            LDA-    LOPER,I            GET LAST OPERATION (ASCII)
0C92 0FCC            ALS     12                 CONVERT WR/RD/FN CODE
0C93 5868            RTJ*    ERE070             CONVERT ASCII
0C94 0FC8            ALS     8                  SAVE LAST I/O
0C95 608E            STA-    B3                   CODE
0C96 C11E            LDA-    LOPRSP,I           GET LAST I/O RESPONSE
0C97 0FC4            ALS     4                  GET RESPONSE CODE
0C98 5863            RTJ*    ERE070             CONVERT ASCII
0C99 B08E            EOR-    B3                 ADD THE RESPONSE CODE
```

```
4566  0C9A 5859          RTJ*    ERE025          SET NO. IN TABLE
4567  0C9B C11F          LDA-    LOPERA,I        GET (A) FOR ERR TBL
4568  0C9C 5857          RTJ*    ERE025
4569  0C9D C120          LDA-    LOPERQ,I        GET (Q) FOR TABLE
4570  0C9E 5855          RTJ*    ERE025
4571  0C9F C131          LDA-    ST1,I           GET ACTUAL STATUS 1
4572  0CA0 5853          RTJ*    ERE025
4573  0CA1 CCE2          LDA*    (ERE000)
4574  0CA2 6876          STA*    ERT001          SAVE SECT/ERROR CODE
4575  0CA3 E8E0          LDQ*    ERE000          GET THE ADDR OF THE          PTC2
4576  0CA4 C202          LDA-    2,Q               ERROR CALLER               PTC2
4577  0CA5 6874          STA*    ERT002
4578  0CA6 0C05          ENQ     5                                            PTC3
4579  0CA7 1400          JMP-    (0)
4580  0CA8 0CA8  ERT005  ADC     *               CONTINUE ADDRESS
4581  0CA9 0CAE  ERT004  ADC     ERE050          ERROR CODES  00 STATUS TIME OUT
4582  0CAA 0CB3          ADC     ERE060                    01 I/O TIME OUT
4583  0CAB 0D05          ADC     ERE040                    02 I/O RESPONSE
4584  0CAC 0CB6          ADC     ERE080                    03 STATUS
4585  0CAD 0CD5          ADC     ERE090                    04 INT TIME OUT
4586  0CAE 5830  ERE050  RTJ*    ERE010          GET ALL ACTUAL STATUS
4587  0CAF 5848          RTJ*    ERE035          GET ACTUAL CLOCK (MILLISEC)
4588  0CB0 C11C          LDA-    STCNTL,I        GET STATUS CONTROL WORD
4589  0CB1 5842          RTJ*    ERE025
4590  0CB2 1853          JMP*    ERE040          REPORT THE ERROR
4591  0CB3 5828  ERE060  RTJ*    ERE010          GET STATUS
4592  0CB4 5843          RTJ*    ERE035            AND CLOCK
4593  0CB5 1850          JMP*    ERE040          REPORT THE ERROR
4594  0CB6 C139  ERE080  LDA-    XST1,I          GET EXPECTED STATUS 1
4595  0CB7 583C          RTJ*    ERE025
4596  0CB8 C102          LDA-    WEST2,I         IS THERE A STATUS 2
4597  0CB9 0111          SAN     ERE082-*-1      YES-SKIP
4598  0CBA 1812          JMP*    ERE085          NO-JUMP
4599  0CBB C133  ERE082  LDA-    ST2,I           GET ACTUAL AND EXPECTED
4600  0CBC 5837          RTJ*    ERE025            STATUS 2
4601  0CBD C138          LDA-    XST2,I
4602  0CBE 5835          RTJ*    ERE025
4603  0CBF C103          LDA-    WEST3,I         IS THERE A STATUS 3
4604  0CC0 0108          SAZ     ERE085-*-1      NONE-SKIP
4605  0CC1 C135          LDA-    CHST,I          YES GET ACTUAL
4606  0CC2 5831          RTJ*    ERE025            AND EXPECTED
4607  0CC3 C130          LDA-    XCHST,I           STATUS
4608  0CC4 582F          RTJ*    ERE025
4609  0CC5 C104          LDA-    WEST4,I         IS THERE A STATUS 4
4610  0CC6 010D          SAZ     ERE015-*-1      NONE-SKIP
4611  0CC7 C136          LDA-    CHADR,I         YES GET ACTUAL
4612  0CC8 5828          RTJ*    ERE025            AND EXPECTED
4613  0CC9 C13E          LDA-    XCHADR,I          STATUS
4614  0CCA 5829          RTJ*    ERE025
4615  0CCB 183A          JMP*    ERE040
4616  0CCC C105  ERE085  LDA-    WECHST,I        IS THERE A 1706/1716
4617  0CCD 0106          SAZ     ERE015-*-1        NO
4618  0CCE C135          LDA-    CHST,I            YES GET ACTUAL
```

```
4619  0CCF 5824          RTJ*    ERE025              AND
4620  0CD0 C13D          LDA-    XCHST,I           EXPECTED STATUS
4621  0CD1 5822          RTJ*    ERE025
4622  0CD2 C136          LDA-    CHADR,I           GET CHANNEL ADDRESS
4623  0CD3 5820          RTJ*    ERE025              ACTUAL AND EXPECTED
4624  0CD4 1831  ERE015  JMP*    ERE040            REPORT THE ERROR
4625  0CD5 5809  ERE090  RTJ*    ERE010
4626  0CD6 5821          RTJ*    ERE035
4627  0CD7 C125          LDA-    IMR,I             GET MASK VALUE
4628  0CD8 581B          RTJ*    ERE025
4629  0CD9 C127          LDA-    LINENO,I          GET SPECIFIC LINE NO.
4630  0CDA 5819          RTJ*    ERE025
4631  0CDB C119          LDA-    ITLINS,I          GET LINES ASSIGNED THIS TEST
4632  0CDC 5817          RTJ*    ERE025
4633  0CDD 1828          JMP*    ERE040            REPORT THE ERROR
4634  0CDE 0000  ERE010  NUM     *
4635  0CDF C102          LDA-    WEST2,I           IS THERE A STATUS 2
4636  0CE0 010B          SAZ     ERE012-*-1          NO-EXIT
4637  0CE1 C133          LDA-    ST2,I               YES
4638  0CE2 5811          RTJ*    ERE025
4639  0CE3 C103          LDA-    WEST3,I           IS THERE A STATUS 3
4640  0CE4 0107          SAZ     ERE012-*-1        NONE-SKIP
4641  0CE5 C135          LDA-    CHST,I            YES GET IT
4642  0CE6 580D          RTJ*    ERE025
4643  0CE7 C104          LDA-    WEST4,I           IS THERE A STATUS 4
4644  0CE8 0109          SAZ     ERE020-*-1        NONE-SKIP
4645  0CE9 C136          LDA-    CHADR,I
4646  0CEA 5809          RTJ*    ERE025
4647  0CEB 1807          JMP*    ERE020
4648  0CEC C105  ERE012  LDA-    WECHST,I          IS THERE A 1706/1716
4649  0CED 0104          SAZ     ERE020-*-1            ZERO SAYS NO
4650  0CEE C135          LDA-    CHST,I              YES-GET ACTUAL VALUES
4651  0CEF 5804          RTJ*    ERE025
4652  0CF0 C136          LDA-    CHADR,I
4653  0CF1 5802          RTJ*    ERE025
4654  0CF2 1CE8  ERE020  JMP*    (ERE010)          EXIT
4655  0CF3 0000  ERE025  NUM     *
4656  0CF4 6A26          STA*    ERT003,Q          TO ERROR TABLE
4657  0CF5 0001          INQ     1
4658  0CF6 1CFC          JMP*    (ERE025)
4659  0CF7 0000  ERE035  NUM     *
4660  0CF8 C11A          LDA-    XTIME,I           GET EXPECTED TIME
4661  0CF9 58F9          RTJ*    ERE025
4662  0CFA 1CFC          JMP*    (ERE035)          EXIT
4663  0CFB 0000  ERE070  NUM     *
4664  0CFC 0134          SAM     ERE072-*-1              WR=10=REPLY
4665  0CFD 0FC1          ALS     1                       RD=20=EXT REJ
4666  0CFE 0134          SAM     ERE074-*-1              FN=30=INT REJ
4667  0CFF 0A10          ENA     $10
4668  0D00 1804          JMP*    ERE076
4669  0D01 0A30  ERE072  ENA     $30
4670  0D02 1802          JMP*    ERE076
4671  0D03 0A20  ERE074  ENA     $20
```

```
4672  0004 1CF6  ERE076   JMP*     (ERE070)          EXIT
4673  0005 4812  ERE040   STQ*     ERT000            NUMBER OF STOPS
4674  0006 E091           LDQ-     TSACTV
4675  0007 C291           LDA-     TSFREQ-1,Q        GET TEST NUMBER
4676  0008 A082           AND-     HFF00
4677  0009 0FCC           ALS      12
4678  000A E80D           LDQ*     ERT000
4679  000B 680C           STA*     ERT000            NOW HAVE  $XXYZ
4680  000C 0844           CLR      A                 ADD A BLANK
4681  000D 58E5           RTJ*     ERE025            TO THE TABLE
4682  000E 0F21           QRS      1                 NO. OF STOPS
4683  000F C808           LDA*     ERT000            GET TEST NO.
4684  0010 0874           EAQ      A                 SET NO. OF STOPS
4685  0011 0FC4           ALS      4                 ADD IN
4686  0012 B06E           EOR-     BIT03               THE ERROR STOP
4687  0013 6804           STA*     ERT000
4688  0014 0844           CLR      A
4689  0015 5402  ERE100   RTJ-     (STOP)            REPORT ERROR
4690  0016 1811           JMP*     ERE045
4691  0017 0000  ERT000   NUM      *                 $XXYZ PARAMETER
4692  0018 0000  ERT001   NUM      *                 $SSEE PARAMETER
4693  0019 0000  ERT002   NUM      *                 TEST RETURN ADDRESS
4694  001A 0000  ERT003   NUM      *                 MBS ERROR CODE  0000-0004
4695  001B 0000           NUM      *                 LAST OPER FN/RD/WR - 10/20/30
4696  001C 0000           NUM      *                 LAST OPERATION (A)
4697  001D 0000           NUM      *                 LAST OPERATION (Q)
4698  001E 0000           NUM      *                 STATUS1
4699  001F 0000           NUM      *
4700  0020 0000           NUM      *
4701  0021 0000           NUM      *
4702  0022 0000           NUM      *
4703  0023 0000           NUM      *
4704  0024 0000           NUM      *
4705  0025 0000           NUM      *
4706  0026 0000           NUM      0                 BLANK
4707  0027 E800  ERE045   LDQ      ERE000            GET REPEAT CONDITIONS
      0028 FF5B
4708  0029 40FF           STQ-     I                   ADDRESS
4709  002A E201           LDQ-     1,Q
4710  002B 0DFE           INQ      -1
4711  002C 0A10           ENA      $10               CHECK REPEAT CONDITIONS
4712  002D 5406           RTJ-     (JUMP)
4713  002E 1201           JMP-     1,Q               REPEAT
4714  002F 1103           JMP-     3,I               NO                          PTC2
```

```
4716                ********************************************************************************
4717                *       TIME CLOCK ROUTINE                                                     *
4718                *       SUMS ELASPED TIME SINCE ROUTINE HAS LAST CALLED                        *
4719                *               ALL USEC COUNTERS  ARE CLEARED                                 *
4720                *               ELASPED TIME IS ADDED TO TCLOCK                                *
4721                *       ROUTINE CALL                                                           *
4722                *       RTJ-    (CLOCK)                                                        *
4723                *               UPON LEAVING ROUTINE (A)=TCLOCK (VALUE IN  MSEC)               *
4724                ********************************************************************************


4726  0D30 0000  TIE000  NUM     0
4727  0D31 D03C  TIE001  RAO-    TK128           PROCESSING CONSTANTS
4728  0D32 D03B          RAO-    TK64              208US TOTAL NO INTS ACTIVE
4729  0D33 D039          RAO-    TK16              ADD 3.3US EACH ACTIVE INT
4730  0D34 C03C          LDA-    TK128           128 USEC COUNTER
4731  0D35 0FC1          ALS     1               MULTIPLY BY TWO
4732  0D36 803B          ADD-    TK64               AND ADD NEXT USEC COUNTER
4733  0D37 0FC1          ALS     1                  CONTINUE THIS PROCESS
4734  0D38 803A          ADD-    TK32               UNTIL LAST
4735  0D39 0FC1          ALS     1                  USEC
4736  0D3A 8039          ADD-    TK16               COUNTER IS ADDED
4737  0D3B 0FC4          ALS     4               MULT BY 16 TO GET MICROSEC
4738  0D3C E834          LDQ*    TIT000          MAKE Q REFLECT MEMORY SPEED
4739  0D3D 2A34          MUI*    TIT001,Q        SPEED FACTOR
4740  0D3E 0F67          LRS     7               DIVIDE BY 128
4741  0D3F 8038          ADD-    TKR             ADD REMAINDER FROM LAST CLOCK
4742  0D40 0842          CLR     Q                  TIME
4743  0D41 3000          DVI     =N1000          CONVERT USEC TO MILLISEC
      0D42 03E8
4744  0D43 4038          STQ-    TKR             SAVE REMAINDER
4745  0D44 8831  TIE002  ADD*    TCLOCK                                          PTC2
4746  0D45 6830          STA*    TCLOCK          RUNNING TOTAL                   PTC2
4747                *                            I REG=CURRENT ERROR FILE ADDR
4748  0D46 9109          SUB-    PRGCLK,I
4749  0D47 6039          STA-    TK16
4750  0D48 0C0F          ENQ     15              DECREMENT
4751  0D49 CA00  TIE003  LDA     INT001-1,Q         ALL THE CLOCKS
      0D4A FCF6
4752  0D4B 0107          SAZ     TIE004-*-1        THAT ARE RUNNING
4753  0D4C 9039          SUB-    TK16
4754  0D4D 0125          SAP     TIE004-*-1
4755  0D4E 408E          STQ-    B3              SAVE THE LINE NO.
4756  0D4F 0A07          ENA     ITIMER          REPORT SYS TIME OUT ERROR
4757  0D50 5428          RTJ-    (SMERROR)
4758  0D51 E08E          LDQ-    B3              CLEAR THIS LINE
4759  0D52 0844          CLR     A                 AND CONTINUE
4760  0D53 6A00  TIE004  STA     INT001-1,Q
      0D54 FCEC
4761  0D55 00FE          INQ     -1              LOOP TILL ALL CLOCKS DONE
```

```
4762  0D56 0141           SQZ       TIE006-*-1
4763  0D57 18F1           JMP*      TIE003
4764  0D58 C02E  TIE006   LDA-      INTFLG
4765  0D59 0111           SAN       TIE010-*-1          SOME INTS HAVE OCCURED
4766  0D5A 180B           JMP*      TIE050
4767  0D5B 0C0E  TIE010   ENQ       14
4768  0D5C CA00  TIE011   LDA       INT002-1,Q          OVERLOAD TIMER TABLE
      0D5D FCF2
4769  0D5E 0123           SAP       TIE012-*-1          SKIP IF NOT ACTIVE
4770  0D5F A087           AND-      H7FFF               REMOVE FLAG
4771  0D60 6A00           STA       INT001-1,Q          MOVE TO ACTIVE TABLE
      0D61 FCDF
4772  0D62 00FE  TIE012   INQ       -1
4773  0D63 0171           SQM       TIE050-*-1
4774  0D64 18F7           JMP*      TIE011
4775  0D65 C810  TIE050   LDA*      TCLOCK                                        PTC2
4776  0D66 6109           STA-      PRGCLK,I
4777  0D67 C039           LDA-      TK16                TIME TO A
4778  0D68 0842           CLR       Q
4779  0D69 403C           STQ-      TK128               CLEAR
4780  0D6A 403B           STQ-      TK64                     USEC
4781  0D6B 403A           STQ-      TK32                        COUNTERS
4782  0D6C 4039           STQ-      TK16
4783  0D6D 402E           STQ-      INTFLG              RESET INT HAS OCCURED SWITCH
4784  0D6E 01B0           SNO       0                   CLEAR POSSIBLE OV
4785  0D6F 1CC0           JMP*      (TIE000)
4786  0D70 0000  TIT000   NUM       *
4787  0D71 007F  TIT001   NUM       127                 1704 / 1714
4788  0D72 00AD           NUM       173                 1774
4789  0D73 0067           NUM       103                 1784-1
4790  0D74 0045           NUM       69                  1784-2
4791  0D75 0000  TCLOCK   NUM       0                                             PTC2
```

```
4793          ************************************************************************
4794          *                                                                      *
4795          *       RANDOM DELAY                                                   *
4796          *            A MINIMUM AND MAXIMUM VALUE IN MILLISECONDS               *
4797          *            IS GIVEN--THE DELAY WILL RANGE SOMEWHERE                  *
4798          *            BETWEEN THESE TWO VALUES                                  *
4799          *            CALL IS AS FOLLOWS--                                      *
4800          *            RTJ-          (RDMDLY)                                    *
4801          *          +0 NUM          $XXXX                                       *
4802          *          +1 NUM          $YYYY  WHERE $YYYY-$XXXX IS GREATER         *
4803          *          +2 RETURN              THAN $0 BUT LESS THAN $7FFF          *
4804          *                                                                      *
4805          ************************************************************************
```

```
4807  0D76 0000  XDE000   NUM       0                   ENTRY
4808  0D77 C000  XDE001   LDA       =XXDT001            ADDR TO CONTAIN RANDOM TIME
      0D78 0D82
```

```
0D79 0C01            ENQ      1                      NO. OF WORDS TO  GENERATE
0D7A 5407            RTJ-     (GENRDM)               GET A RANDOM NUMBER
0D7B C807            LDA*     XDT001
0D7C 9CF9            SUB*     (XDE000)
0D7D 0137            SAM      XDE002-*-1             SKIP IF NUMBER TOO SMALL
0D7E CCF8            LDA*     (XDE000+1)
0D7F 9803            SUB*     XDT001
0D80 0134            SAM      XDE002-*-1             SKIP IF NUMBER TOO LARGE
0D81 5417            RTJ-     (FIXDLY)               EXECUTE FIXED DELAY
0D82 0000   XDT001   NUM      *                      DELAY VALUE - RANDOM NUMBER
0D83 E8F2            LDQ*     XDE000
0D84 1202            JMP-     2,Q                    EXIT ROUTINE
0D85 18F1   XDE002   JMP*     XDE001                 NUMBER OUT OF LIMITS, GO AGAIN


            **********************************************************************
            *                                                                    *
            *      FIXED DLEAY ROUTINE DELAYS A SPECIFIED NUMBER OF MILLISECONDS *
            *         TIME PER INS IS INDICATED BEFORE COMMENT FEILO             *
            *                                                                    *
            **********************************************************************


            **********************************************************************
            *                                                                    *
            *    THE DELAY LOOPS ARE SET UP TO PROVIDE AS MUCH ACCURACY AS THE   *
            *     1700 WILL PERMIT.  THERE ARE TWO LOOPS - THE FIRST COUNTS A REG *
            *    UP TO ZERO GIVING A 393US DELAY PER COUNT, OR 990US FOR $12C    *
            *    COUNTS.  THE SECOND LOOP COUNTS Q UP TO ZERO, THE NUMBER OF COUNTS*
            *    NORMALLY SPECIDIES THE NUMBER OF MS DELAY, FOR 1 PASS THE INS   *
            *    TIME TO ENTER AND EXIT LOOP = 10US.  THUS THE TOTAL TIME TO     *
            *    EXECUTE EACH PASS THROUGH SECOND LOOP  =990US (FOR FIRST LOOP)  *
            *    PLUS 10US(FOR SECOND) = 1000US TOTAL.  2T IS POSSSIBLE TO SET A TO*
            *    A VALUE GREATER THAN -$12C AND DECREASE FIRST PASS THROUGH BOTH *
            *    LOOPS BY 393US FOR EACH COUNT GREATER THAN -$12C.               *
            *                                                                    *
            **********************************************************************


            *                                         1704/14  1774   1784-1 1784-2
            *                                          ****    ****   ****   ****
            *                ENTRY + EXIT JUMPS         5.5     8.0    4.5    3.0
            *
0D86 0000   FXE000   NUM      0          ENTRY POINT
0D87 C8FE            LDA*     FXE000     CALLPOINT    2.2     3.0    1.8    1.2
0D88 0901            INA      1          SET FOR CORRECT RETURN
```

```
4853                *                                          1.1    1.5    0.9    0.6
4854  0D89 6037     STA-      CALLPT       SAVE RETURN ADDRESS
4855                *                                          2.2    3.0    1.8    1.2
4856  0D8A E8E5     LDQ*      TIT000       X4 TYPE TO Q 2.2    3.0    1.8    1.2
4857  0D8B CA15     LDA*      DLT001,Q     LOOP CONSTNT 2.2    3.5    2.2    1.5
4858  0D8C 6818     STA*      DLT003       FUTURE USE   2.2    3.0    1.8    1.2
4859  0D8D CA0F     LDA*      FXT001,Q     1ST CONSTANT 2.2    3.5    2.2    1.5
4860  0D8E ECF7     LDQ*      (FXE000)     DELAY COUNT IN MILLISECONDS
4861                *                                          3.3    4.5    2.7    1.8
4862  0D8F 0152     SQN       FXE002-*-1   SKIP IN NON ZERO
4863                *                                          1.1    2.0    0.9    0.6
4864  0D90 D8F5     RAO*      FXE000
4865  0D91 1CF4     JMP*      (FXE000)     EXIT IF ZERO TIME
4866  0D92 0852     FXE002    TCQ          Q            COMPLEMENT DELAY COUNT
4867                *                                          1.1    1.5    0.9    0.6

4869                *         INITIAL SETUP TIME              25.3   36.5   21.5   14.4

4871  0D93 0901     DLE000    INA          1            INCREMENT A  1.1    1.5    0.9    0.6
4872  0D94 0121     SAP       DLE005-*-1   EXIT IF POS  1.1    2.0    0.9    0.6
4873  0D95 18FD     JMP*      DLE000       DELAY LOOP   1.1    1.5    0.9    0.6

4875                *         990+  US LOOP TIMES             3.3    5.0    2.7    1.8

4877  0D96 0001     DLE005    INQ          1            INCREMENT MS COUNT
4878                *                                          1.1    1.5    0.9    0.6
4879  0D97 0A00     ENA       0            TIMING DUMMY 1.1    1.5    0.9    0.6
4880  0D98 C80C     LDA*      DLT003       RESTORE LOOP 2.2    3.0    1.8    1.2
4881  0D99 0161     SQP       DLE010-*-1   MS LOOP EXIT 1.1    2.0    0.9    0.6
4882  0D9A 18F8     JMP*      DLE000       DELAY LOOP   1.1    1.5    0.9    0.6
4883  0D9B 1437     DLE010    JMP-         (CALLPT)     EXIT DELAY ROUTINE

4885                *         MS INCREMENT TIMES              6.6    9.5    5.4    3.6
4886  0D9C FEDA     FXT001    NUM          -293
4887  0D9D FF40               NUM          -191
4888  0D9E FE9C               NUM          -355
4889  0D9F FDE6               NUM          -537
4890  0DA0 FED2     DLT001    NUM          -301
4891  0DA1 FF39               NUM          -198
4892  0DA2 FE94               NUM          -363
4893  0DA3 FDDE               NUM          -545
4894  0DA4 0000     DLT003    NUM          *            LOOP COUNT TO BE EXECUTED


4896                ********************************************************************
4897                *                                                                  *
4898                *                      INITIALIZE                                  *
4899                *        1. ENABLE INTERRUPT SYSTEM.                               *
4900                *        2. CLEAR ERROR/OPERATION FILE AT END OF CALLERS TEST.     *
4901                *        3. SET UP EQUIPMENT ADDRESSES IN CALLERRS ERROR FILE.     *
4902                *                                                                  *
4903                *                                                                  *
```

```
4904                ********************************************************************************

4906  0DA5 0000  MSE000  NUM     *
4907  0DA6 C042          LDA-    SETMASK          ENABLE
4908  0DA7 0821          TRA     M                  PROTECT
4909  0DA8 0400          EIN     0                  PROCESSOR
4910  0DA9 C056          LDA-    SMMCNT           CHECK 1700/1774 FOR MBS CLOCK
4911  0DAA A07D          AND-    H000F            1704 A=0   1774 A=1
4912  0DAB 0F42          ARS     2                1784-1 A=2   1784-2 A=3
4913  0DAC 68C3          STA*    TIT000
4914  0DAD 541F          RTJ-    (FWAEI)          POSITION CURRENT ERR FILE TO I
4915  0DAE 0C55          ENQ     TSDATA-1
4916  0DAF 0844          CLR     A                CLEAR DSA RD/WR
4917  0DB0 6030          STA-    NULL               CONTROL
4918  0DB1 602F          STA-    IOACT
4919  0DB2 6035          STA-    ILO                INT LOCKOUT AND ALL
4920  0DB3 6307  MSE005  STA-    ILT,B              TEST DATA
4921  0DB4 0DFE          INQ     -1                 CELLS
4922  0DB5 0171          SQM     MSE010-*-1
4923  0DB6 18FC          JMP*    MSE005
4924  0DB7 E091  MSE010  LDQ-    TSACTV           GET EQUIP NO.
4925  0DB8 C29B          LDA-    TSEQAD-1,Q
4926  0DB9 6101          STA-    WEST1,I          STATUS 1 EQUIPMENT ADDRESS
4927  0DBA A81E          AND*    MST000           GET WE FIELD
4928  0DBB 6106          STA-    WE,I
4929  0DBC C102          LDA-    WEST2,I          DOES AN EQUIPMENT STATUS
4930  0DBD 010D          SAZ     MSE015-*-1         2 EXIST
4931  0DBE A08A          AND-    H007F            YES BUILD STATUS 2
4932  0DBF B106          EOR-    WE,I               ADDRESS
4933  0DC0 6102          STA-    WEST2,I
4934  0DC1 C103          LDA-    WEST3,I          IS THERE A STATUS 3
4935  0DC2 0108          SAZ     MSE015-*-1       NO-SKIP
4936  0DC3 A08A          AND-    H007F            YES FORM THE
4937  0DC4 B106          EOR-    WE,I               ADDRESS
4938  0DC5 6103          STA-    WEST3,I
4939  0DC6 C104          LDA-    WEST4,I          IS THERE A STATUS 4
4940  0DC7 0103          SAZ     MSE015-*-1       NO-SKIP
4941  0DC8 A08A          AND-    H007F            YES FORM THE
4942  0DC9 B106          EOR-    WE,I               ADDRESS
4943  0DCA 6104          STA-    WEST4,I
4944  0DCB C106  MSE015  LDA-    WE,I
4945  0DCC A089          AND-    H0780
4946  0DCD 0F47          ARS     7
4947  0DCE 6117          STA-    EQUIPT,I         EQUIP NO. RIGHT JUSTIFIED
4948  0DCF C106          LDA-    WE,I
4949  0DD0 0842          CLR     Q
4950  0DD1 0FE5          LLS     5
4951  0DD2 4116          STQ-    CHANNO,I         CHANNEL NUMBER (RIGHT JUSTIFIED)
4952  0DD3 0143          SQZ     MSE020-*-1         SKIP FOR W=0
4953  0DD4 0D02          INQ     2
4954  0DD5 0FE8          LLS     11
4955  0DD6 4105          STQ-    WECHST,I         CHANNEL EQUIP NO. FOR STATUS
```

```
4956  0DD7 1CCD   MSE020   JMP*      (MSE000)            EXIT
4957  0DD8 FF80   MST000   NUM       $FF80               W-E FIELD MASK


4959              ********************************************************************
4960              *                                                                  *
4961              *                  GET FWA OF TEST TO I                            *
4962              *                                                                  *
4963              ********************************************************************


4965  0DD9 0000   FWE000   NUM       *
4966  0DDA 4808            STQ*      FWAQR                                      PTC2
4967  0DDB E091   FWE005   LDQ-      TSACTV
4968  0DDC E2A5   FWE010   LDQ-      TSIAAD-1,Q          GET FWA
4969  0DDD 40FF            STQ-      I
4970  0DDE E804            LDQ*      FWAQR               RESTORE Q                  PTC2
4971  0DDF D03A            RAO-      TK32                UPDATE 32US COUNTER
4972  0DE0 1CF8            JMP*      (FWE000)            EXIT
4973  0DE1 0000   FWAAR    NUM       0                   SAVE A                     PTC2
4974  0DE2 0000   FWAQR    NUM       0                   SAVE Q                     PTC2


4976              ********************************************************************
4977              *                                                                  *
4978              *                  GET FWA OF ERROR FILE TO I.                     *
4979              *                                                                  *
4980              ********************************************************************

4982  0DE3 0000   POS000   NUM       *                   LOC RIGHT ERROR BLOCK
4983  0DE4 68FC            STA*      FWAAR                                      PTC2
4984  0DE5 48FC            STQ*      FWAQR                                      PTC2
4985  0DE6 E091   POS005   LDQ-      TSACTV              GET THE POINTER
4986  0DE7 E2A5            LDQ-      TSIAAD-1,Q          GET FWA
4987  0DE8 C20C            LDA-      CRLUNO,Q            CURRENT LOGICAL UNIT NO.
4988  0DE9 0105            SAZ       POS010-*-1          SKIP FOR TEST WITH ONE
4989  0DEA 40FF            STQ-      I                     ERROR FILE ONLY
4990  0DEB 2000            MUI       =XTSDATA            LENGTH OF INFO LIST
      0DEC 0056
4991  0DED 8108            ADD-      ERRFLE,I            NOW HAVE CORRECT REFERENCE
4992  0DEE 1802            JMP*      POS020
4993  0DEF C208   POS010   LDA-      ERRFLE,Q            FWA ERROR FILE (FAST METHOD)
4994  0DF0 60FF   POS020   STA-      I
4995  0DF1 C8EF            LDA*      FWAAR               RESTORE REGISTERS          PTC2
4996  0DF2 E8EF            LDQ*      FWAQR                                          PTC2
4997  0DF3 D03A            RAO-      TK32                UPDATE 32US CLOCK
4998  0DF4 1CEE            JMP*      (POS000)


5000              ********************************************************************
5001              *                                                                  *
5002              *                  SET PROTECT BITS   CALL+1=ADDRESS               *
5003              *                                     CALL+2=LENGTH                *
```

```
5004                *                                                              *
5005                ********************************************************************

5007  00F5 0000   SPE000   NUM       *                   SET PROTECT BITS
5008  00F6 ECFE            LDQ*      (SPE000)            GET FIRST WORD
5009  00F7 D8FD            RAO*      SPE000                ADDRESS
5010  00F8 CCFC            LDA*      (SPE000)              GET LENGTH
5011  00F9 0600   SPE010   SPB       0                     BEGIN SETTING
5012  00FA 09FE            INA       -1                    PROTECT BITS
5013  00FB 0001            INQ       1                     FROM 1ST
5014  00FC 0101            SAZ       SPE005-*-1            ADDRESS TO
5015  00FD 18FB            JMP*      SPE010                LAST
5016  00FE D8F6   SPE005   RAO*      SPE000
5017  00FF 1CF5            JMP*      (SPE000)            EXIT AT CALL+3

5019                ********************************************************************
5020                *                                                                  *
5021                *                  CLEAR PROTECT BITS  CALL+1=ADDRESS              *
5022                *                                      CALL+2=LENGTH               *
5023                *                                                                  *
5024                ********************************************************************

5026  0E00 0000   CPE000   NUM       *                   CLEAR PROTECT BITS
5027  0E01 ECFE            LDQ*      (CPE000)            GET FIRST WORD
5028  0E02 D8FD            RAO*      CPE000                ADDRESS
5029  0E03 CCFC            LDA*      (CPE000)              GET LENGTH
5030  0E04 0700   CPE010   CPB       0                     BEGIN CLEARING
5031  0E05 09FE            INA       -1                    PROTECT BITS
5032  0E06 0001            INQ       1                     FROM 1ST
5033  0E07 0101            SAZ       CPE005-*-1            ADDRESS TO
5034  0E08 18FB            JMP*      CPE010                LAST
5035  0E09 D8F6   CPE005   RAO*      CPE000
5036  0E0A 1CF5            JMP*      (CPE000)            EXIT AT CALL+3

5038  0E0B 0000   RDE000   NUM       *                   MINI READ ROUTINE
5039  0E0C 0844            CLR       A                     SET UP READ
5040  0E0D 608F            STA-      B4                    FOR R/W ROUTINE
5041  0E0E C8FC            LDA*      RDE000              GET THE ADDRESS
5042  0E0F 6807   RDE010   STA*      RWE000                OF THE CALLER FOR R/W
5043  0E10 1807            JMP*      RWE000+1            GO TO READ/WRITE
5044  0E11 0000   WRE000   NUM       *                   MINI WRITE ROUTINE
5045  0E12 0A01            ENA       1                     SET UP FOR
5046  0E13 60BF            STA-      B4                    WRITE
5047  0E14 C8FC            LDA*      WRE000              GET THE ADDR OF
5048  0E15 18F9            JMP*      RDE010                THE CALLER FOR READ/WRITE
5049               ********************************************************************
5050               *                                                                  *
5051               *                          READ/WRITE ROUTINE                      *
5052               *                                                                  *
```

```
               ************************************************************************

0E16 0000  RWE000  NUM     *                    READ/WRITE ROUTINE  ** I/O **
0E17 5426          RTJ-    (MPX)                LOOK FOR INTS-HOG---GET CALLPT
0E18 C030          LDA-    NULL                 EXIT AT REJECT
0E19 0101          SAZ     RWE005-*-1             RETURN IF
0E1A 183F          JMP*    RWE010                NULL IS SET
0E1B 541F  RWE005  RTJ-    (FWAEI)              GET 1ST WORD ADDRESS ERR BLOCK
0E1C E037          LDQ-    CALLPT               GET CALL ADDRESS
0E1D C206          LDA-    6,Q                  SET THE TIME
0E1E 611A          STA-    XTIME,I               IN ERROR MESSAGE
0E1F 0111          SAN     RWE011-*-1           SKIP FOR TIMER REQUEST
0E20 180F          JMP*    RWE013
0E21 C07A  RWE011  LDA-    BIT15
0E22 9206          SUB-    6,Q                  SET TIME IN 7FFF-T FORM
0E23 0180          SNO     0
0E24 6041          STA-    IOTM3                 MILLISEC MAX
0E25 6879          STA*    RWT008
0E26 E400          LDQ+    TIT000               GET THE CORRECT 1 MS TIMER
0E27 0D70
0E28 CA79          LDA*    RWT011,Q              CONSTANT FOR THE
0E29 603F          STA-    IOTM1                 FAST CLOCK
0E2A 6040          STA-    IOTM2
0E2B C000          LDA-    0                    ENABLE
0E2C 603E          STA-    IODATA                MILLISEC COUNTER
0E2D 6800          STA     IOE155
0E2E FDEB
0E2F 0C02  RWE013  ENQ     2                    EXPECT REPLY
0E30 40BC          STQ-    B1
0E31 E037          LDQ-    CALLPT
0E32 C205          LDA-    5,Q                  CHECK RESPONSE CONTROL
0E33 A080          AND-    HF000                 AND SET UP REJECT
0E34 0116          SAN     RWE021-*-1            REPLY ADDRESSES
0E35 C000          LDA-    0                    SET ERR ON REPLY
0E36 0205          ADC     RWE170-IOE140-1       ADDRESS IN I/O
0E37 6800          STA     IOE140+1              ROUTINE
0E38 FDD8
0E39 E85E          LDQ*    RWT000+1             SET CONTINUE ON ERR ADDR
0E3A 1805          JMP*    RWE022
0E3B E85B  RWE021  LDQ*    RWT000               SET CONTINUE ADDR FOR
0E3C 4800          STQ     IOE140+1              FAST RETURN TO READ/WRITE
0E3D FDD3
0E3E E85A          LDQ*    RWT001               SET REJECT ADDR IN
0E3F 4400  RWE022  STQ+    IOE130                I/O EXIT ADDRESS
0E40 0C0E
0E41 4400          STQ+    IOT004                AND ERROR RTN
0E42 0C25
0E43 C106          LDA-    WE,I                 GET WE FIELD
0E44 685C          STA*    RWT010
0E45 C087          LDA-    H7FFF                SET TRANSFER LENGTH
0E46 6856          STA*    RWT005                TO 1 FOR DSA
0E47 C437          LDA-    (CALLPT)             A/Q OR DSA DEVICE
```

```
5099  0E48 0100          SAZ     RWE025-*-1          SKIP FOR A/Q
5100  0E49 C037          LDA-    CALLPT              *** DSA ***
5101  0E4A E855          LDQ*    RWT009              CLEAR PROTECT BIT ON
5102  0E4B 0700          CPB     0                     I/O INSTRUCTION
5103  0E4C 0822          TRA     Q                   GET ADDRESS OF
5104  0E4D 0902          INA     2                     CONTROL WORD
5105  0E4E 684D          STA*    RWT004
5106  0E4F D02F          RAO-    IOACT               COUNT NO. OF USERS
5107  0E50 0A01          ENA     1
5108  0E51 610A          STA-    HACT,I              SET DSA ACTIVE FLAG
5109  0E52 E105          LDQ-    WECHST,I            DOES USER WANT 17X6 BUFFERED I/O
5110  0E53 0141          SQZ     RWE024-*-1          NO-SKIP
5111  0E54 484C          STQ*    RWT010                YES  SET UP FOR WRITE
5112  0E55 1810  RWE024  JMP*    RWE030
5113  0E56 C02F  RWE025  LDA-    IOACT               *** A/Q ***
5114  0E57 0103          SAZ     RWE045-*-1            REQUEST BUT
5115  0E58 6030          STA-    NULL                DSA ACTIVE SET NULL
5116  0E59 E037  RWE010  LDQ-    CALLPT                AND EXIT
5117  0E5A 1207          JMP-    7,Q                   TO USER AT REJECT RETURN
5118  0E5B E037  RWE045  LDQ-    CALLPT              GET ADDRESS OF CALLER
5119  0E5C C202          LDA-    2,Q                 GET FWA OF DATA
5120  0E5D 683E          STA*    RWT004                BUFFER
5121  0E5E C07A          LDA-    BIT15
5122  0E5F 9201          SUB-    1,Q                 GET TRANSFER LENGTH
5123  0E60 01B0          SNO     0                     IN 8000-LENGTH FORM
5124  0E61 6838          STA*    RWT005
5125  0E62 C08F          LDA-    B4                  DETERMINE READ OR WRITE
5126  0E63 0111          SAN     RWE030-*-1            REQUEST
5127  0E64 1816          JMP*    RWE015              JUMP FOR READ
5128  0E65 CC36  RWE030  LDA*    (RWT004)            WRITE
5129  0E66 5800          RTJ     IOE100                SET (A) TO ERR MSG
      0E67 FD92
5130  0E68 C000          LDA-    0                   OVERLAY
5131  0E69 0800          NOP     0                     FOR
5132  0E6A 683C          STA*    RWE075                WRITE
5133  0E6B C000          LDA-    0                   BUILD LOAD A
5134  0E6C CCE8          VFD     N8/$CC,X8/WRITE       INSTRUCTION
5135  0E6D 6845          STA*    RWE080
5136  0E6E C437          LDA-    (CALLPT)            DID DSA CALL WRITE
5137  0E6F 0107          SAZ     RWE035-*-1          NO-SKIP
5138  0E70 C08F          LDA-    B4                  YES-IS THIS A WRITE
5139  0E71 0115          SAN     RWE035-*-1          YES-SKIP
5140  0E72 0151          SQN     RWE014-*-1          SKIP FOR 17X6
5141  0E73 1810          JMP*    RWE018
5142  0E74 F076  RWE014  ADQ-    BIT11
5143  0E75 482B          STQ*    RWT010              SET UP FOR 17X6 READ
5144  0E76 180D          JMP*    RWE018
5145  0E77 C000  RWE035  LDA     =AWR                SET LAST OPERATION IN MSG
      0E78 5752
5146  0E79 180C          JMP*    RWE020
5147  0E7A 6C21  RWE015  STA*    (RWT004)            CLEAR 1ST WORD IN READ BUFFER
5148  0E7B 5800          RTJ     IOE120                SET UP INPUT ROUTINE
      0E7C FD87
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5149  0E7D C000          LDA-    0                 BUILD STORE A
5150  0E7E 6CF4          VFD     N8/$6C,X8/READE     INSTRUCTION
5151  0E7F 6827          STA*    RWE075
5152  0E80 C000          LDA-    0                 OVERLAY
5153  0E81 0844          CLR     A                   FOR
5154  0E82 6830          STA*    RWE080              READ
5155  0E83 C000 RWE018   LDA     =ARD              SET LAST OPERATION
      0E84 5244
5156  0E85 611D RWE020   STA-    LOPER,I             TO ERR MSG
5157  0E86 E037          LDQ-    CALLPT
5158  0E87 C203          LDA-    3,Q               DOES TRANSFER REQUIRE CONTINUE
5159  0E88 0131          SAM     RWE050-*-1          BIT(15) SET   ***MINUS=YES
5160  0E89 1806          JMP*    RWE055            NO  GET EQUIPMENT NUMBER
5161  0E8A 680F RWE050   STA*    RWT002            SAVE FCA (1ST CHANNEL ADDRESS)
5162  0E8B 8204          ADD-    4,Q                 CALCULATE LCA (LAST)
5163  0E8C 680E          STA*    RWT003              AND SAVE
5164  0E8D E80C          LDQ*    RWT002            GET FCA TO Q FOR 1ST TRANSFER
5165  0E8E 1805          JMP*    RWE070
5166  0E8F C205 RWE055   LDA-    5,Q               GET EQUIPMENT ADDRESS
5167  0E90 E08A          LDQ-    H007F             ADD ON
5168  0E91 08B2          LAQ     Q                   DIRECTOR
5169  0E92 F80E          ADQ*    RWT010              BITS
5170  0E93 C123 RWE070   LDA-    LINSTA,I          GET OUTPUT WORD
5171  0E94 1800          JMP     IOE135            BEGIN I/O TRANSFER
      0E95 FD79
5172  0E96 0295 RWT000   ADC     RWE075-IOE140-1   CONTINUE ON REPLY ADDRESS
5173  0E97 0EA5          ADC     RWE065            CONTINUE ON ERR ADDRESS
5174  0E98 0ED7 RWT001   ADC     RWE160            ERROR ADDRESS
5175  0E99 0000 RWT002   NUM     *                 FIRST CHANNEL ADDRESS
5176  0E9A 0000 RWT003   NUM     *                 LAST CHANNEL ADDRESS
5177  0E9B 0000 RWT004   NUM     *                 FWA DATA BUFFER
5178  0E9C 0000 RWT005   NUM     *                 DATA LENGTH COUNTER
5179  0E9D 180D RWT006   VFD     N8/$18,X8/INST    IOE155 INSTRUCTION
5180  0E9E 0000 RWT008   NUM     *                 TIME TO HANG
5181  0E9F 0C0F RWT009   ADC     IOE135            I/O INSTRUCTION ADDRESS
5182  0EA0 0000 RWT010   NUM     *                 WE FIELD
5183  0EA1 7F9B RWT011   NUM     $7F9B             1 MS CONSTANT  9.9US LOOP  1700
5184  0EA2 7FB9          NUM     $7FB9             1 MS CONSTANT 14.3US LOOP  1774
5185  0EA3 7F87          NUM     $7F87             1 MS CONSTANT  8.3US LOOP CR900
5186  0EA4 7F5E          NUM     $7F5E             1 MS CONSTANT  6.2US LOOP CR600
5187  0EA5 E124 RWE065   LDQ-    LINSTQ,I          RESTORE (Q)
5188  0EA6 6CF4 RWE075   STA*    (RWT004)          STORE THE DATA
5189               *                               OVERLAY WITH NOP FOR WRITE
5190  0EA7 D8F4          RAO*    RWT005            LAST TRANSFER CHECK
5191  0EA8 01AC          SOV     RWE095-*-1        YES--EXIT
5192  0EA9 D8F1          RAO*    RWT004            NO --INCREMENT DATA ADDRESS
5193  0EAA C8F3          LDA*    RWT008            REFRESH MILLISEC
5194  0EAB 6041          STA-    IOTM3               COUNTER
5195  0EAC 0165          SQP     RWE080-*-1
5196  0EAD C8EC          LDA*    RWT003            CONTINUE BIT IS REQUIRED
5197  0EAE 0DD1          INQ     1                   CHECK FOR
5198  0EAF 0874          EAQ     A                   LAST
5199  0EB0 0111          SAN     RWE080-*-1          ADDRESS    *** 0=LAST
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```
5200  0E81 E8E7          LDQ*    RWT002          GET FCA AND REPEAT
5201  0E82 CCE8  RWE080  LDA*    (RWT004)        GET NEXT WORD FOR WRITE
5202               *                              OVERLAY WITH CLR A FOR READ
5203  0E83 1800          JMP     IOE135            AND EXECUTE I/O
      0E84 FD5A
5204  0E85 CCE5  RWE095  LDA*    (RWT004)        GET LAST DATA VALUE
5205  0E86 4124          STQ-    LINSTQ,I        (Q) TO ERR MSG FOR CONTINUE RTN
5206  0E87 5802          RTJ*    RWE200          RESTORE AND EXIT NORNAL
5207  0E88 1209          JMP-    9,Q               RETURN NORMAL
5208  0E89 0000  RWE200  NUM     *               RESTORE ROUTINE
5209  0E8A 611F          STA-    LOPERA,I        (A) TO ERR MSG
5210  0E8B E124          LDQ-    LINSTQ,I        (Q) TO ERR MSG
5211  0E8C 4120          STQ-    LOPERQ,I
5212  0E8D E08C          LDQ-    B1              GET RESPONSE NO.
5213  0E8E 5800          RTJ     IOE170            SET RESPONSE IN ERR MSG
      0E8F FD6A
5214  0EC0 411E          STQ-    LOPRSP,I
5215  0EC1 0A01          ENA     IORPLY          REPLACE JUMP LENGTH
5216  0EC2 6800          STA     IOE140+1
      0EC3 FD4D
5217  0EC4 C8D8          LDA*    RWT006          REPLACE JUMP
5218  0EC5 6800          STA     IOE155            INSTRUCTION
      0EC6 FD53
5219  0EC7 0C05          ENQ     5
5220  0EC8 C637          LDA-    (CALLPT),Q      DOES CALLER WANT STATUS
5221  0EC9 0132          SAM     RWE202-*-1      NO-SKIP
5222  0ECA 5800          RTJ     IOE050          COPY STATUS
      0ECB FD05
5223  0ECC C041  RWE202  LDA-    IOTM3           GET THE CURRENT TIME
5224  0ECD 0122          SAP     RWE205-*-1      SKIP FOR NO TIME OUT
5225  0ECE 0AFE          ENA     -1              MAKE ERR MSG SAME AS
5226  0ECF 1803          JMP*    RWE210            RINT-MNTRST-FN TIME OUT
5227  0ED0 0864  RWE205  TCA     A               GET ACTUAL
5228  0ED1 A087          AND-    H7FFF           TIME FOR
5229  0ED2 6118  RWE210  STA-    TIMER,I           ERR MSG
5230  0ED3 E8CB          LDQ*    RWT009          SET PROTECT BIT ** WAS CLEARED
5231  0ED4 0600          SPB     0                 ON I/O CELL    ** FOR DSA XFER
5232  0ED5 5816          RTJ*    RWE220          CALCULATE DATA LENGTH
5233  0ED6 1CE2          JMP*    (RWE200)        EXIT RESTORE ROUTINE
5234  0ED7 E08C  RWE160  LDQ-    B1              GET RESPONSE NUMBER
5235  0ED8 0142          SQZ     RWE165-*-1
5236  0ED9 410F          STQ-    MNTERR,I        SET TIME ERR IN MSG
5237  0EDA 1803          JMP*    RWE172
5238  0EDB 0C02  RWE165  ENQ     2               SET RESPONSE ERR IN MSG
5239  0EDC 410F          STQ-    MNTERR,I
5240  0EDD 580E  RWE172  RTJ*    RWE220          RETURN (A)= DATA LENGTH
5241  0EDE E88C          LDQ*    RWT004
5242  0EDF 0102          SAZ     RWE173-*-1
5243  0EE0 0DFD          INQ     -2              GET LAST DATA TRANSFERED
5244  0EE1 1802          JMP*    RWE175            A=0 FOR NO READ
5245  0EE2 0DFE  RWE173  INQ     -1                TRANSFERS
5246  0EE3 C201  RWE175  LDA-    1,Q
5247  0EE4 58D4          RTJ*    RWE200          SET ERR MSG/RESTORE JUMPS
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5248  0EE5 1208          JMP-    8,Q                 EXIT AT ERROR RETURN
5249  0EE6 4124  RWE170  STQ-    LINSTQ,I            (Q) TO ERR MSG
5250  0EE7 0C02          ENQ     2                   REPLY RESPONSE NUMBER
5251  0EE8 5800          RTJ     IOE170              SET RESPONSE IN ERR MSG
      0EE9 FD40
5252  0EEA 18F0          JMP*    RWE165              SET RESPONSE ERROR
5253  0EEB 0000  RWE220  NUM     *
5254  0EEC C8AE          LDA*    RWT004              CALCULATE
5255  0EED E037          LDQ-    CALLPT                TRANSFER
5256  0EEE 9202          SUB-    2,Q                   LENGTH
5257  0EEF 610B          STA-    DATLGH,I            SET DATA LENGTH IN
5258  0EF0 6123          STA-    LINSTA,I              ERROR MESSAGE
5259  0EF1 1CF9  MBSEND  JMP*    (RWE220)            EXIT
5260       0001          EQU     IORPLY(IOE145-IOE140-1)
5261       000D          EQU     INST(IOE160-IOE155)
5262       7FF4          EQU     READE(RWT004-RWE075)
5263       7FE8          EQU     WRITE(RWT004-RWE080)



5266               ************************************************************************
5267               *                                                                      *
5268               *                      PROCESS PROTECT FAULTS                          *
5269               *                                                                      *
5270               ************************************************************************

5272  0EF2 C473  PFE010  LDA-    (BIT08)
5273  0EF3 9000          SUB     =XIOE135+1          CHECK FOR LEGAL I/O
      0EF4 0C10
5274  0EF5 0133          SAM     PFE015-*-1          SKIP ON ERROR
5275  0EF6 0108          SAZ     PFE020-*-1          SKIP OK
5276  0EF7 09F4          INA     IOPF                DELTA FROM I/O INST
5277  0EF8 0136          SAM     PFE020-*-1          SKIP OK
5278  0EF9 C473  PFE015  LDA-    (BIT08)             GET TRAP ADDRESS
5279  0EFA 8000          EOR-    0
5280  0EFB 0B10          ADC     RIE025+1            CHECK IF PF FROM RETURN
5281  0EFC 0102          SAZ     PFE020-*-1          RIE025 - SKIP IF YES (OK)
5282  0EFD 1400          JMP+    PF                  REPORT PROTECT FAULT
      0EFE 0215
5283  0EFF 1400  PFE020  JMP+    XITINT              EXIT INT STATE
      0F00 0223
5284  0F01 0F01  LASMBS  ADC     *



5288               ************************   CONTINUATION INFORMATION   ******************
5289               **JUMPX, STOPX, LDSTJP, AQPOS, TTBUSY, NON-INTERRUPT PORTION OF MESSAGE-
5290               *  THESE POUTINES MUST OPERATE ENTIRELY IN RELATIVE MODE BECAUSE OF
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5291                *  MONITOR RELOCATION AND THEIR SUBSEQUENT USE BY MEM002.
5293                       END

  PGM=  0F02 (  3842)   COM = 0000 (     0)   DAT = 0000 (     0)
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E Q U I V A L E N C E S

DEF.LINE	NAME	VALUE		REFERENCED AT LINE NUMBER
0000	I	00FF	(000255)	, 0603, 0609, 0617, 0632, 0643, 0689 , 0690, 0713, 0755, 0854, 0910, 0924 , 0967, 0985, 0991, 0999, 1004, 1009 , 1014, 1015, 1017, 1027, 1092, 1095 , 1103, 1294, 1387, 1497, 1510, 1528 , 1533, 1555, 1570, 1577, 1579, 1582 , 1871, 1997, 2020, 2022, 2063, 2080 , 2091, 2134, 2153, 2155, 2165, 2166 , 2167, 2168, 2169, 2260, 2271, 2279 , 2312, 2376, 2402, 2405, 2447, 2449 , 2778, 2782, 2783, 2845, 2849, 3010 , 3016, 3021, 3097, 3125, 3130, 3135 , 3203, 3209, 3231, 3239, 3241, 3256 , 3637, 3639, 3683, 3697, 3698, 3709 , 3710, 3718, 3719, 3720, 3747, 3762 , 3882, 4708, 4969, 4989, 4994
0015	PASSMM	0FDD	(004061)	, 2769
0016	PASSJ	0FDE	(004062)	, 2775
0017	PASEQ	0FDF	(004063)	, 2787
0018	PRELOR	0EA0	(003744)	, 2848
0019	NAME	0001	(000001)	, 0020, 1148
0020	MUXRTA	0005	(000005)	, 0021, 1055, 1144, 1146, 1178, 3860 , 4096, 4118, 4146
0021	TESTEQ	0006	(000006)	, 1141
0022	PT	0001	(000001)	
0023	CRD	0002	(000002)	
0024	MT	0003	(000003)	, 2843, 2941
0025	DP	0004	(000004)	
0026	CDD	0005	(000005)	
0027	MT8	0008	(000008)	, 3588
0029	START	0000	(000000)	, 0030, 0099
0030	WEST1	0001	(000001)	, 0031, 4053, 4342, 4926
0031	WEST2	0002	(000002)	, 0032, 4111, 4347, 4486, 4524, 4596 , 4635, 4929, 4933
0032	WEST3	0003	(000003)	, 0033, 4355, 4455, 4603, 4639, 4934 , 4938
0033	WEST4	0004	(000004)	, 0034, 4361, 4472, 4609, 4643, 4939 , 4943

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0034    WECHST  0005   (000005) , 0035, 4368, 4374, 4453, 4470, 4616
                                , 4648, 4955, 5109
0035    WE      0006   (000006) , 0036, 4189, 4220, 4232, 4928, 4932
                                , 4937, 4942, 4944, 4948, 5094
0036    ILT     0007   (000007) , 0037, 3808, 3817, 4025, 4027, 4134
                                , 4920
0037    PRGCLK  0009   (000009) , 0038, 4748, 4776
0038    HACT    000A   (000010) , 0039, 4318, 4321, 5108
0039    DATLGH  000B   (000011) , 0040, 5257
0040    TSTNAM  000C   (000012) , 0041
0041    PRGERR  000E   (000014) , 0042
0042    MNTERR  000F   (000015) , 0043, 4254, 4523, 4527, 4551, 5236
                                , 5239
0043    ITESYM  0010   (000016) , 0044
0044    IOESYM  0011   (000017) , 0045
0045    PRESYM  0012   (000018) , 0046
0046    AFESYM  0013   (000019) , 0047
0047    PEESYM  0014   (000020) , 0048
0048    PFESYM  0015   (000021) , 0049
0049    CHANNO  0016   (000022) , 0050, 4951
0050    EQUIPT  0017   (000023) , 0051, 4947
0051    STATNO  0018   (000024) , 0052
0052    ITLINS  0019   (000025) , 0053, 4033, 4631
0053    XTIME   001A   (000026) , 0054, 4073, 4173, 4274, 4660, 5063

0054    TIMER   001B   (000027) , 0055, 4074, 4091, 4092, 4174, 4243
                                , 4244, 4275, 4307, 4308, 5229
0055    STCNTL  001C   (000028) , 0056, 4288, 4588
0056    LOPER   001D   (000029) , 0057, 4166, 4557, 5156
0057    LOPRSP  001E   (000030) , 0058, 4197, 4562, 5214
0058    LOPERA  001F   (000031) , 0059, 4192, 4224, 4228, 4246, 4567
                                , 5209
0059    LOPERQ  0020   (000032) , 0060, 4193, 4218, 4223, 4229, 4235
                                , 4247, 4569, 5211
0060    LINST   0021   (000033) , 0061, 4385, 4393
0061    LINRSP  0022   (000034) , 0062, 4444
0062    LINSTA  0023   (000035) , 0063, 4383, 4389, 4398, 5170, 5258

0063    LINSTQ  0024   (000036) , 0064, 4414, 4418, 4438, 5187, 5205
                                , 5210, 5249
0064    IMR     0025   (000037) , 0065, 4070, 4627
0065    PREG    0026   (000038) , 0066
0066    LINENO  0027   (000039) , 0067, 0096, 3776, 3995, 4075, 4629

0067    EXIMR   0028   (000040) , 0068
0068    ST1RSP  0029   (000041) , 0069, 4346
0069    SKIP7   002A   (000042) , 0070
0070    ST2RSP  002B   (000043) , 0071, 4353
0071    SKIP5   002C   (000044) , 0072
0072    CHRSP   002D   (000045) , 0073, 4360, 4373
0073    CHARSP  002E   (000046) , 0074, 4366, 4378
0074    SKIP5A  002F   (000047) , 0075
0075    CH3RSP  0030   (000048) , 0076
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0076    ST1     0031   (000049) , 0077, 4296, 4345, 4506, 4509, 4571

0077    SKIP8   0032   (000050) , 0078
0078    ST2     0033   (000051) , 0079, 4352, 4494, 4497, 4599, 4637

0079    SKIP4   0034   (000052) , 0080
0080    CHST    0035   (000053) , 0081, 4359, 4372, 4464, 4467, 4605
                                , 4618, 4641, 4650
0081    CHADR   0036   (000054) , 0082, 4365, 4377, 4480, 4483, 4611
                                , 4622, 4645, 4652
0082    SKIP4A  0037   (000055) , 0083
0083    CHST3   0038   (000056) , 0084
0084    XST1    0039   (000057) , 0085, 4508, 4594
0085    SKIP6   003A   (000058) , 0086
0086    XST2    003B   (000059) , 0087, 4496, 4601
0087    SKIP2   003C   (000060) , 0088
0088    XCHST   003D   (000061) , 0089, 4466, 4607, 4620
0089    XCHADR  003E   (000062) , 0090, 4482, 4613
0090    SKIP2A  003F   (000063) , 0091
0091    XCHST3  0040   (000064) , 0092, 0096
0092    CALLP   0041   (000065) , 0093, 3848, 3895, 4067, 4099, 4116

0093    MPXRTN  0042   (000066) , 0094, 3846, 3893
0094    RBIT    0043   (000067) , 0095, 3778, 3994, 4068
0095    TSCOML  0044   (000068) , 0097, 0098, 3863, 3879
0096    SDATA   0019   (000025) , 0097, 0098
0097    TSDATA  0056   (000086) , 4915, 4990
0098    TDATA   005D   (000093)
0099    ERRFLE  000B   (000011) , 0100, 4991, 4993
0100    CRLUNO  000C   (000012) , 0101, 4987
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5176    RWT003  0E9A    (003738) , 5163, 5196
5177    RWT004  0E9B    (003739) , 5105, 5120, 5128, 5147, 5188, 5192
                                 , 5201, 5204, 5241, 5254, 5262, 5263

5178    RWT005  0E9C    (003740) , 5097, 5124, 5190
5179    RWT006  0E9D    (003741) , 5217
5180    RWT008  0E9E    (003742) , 5070, 5193
5181    RWT009  0E9F    (003743) , 5101, 5230
5182    RWT010  0EA0    (003744) , 5095, 5111, 5143, 5169
5183    RWT011  0EA1    (003745) , 5072
5187    RWE065  0EA5    (003749) , 5173
5188    RWE075  0EA6    (003750) , 5132, 5151, 5172, 5262
5201    RWE080  0EB2    (003762) , 5135, 5154, 5195, 5199, 5263
5204    RWE095  0EB5    (003765) , 5191
5208    RWE200  0EB9    (003769) , 5206, 5233, 5247
5223    RWE202  0ECC    (003788) , 5221
5227    RWE205  0ED0    (003792) , 5224
5229    RWE210  0ED2    (003794) , 5226
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5234    RWE160  0ED7   (003799) , 5174
5238    RWE165  0EDB   (003803) , 5235, 5252
5240    RWE172  0EDD   (003805) , 5237
5245    RWE173  0EE2   (003810) , 5242
5246    RWE175  0EE3   (003811) , 5244
5249    RWE170  0EE6   (003814) , 5085
5253    RWE220  0EEB   (003819) , 5232, 5240, 5259
5259    MBSEND  0EF1   (003825)
5260    IORPLY  0001   (000001) , 5215
5261    INST    000D   (000013) , 5179
5262    READE   7FF4   (032756) , 5150
5263    WRITE   7FE8   (032744) , 5134
5272    PFE010  0EF2   (003826) , 0740
5278    PFE015  0EF9   (003833) , 5274
5283    PFE020  0EFF   (003839) , 5275, 5277, 5281
5284    LASMBS  0F01   (003841) , 2824, 2930
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*** A L P H A B E T I C A L S O R T O F S Y M B O L S ***

ADDR	1731	ADINST	0253	ADQX	3364	ADR1	0831	ADR2	0832
ADR3	0833	ADR4	0834	ADR5	0835	ADR6	0836	AFESYM	0046
ALFXH	2960	ANYL	2307	ANYL1	2310	ANYL2	2314	ANYL3	2318
ANYL4	2321	ANYL5	2324	ANYL6	2327	AQ1	1412	AQ1A	1417
AQ2	1456	AQCNT	1433	AQPOS	1268	AQSTP	1483	AQTTY	1404
AQX	1532	AQX1	1539	ASC5	2553	ASCDEC	0251	ASCHEX	0250
ASCIHE	2540	ASCWD	0258	AUTOPP	0262	AXREPT	0588	B0	0475
B1	0476	B2	0477	B3	0478	B4	0479	B5	0480
B6	0481	B7	0482	BASM	2441	BASM1	2427	BASM2	2435
BELL	2356	BFR1	1502	BFR2	1503	BFRB4L	1504	BIAS	1402
BIASED	1147	BIT	2416	BIT00	0379	BIT01	0380	BIT02	0381
BIT03	0382	BIT04	0383	BIT05	0384	BIT06	0385	BIT07	0386
BIT08	0387	BIT09	0388	BIT10	0389	BIT11	0390	BIT12	0391
BIT13	0392	BIT14	0393	BIT15	0394	BITERR	2462	BITS	2451
BKCHK1	2881	BKCHK2	2889	BKCHK3	2891	BKCHK4	2892	BLDBFR	1575
BSL	2446	BUILDT	0947	BUSY	0779	BWDCON	2421	C108	0412
CALLAD	3045	CALLP	0092	CALLPT	0263	CD08	3476	CD09	3485
CD09A	3503	CD09B	3507	CD1LDR	3410	CDAD1	3568	CDCUAD	3539
CDD	0026	CDDOVL	3351	CDDSK	1818	CDERR	3482	CDEXT	3560
CDLDA2	3547	CDLDAD	3510	CDNWHS	3554	CDP01	3411	CDP02	3426
CDP02A	3427	CDP03	3432	CDP04	3442	CDP10	3443	CDP10A	3449
CDP11	3456	CDP12	3460	CDPADR	3464	CDPALM	0132	CDPNAM	3462
CDPROE	3438	CDRDWR	3466	CDSTAT	3493	CDUNIT	3409	CH2050	3463
CH3RSP	0075	CHADR	0081	CHANNO	0049	CHAR1	0510	CHAR2	0511
CHARSP	0073	CHKLEG	2564	CHKMBS	0654	CHPEPF	0713	CHRSP	0072
CHST	0080	CHST3	0083	CJMP	3529	CJMPDF	3436	CKAQ	1476
CKAQA	1481	CKCDAL	3489	CKCOUN	1487	CKDPAL	3379	CKE000	4530
CKFLAG	1868	CKID	1353	CKIDNM	1424	CKLLER	3028	CKPE	0720
CKPF	0722	CKSJ48	1374	CKSMER	0124	CKST	0226	CKTFLG	1874
CLOCK	0229	CLRIA	0968	CLRPP	0112	CLRREJ	2668	CNTNUM	1732
COMUSE	0495	CONASC	1233	CONDEC	2562	CONHEX	2513	CONTLL	2987
CONTR0	1161	CONTR1	1172	CONTR3	1173	CONTR7	1168	CONTRO	0209
CONV00	1236	CONV01	1244	CONV02	1251	CONV03	1255	CONV04	1260
CORCHK	1943	COREOK	1976	CORMOD	0135	CPB	0233	CPE000	5026
CPE005	5035	CPE010	5030	CR	3181	CR00	3183	CR01	3194
CR02	3195	CR03	3202	CR04	3205	CR05	3207	CR06	3208
CR07	3209	CR08	3212	CR11	3216	CR12	3227	CR13	3228
CR15	3231	CR16	3233	CR17	3240	CR18	3260	CR1LDR	3182
CR21	3276	CR22	3277	CR23	3281	CR24	3283	CRALAR	0126
CRD	0023	CREOP	0127	CREXIT	3275	CRFLGS	3266	CRLUNO	0100
CRSUNO	0101	D2	0503	DATA	1558	DATA1	1564	DATARE	0116
DATE01	3055	DATE23	3056	DATE45	3057	DATEPL	3004	DATLGH	0039
DEC	2379	DEC1	2593	DEC2	2594	DEC3	2595	DECCR	2383
DECILL	2570	DECSL	2398	DECSL1	2405	DECWD	2388	DLE000	4871
DLE005	4877	DLE010	4883	DLT001	4890	DLT003	4894	DP	0025
DP01	3289	DP02	3304	DP02A	3305	DP03	3310	DP04	3320
DP08	3358	DP09	3373	DP10	3322	DP10A	3328	DP11	3335
DP12	3339	DP1LDR	3288	DPADR	3343	DPALAR	0130	DPERR	3375
DPNAML	3341	DPRDER	3316	DPRDWR	3345	DR42	2604	DR42A	2609

DR42AB	2616	DR42AC	2621	DR42AD	2626	DR42B	2627	DR42BA	2636
DR42BB	2638	DR42E	2644	DR42EA	2649	DR42EX	2608	DR42T1	2671
DR42T3	2672	DSE000	3985	DSE010	3999	DSELIN	0242	DTEMP	2415
DWD	2409	DWDCON	2407	EE	1225	ENDAQ	1499	ENDBFR	1570
ENDCNV	1258	ENDMES	1681	ENDMON	2243	ENDSMR	0867	ENDSTP	1391
ENTA	0837	ENTQ	0838	EQUIP	0351	EQUIPT	0050	ER1	2348
ERCODE	3044	ERE000	4545	ERE010	4634	ERE012	4648	ERE015	4624
ERE020	4654	ERE025	4655	ERE035	4659	ERE040	4673	ERE045	4707
ERE050	4586	ERE060	4591	ERE070	4663	ERE072	4669	ERE074	4671
ERE076	4672	ERE080	4594	ERE082	4599	ERE085	4616	ERE090	4625
ERE100	4689	ERMES	2352	ERRFLE	0099	ERROR	0228	ERT000	4691
ERT001	4692	ERT002	4693	ERT003	4694	ERT004	4581	ERT005	4580
EXECTL	1065	EXIMR	0067	EXIT	1188	EXIT03	0660	EXIT05	0662
EXITB	1196	EXITC	1198	EXITD	1211	EXITEX	2266	EXITG	1224
EXITL	0644	EXLEV	0667	EXREAD	2280	EXTEX1	2276	F33	3524
F33GO	3528	FAKE	0213	FCLRIN	0873	FIXDLY	0231	FLAG7T	2124
FLGEND	2977	FLGMSG	0830	FLGSMR	0828	FLGSTP	0829	FN	0224
FNE000	4162	FNE002	4173	FNE005	4196	FNE007	4205	FNE010	4209
FNE015	4214	FNE016	4220	FNE017	4224	FNE018	4226	FNE019	4232
FNE020	4241	FNE030	4250	FNE034	4252	FNE036	4253	FNE038	4256
FWAAR	4973	FWAEI	0239	FWAI	0238	FWAQR	4974	FWE000	4965
FWE005	4967	FWE010	4968	FXE000	4850	FXE002	4866	FXT001	4886
GEN1	1779	GENMOR	1762	GENRAN	1758	GENRDM	0215	H0000	0395
H000F	0397	H007F	0410	H00F0	0398	H00FF	0401	H0780	0409
H0E00	0414	H0F00	0399	H0FFF	0404	H2020	0411	H2050	3342
H7F00	0408	H7FFF	0407	H8D0A	1734	HACT	0038	HEADB	3069
HEADC	3071	HEADD	3073	HEADF	2731	HEADG	2729	HEADIN	3062
HEX	2359	HEXASC	0218	HEXCOR	1907	HEXCR	2378	HEXRD	2362
HEXSL	2376	HEXWD	2367	HEXWOR	0257	HF000	0400	HF0FF	0406
HFEFD	0413	HFF00	0402	HFF0F	0405	HFFF0	0403	HFFFF	0396
HGE000	4149	HOG	0236	HOG1	3831	HOG2	0260	I	0000
ID	1399	ID1	1365	ID2	1364	ID48	1363	IDSAVE	1427
ILBZY	0114	ILLASC	2539	ILLBLK	1853	ILLDEC	2592	ILLRBD	0121
ILO	0261	ILT	0036	IMR	0064	IN0	2755	IN1	2869
IN10	2901	IN13A	2907	IN13B	2911	IN13C	2920	IN2	2875
IN2A	2796	IN2B	2799	IN2C	2800	IN2D	2807	IN3	2812
IN3A	2813	IN3B	2820	IN4	2824	IN4C	2838	IN5	2856
INBI1	0278	INE000	3746	INE025	3788	INE027	3792	INE029	3796
INE030	3802	INE031	3808	INE054	3809	INE056	3819	INE057	3820
INE059	3821	INFORM	0281	INIT1	1075	INIT1A	1079	INIT1B	1100
INIT1C	1098	INIT1D	1090	INIT2	1102	INIT4	1104	INIT4D	1107
INIT4E	1113	INIT5	1151	INIT9A	1136	INITA	0990	INITA1	0993
INITA2	1020	INITA3	1031	INITAA	1034	INITAB	1046	INITAC	0980
INITB	1137	INITC	1116	INITD	1126	INITF	1114	INITSJ	2779
INPTTY	0222	INQX	3359	INSMM1	2749	INST	5261	INT000	3902
INT001	3917	INT002	3933	INT003	3949	INT004	3967	INT005	3898
INTACT	1729	INTFLG	0254	INTON1	0668	INTPRC	0244	INTREJ	4446
INTSTK	3901	INTTY	2226	INTTY1	2233	INTTY2	2237	INTX	0245
IOACT	0255	IODATA	0270	IOE050	4341	IOE053	4351	IOE055	4368
IOE058	4379	IOE100	4382	IOE120	4391	IOE130	4409	IOE135	4410
IOE140	4411	IOE145	4414	IOE150	4418	IOE155	4422	IOE156	4429
IOE157	4435	IOE160	4438	IOE165	4416	IOE170	4441	IOE200	4450
IOE202	4458	IOE204	4470	IOE206	4474	IOE208	4486	IOE212	4500

IOE214	4512	IOESYM	0044	IOPF	4447	IORPLY	5260	IOT000	4337
IOT001	4258	IOT002	4261	IOT003	4381	IOT004	4436	IOTM1	0271
IOTM2	0272	IOTM3	0273	ISAVE	1396	ISER	0484	ISERR	0759
ISERR1	0770	ISERR2	0776	ISERRQ	0777	ITESYM	0043	ITIMER	0117
ITLINS	0052	IXT1	1060	JLL1	3042	JMPDIF	3314	JMPLDR	1938
JTYPL	1525	JUMP	0214	JUMP0	0318	JUMP1	0352	JUMP2	0354
JUMP3	0353	JUMPX	0311	LASMBS	5284	LASTAD	0277	LASTID	1505
LASTOV	0282	LASTVA	0276	LDADR	3391	LDADR1	3402	LDADR3	3516
LDCONT	1887	LDEQ	2787	LDL1CO	0280	LDLCOR	0279	LDLDR1	2845
LDLDR2	2849	LDLDR3	2850	LDOVLY	2710	LDRBD1	1897	LDRBD2	1904
LDRBD3	1905	LDRCHK	1809	LDSTJP	0364	LEGDEC	2571	LEV0	0515
LEV1	0519	LEV10	0555	LEV11	0559	LEV12	0563	LEV13	0567
LEV14	0571	LEV15	0575	LEV2	0523	LEV3	0527	LEV4	0531
LEV5	0535	LEV6	0539	LEV7	0543	LEV8	0547	LEV9	0551
LINENO	0066	LINRSP	0061	LINST	0060	LINSTA	0062	LINSTQ	0063
LL1	2948	LL2	2951	LLCONT	2930	LLERID	3043	LLLINE	3026
LLMSG2	3050	LLMSG3	3052	LLMSG4	3060	LLNAM	2988	LLTERM	2980
LLTRM1	2981	LOADER	2038	LOADNX	1817	LOADRB	1888	LOPER	0056
LOPERA	0058	LOPERQ	0059	LOPRSP	0057	LV0ADR	0518	LV10AD	0558
LV11AD	0562	LV12AD	0566	LV13AD	0570	LV14AD	0574	LV15AD	0578
LV1ADR	0522	LV2ADR	0526	LV3ADR	0530	LV4ADR	0534	LV5ADR	0538
LV6ADR	0542	LV7ADR	0546	LV8ADR	0550	LV9ADR	0554	MAINL	0869
MANUAL	0221	MBSEND	5259	MBSOLY	2738	MCINIT	0944	MEMPE	0110
MES1	2300	MES2	2463	MESS	1733	MESS0	1650	MESS1	1711
MESS1A	1691	MESS1B	1704	MESS1C	1683	MESS2	1715	MESS2A	1718
MESS3	1697	MESS4	1723	MESS6	1730	MESSA0	1612	MESSA1	1665
MESSA2	1666	MESSA3	1676	MESSA4	1679	MESSAG	1609	MESSIN	1682
MISWX	0315	MNE000	4270	MNE006	4278	MNE010	4311	MNE012	4313
MNE014	4314	MNE016	4316	MNE018	4317	MNE020	4327	MNTERR	0042
MNTRST	0225	MONPP	0223	MPE000	3032	MPE005	3839	MPE007	3844
MPE010	3897	MPE015	3892	MPE020	3858	MPE025	3862	MPE030	3879
MPE035	3869	MPX	0246	MPXCNT	3899	MPXRTN	0093	MSE000	4906
MSE005	4920	MSE010	4924	MSE015	4944	MSE020	4956	MSINIT	0240
MST000	4957	MSTJP	0473	MSTOP	0483	MT	0024	MT8	0027
MT89TR	3626	MT8L1	3625	MT8L10	3725	MT8L11	3679	MT8L2	3620
MT8L3	3627	MT8L4	3645	MT8L5	3641	MT8L6	3649	MT8L7	3652
MT8L8	3659	MT8L8	3660	MT8LC	3677	MT8LD	3675	MT8LDR	3588
MT8LDX	3602	MT8LDY	3612	MT8LE	3681	MT8LF	3686	MT8LRW	3657
MT8UN	3587	MT8S	2118	MTLD11	2100	MTLD13	2132	MTLD14	2121
MTLD15	2123	MTLD16	2131	MTLD17	2137	MTLD18	2174	MTLD7A	2085
MTLD7B	2090	MTLDPE	2108	MTLDR1	2048	MTLDR3	2062	MTLDR4	2068
MTLDR5	2071	MTLDR6	2072	MTLDR7	2077	MTLDR8	2091	MTLDR9	2094
MTLDRW	2105	MTPE	0128	MTSTJP	1395	MTUNIT	2037	MUTEXC	0137
MUXRTA	0020	NAMBLK	1929	NAMCOM	1933	NAME	0019	NAMWD5	3053
NAMWD6	3054	NEGCNT	1432	NEWMAS	1454	NEWSJ	1382	NOCDAL	3508
NODPAL	3389	NOGO	1971	NOMOCO	0119	NOP	3211	NOTFM1	1637
NOTFOR	1624	NOTHCB	1914	NOTXH	2971	NOXFR	0123	NULL	0256
OCALL8	2716	OLLERR	0134	OMITTO	1394	OVERLA	1793	OVFHA	0283
OVRBL1	1829	OVRBL2	1832	OVRBLK	1821	OVRLA1	1805	OVRLAY	0219
OVRLD1	1808	PARDAT	1463	PASEQ	0017	PASSJ	0016	PASSMM	0015
PD1	1469	PE	0742	PEESYM	0047	PF	0741	PFE000	0724
PFE005	0737	PFE010	5272	PFE015	5278	PFE020	5283	PFESYM	0048
PFR	0752	PFRT	0247	PL	3058	POINT	2278	POS000	4982

POS005	4985	POS010	4993	POS020	4994	PPMON	2723	PREEXD	2181
PREEXS	2179	PREG	0065	PRELDR	0018	PRESTP	1283	PRESTR	2782
PRESYM	0045	PRGCLK	0037	PRGERR	0041	PRGLOA	0252	PRLFLG	0508
PROC	0617	PROC0	3755	PROC1	0624	PROC10	3783	PROC2	0625
PROC2A	3766	PROC2B	3756	PROC3	0670	PROC4	0679	PROC5	0687
PROC5A	0688	PROC6	0690	PROC9	3764	PROCD	0642	PROCES	0589
PROTEC	0111	PRT42	2690	PRTBFR	2654	PRTBSY	2681	PRTCLR	2663
PRTEND	2703	PRTEQU	2673	PRTFNC	2675	PRTREJ	2660	PT	0022
PT00	3096	PT01	3099	PT02	3105	PT03	3120	PT04	3125
PT05	3134	PT06	3136	PT07	3140	PT08	3142	PT1LDR	3090
PTALAR	0125	PTCNT	3089	PTERR	3168	PTYPE	2724	PWR	0747
QTEMP	0640	R	1783	R1	1784	RBD001	2003	RBD003	2005
RBD004	2010	RBD005	2011	RBD007	2015	RBD009	2020	RBDBLK	1994
RBDTAB	1921	RBIT	0094	RD	0234	RDE000	5038	RDE010	5042
RDMDLY	0230	READ	2282	READE	5262	RECKST	0227	REE000	4514
REE002	4517	REE004	4523	REE005	4527	REE006	4529	REG	0586
RELPOS	0220	REPORT	0800	REQIN2	0887	REQIN3	0889	REQIN4	0893
REQIN5	0901	REQIN6	0907	REQIN7	0909	REQIN8	0920	REQIN9	0924
REQINT	0686	REQIT	0212	RIE000	4060	RIE006	4075	RIE007	4089
RIE008	4079	RIE009	4098	RIE011	4102	RIE012	4103	RIE013	4105
RIE015	4115	RIE020	4116	RIE025	4132	RIE030	4145	RINT	0241
RP1	1273	RP2	1274	RP3	1276	RPT00	0783	RPT01	0788
RPT02	0790	RPT02A	0795	RPT02B	0796	RPT02C	0797	RPT04	0809
RPT05	0814	RPT06	0816	RPT10	0818	RPTF	3144	RPTF00	3146
RPTF01	3156	RPTF02	3157	RPTF03	3162	RPTRTN	0823	RTA	1401
RTAQ	1485	RTNMSG	0827	RTNSMR	0825	RTNSTP	0826	RWDFLG	0486
RWE000	5055	RWE005	5060	RWE010	5116	RWE011	5066	RWE013	5078
RWE014	5142	RWE015	5147	RWE018	5155	RWE020	5156	RWE021	5089
RWE022	5092	RWE024	5112	RWE025	5113	RWE030	5128	RWE035	5145
RWE045	5118	RWE050	5161	RWE055	5166	RWE065	5187	RWE070	5170
RWE075	5188	RWE080	5201	RWE095	5204	RWE160	5234	RWE165	5238
RWE170	5249	RWE172	5240	RWE173	5245	RWE175	5246	RWE200	5208
RWE202	5223	RWE205	5227	RWE210	5229	RWE220	5253	RWT000	5172
RWT001	5174	RWT002	5175	RWT003	5176	RWT004	5177	RWT005	5178
RWT006	5179	RWT008	5180	RWT009	5181	RWT010	5182	RWT011	5183
S2020	1540	S7FFF	1506	S8D0A	1553	SAVIT	2102	SCAN2	1450
SCAN4	1452	SCANID	1443	SDATA	0096	SELIN	0243	SETMAS	0274
SETP	2485	SETP0	2501	SETPFG	2505	SETPGO	2488	SETTER	2984
SIE000	4011	SIE010	4039	SIE012	4041	SINGLE	1435	SJPARA	1437
SJX	1400	SKIP2	0087	SKIP2A	0090	SKIP4	0079	SKIP4A	0082
SKIP5	0071	SKIP5A	0074	SKIP6	0085	SKIP7	0069	SKIP8	0077
SKIPOK	1963	SKPXIT	1380	SLSPAD	0699	SLSPIO	0693	SMER1	0857
SMERCD	0862	SMERID	0861	SMERQ	0864	SMERRO	0248	SMERRT	0863
SMM000	0201	SMMCNT	0349	SMMERR	0846	SMMSJ	0370	SMSTAR	0956
SPB	0232	SPB1	2191	SPB2	2192	SPB4	2196	SPB5	2199
SPB6	2204	SPB7	2205	SPB8	2213	SPB9	2215	SPBEND	2220
SPC42	2697	SPCK	2329	SPCK1	2338	SPCK1A	2334	SPCK2	2342
SPCK3	2346	SPE000	5007	SPE005	5016	SPE010	5011	SPP000	2190
ST1	0076	ST1RSP	0068	ST2	0078	ST2RSP	0070	START	0029
STAT	2287	STATNO	0051	STB7B3	1858	STCNTL	0055	STJP	0275
STKLGH	3900	STMORE	1772	STOP	0210	STOPA3	3046	STOPA4	3048
STOPBF	0507	STOPCN	1431	STOPQ3	3047	STOPQ4	3049	STOPX	1292
STOPX1	1309	STOPX2	1319	STOPX3	1320	STOPX4	1331	STOPX5	1332

STOPX6	1340	STPEXI	1386	STPTYP	1508	TCLOCK	4791	TDATA	0098
TELAQ	2260	TEMPLO	0505	TEMPTS	0509	TESTEQ	0021	TIE000	4726
TIE001	4727	TIE002	4745	TIE003	4751	TIE004	4760	TIE006	4764
TIE010	4767	TIE011	4768	TIE012	4772	TIE050	4775	TIMER	0054
TIT000	4786	TIT001	4787	TK128	0268	TK16	0265	TK32	0266
TK64	0267	TKR	0264	TMES	2477	TOHEAD	2853	TRANSF	1053
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Customer Engineering Manual

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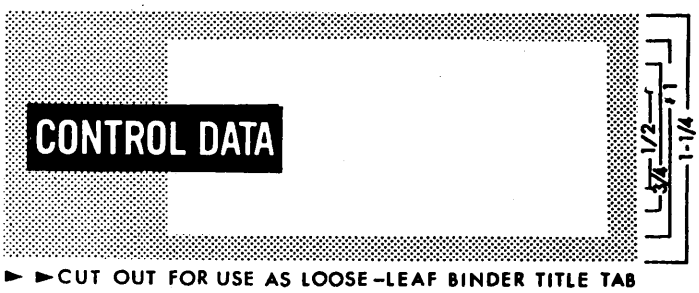

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