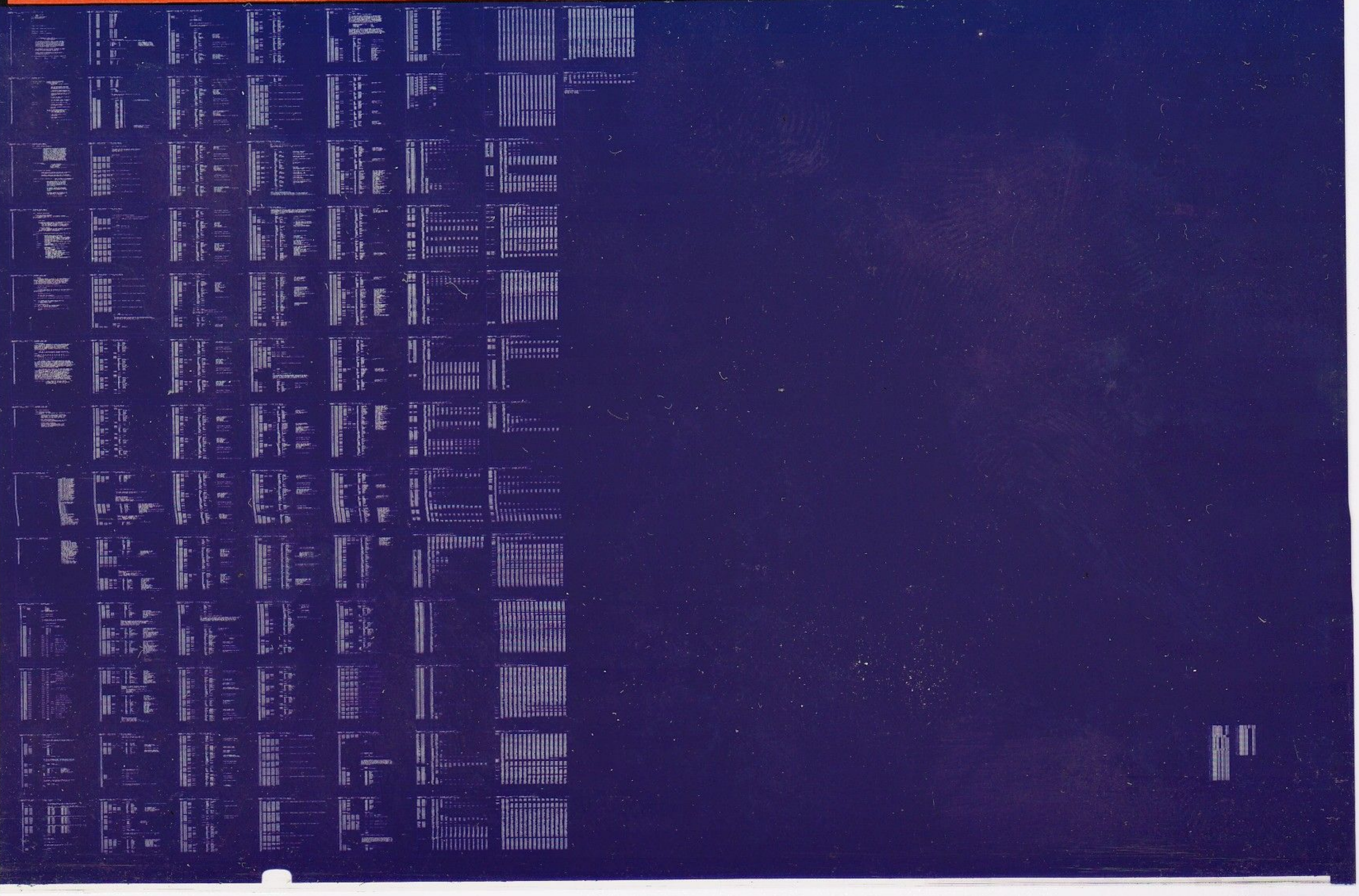
BDV11,
KDF11-B

BDV11/KDF11B BT DIAG
CVM8AE0

AH-B062E-MC
FICHE 1 OF 1



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                        .ENABL  ABS,AMA
002000                  .=2000
                        .NLIST  CND,MD,MEB,ME
                .TITLE USER DOCUMENTATION
                .SBTTL  IDENTIFICATION




; PRODUCT CODE: AC-B061E-MC

; PRODUCT NAME: CVM8AE0 BDV11/KDF11B BT DIAG

; PRODUCT DATE: JANUARY 1982

; MAINTAINER:   DIAGNOSTIC ENGINEERING


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;
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                        ;++
                        ; FUNCTIONAL DESCRIPTION:  THE BDV11 BOOTSTRAP/TERMINATOR/
                        ;                          DIAGNOSTIC MODULE PROVIDES THE
                        ;                          FOLLOWING FUNCTIONS:
                        ;                               1. ROM RESIDENT HARDCORE DIAGNOSTIC
                        ;                                  TESTS.
                        ;
                        ;*BDV11 ONLY*                  2. PADS FOR ROM RESIDENT BOOTSTRAP
                        ;                                  ROUTINES FOR THOSE DEVICES WHICH
                        ;                                  ARE SUPPORTED BY THE LSI-11 SYSTEM.
                        ;
                        ;                              3. A READ/WRITE STORAGE REGISTER FOR
                        ;                                  USE BY THE RESIDENT DIAGNOSTIC TESTS.
                        ;
                        ;                              4. TWELVE DIP ROCKER SWITCHES TO SELECT
                        ;                                  TESTING AND BOOTSTRAP OPTIONS AT
                        ;                                  POWER UP.
                        ;
                        ;                              5. AN ARRAY OF FOUR LED'S TO PROVIDE
                        ;                                  STATUS INFORMATION.
                        ;
                        ;                              6. HALT AND REBOOT TOGGLE SWITCHES FOR
                        ;                                  USE IN SYSTEMS WITHOUT A CONSOLE.
                        ;
                        ;*BDV11 ONLY*                  7. SOCKETS FOR 2K WORDS OF EPROM.
                        ;
                        ;*BDV11 ONLY*                  8. OPTIONAL REPLACEMENT OF SYSTEM ROM
                        ;                                  BY 8K WORDS OF EPROM.
                        ;
                        ;                              9.LINE CLOCK INTERRUPT ENABLE/DISABLE
                        ;                                REGISTER
                        ;
                        ;                         THE KDF11B BOOTSTRAP/DIAGNOSTIC MODULE
                        ;                         PROVIDES THE FOLLOWING FUNCTIONS:
                        ;                              1. ABOVE MENTIONED FUNCTIONS 1.,
                        ;                                 3., 4.(8 SWITCHES), 5., 6., 9.
                        ;
                        ;                              2. LINE CLOCK CLEARED BY RESET
                        ;                                 INSTRUCTION
                        ;
                        ;                              3. PAGE CONTROL REGISTER IS
                        ;                                 WRITE ONLY
                        ;
                        ;                              4. PRIORITY LEVEL 6(THE SAME FOR KDF11A)
                        ;
                        ;--
```

```
                        .SBTTL  GENERAL PROGRAM INFORMATION

                        ; PROGRAM PURPOSE:  THIS DIAGNOSTIC WILL BE USED TO ESTABLISH
                        ;                   CONFIDENCE THAT THE MODULE IS FUNCTIONING
                        ;                   PROPERLY. IT WILL PROVIDE CHECKSUM VERI-
                        ;                   FICATION OF THE CONTENTS OF THE DIAGNOSTIC
                        ;                   ROMS AND ANY ADDITIONAL ROM OR EPROM.IN
                        ;                   ADDITION, IT WILL VERIFY THAT THE PROPER
                        ;                   DIAGNOSTIC ROMS ARE INSERTED IN THE MODULE
                        ;                   BY COMPARING THE ACTUAL CHECKWORDS IN THE
                        ;                   ROMS TO THOSE SPECIFIED IN THE DIAGNOSTIC
                        ;                   PROGRAM. IT WILL ALSO ACCEPT CHECKWORDS
                        ;                   FROM AN OPERATOR FOR USE IN TESTING ANY
                        ;                   ADDITIONAL ROM/EPROM. THE DIAGNOSTIC WILL
                        ;                   ALSO TEST THE PROGRAMMABLE REGISTERS AND
                        ;                   EXERCISE THE LED'S FOR OPERATOR INSPECTION.
                        ;
                        ; SYSTEM REQUIREMENTS:
                        ;                   HARDWARE:       LSI-11 BUS PROCESSOR:
                        ;                                     11/03(LSI-11/02),11/23(KDF11-A),11/23B(KDF11-B)
                        ;                                   16K WORDS OF MEMORY
                        ;                                   CONSOLE TERMINAL
                        ;                                   DIAGNOSTIC PROGRAM LOAD DEVICE
                        ;
                        ; RELATED DOCUMENTS AND STANDARDS:
                        ;
                        ;                   CHQUSB XXDP+/SUPR USER MAN (AC-F348 -MC) TO REFERENCE
                        ;                   THE DIAGNOSTIC SUPERVISOR COMMAND INSTRUCTIONS.
                        ;
                        ;                   DIAGNOSTIC SUPERVISOR FUNCTIONAL SPEC (176-681-001)
                        ;                   APT/DIAGNOSTIC SUPERVISOR INTERFACE SPEC (176-681-003)
                        ;
                        ; DIAGNOSTIC HIERARCHY PREREQUISITES:   NONE, ALTHOUGH IT IS ASSSUMED THAT
                        ;                                       THE CPU IS FUNCTIONING PROPERLY.
                        ;
                        ; ASSUMPTIONS:           --WHEN RUNNING UNDER APT, ALL ROCKER
                        ;                         SWITCHES ARE IN THE ''ON'' POSITION.
                        ;                         THE EXCEPTION TO THIS OCCURS ONLY
                        ;                         WHEN AN OPERATOR CHANGES THE HARD-
                        ;                         WARE P-TABLE TO CORRESPOND TO THE NEW
                        ;                         SWITCH SETTINGS.
                        ;
                        ;                       --THE ADDRESS JUMPERS ARE CONFIGURED
                        ;                         AND MEMORY CHIPS INSTALLED PROPERLY.
                        ;                         NO TWO CHIPS CAN RESPOND TO THE SAME
                        ;                         ADDRESS.
                        ;
                        ;                       --THE MODULE UNDER TEST RESIDES IN THE
                        ;                         SAME BACKPLANE AS THAT FROM WHICH THE
                        ;                         LINE TIME CLOCK IS GENERATED.
                        ;
                        ;                       --THE CPU IS WORKING  PROPERLY.
```

```
                        .SBTTL  OPERATING INSTRUCTIONS

                        ;1. LOADING AND STARTING PROCEDURES
                        ;       IN SYSTEMS OTHER THAN APT,  THE DIAGNOSTIC PROGRAM
                        ;AND THE DIAGNOSTIC SUPERVISOR WILL BE LOCATED ON THE XXDP+ MEDIA
                        ;AS TWO SEPARATE FILES.
                        ;
                        ;
                        ;       I. XXDP+ MEDIA
                        ;
                        ;         FOR OPERATING INSTRUCTIONS OF THE SUPERVISOR,PLEASE REFER
                        ;         TO CHQUSB XXDP+/SUPR USER MAN (AC-F348 -MC).
                        ;               ISSUE THE COMMAND ".R CVM8AE". THE XXDP+ MONITOR
                        ;               WILL LOAD THE DIAGNOSTIC AND THE SUPERVISOR FILE
                        ;               HSAA??.SYS AND GIVE CONTROL TO THE SUPERVISOR.
                        ;
                        ;       II. SUPERVISOR COMMANDS
                        ;               ONCE THE SUPERVISOR HAS BEEN INVOKED AT LOCATION 200,
                        ;          THE FOLLOWING COMMANDS SHOULD BE USED SELECTIVELY TO
                        ;          CONTROL THE RUNNING OF THE DIAGNOSTIC:
                        ;2. TO START
                        ;
                        ;     START/TEST:<TESTNOS>/PASS:<PASSCNT>/UNIT:<DEVN>/FLAG:<CF>:<CF>
                        ;WHERE:
                        ;     TEST        ::=(DEFINES WHICH TESTS TO EXECUTE, IF NO
                        ;                     SPECIFICATION EXECUTE ALL TESTS)
                        ;     PASS        ::=(INDICATES HOW MANY PASSES TO RUN, IF NO SPEC-
                        ;                     IFICATION RUN UNTIL DIAGNOSTIC ESCAPE SEQUENCE)
                        ;     UNIT        ::=(SPECIFIES WHICH UNIT ENTRIES TO GET FROM THE
                        ;                     CONFIGURATION FILE, IF NO SPECIFICATION USE ALL
                        ;                     APPLICABLE UNIT ENTRIES)
                        ;     FLAG        ::=(SPECIFIES THE ERROR CONTROL/REPORT FLAG OPTIONS
                        ;                     TO BE USED)
                        ;     <TESTNOS>   ::=(LIST FOR UP TO 16 TESTS TO BE EXECUTED IN AN
                        ;                     ASCENDING ORDER.
                        ;     <PASSCNT>   ::=(NUMBER OF PROGRAM PASSES TO EXECUTE)
                        ;
                        ;     <DEVN>      ::=(UNIQUE,DEC STANDARD, DEVICE SPECIFIER AND
                        ;                     UNIT NUMBER)
                        ;     <CF>        ::=(ANY OF THE FOLLOWING CONTROL FLAGS:
                        ;                       HOE-HALT ON ERROR
                        ;                       LOE-LOOP ON ERROR AND ATTEMPT REPORT
                        ;                       IER-INHIBIT ALL ERROR REPORTS
                        ;                       IBE-INHIBIT BASIC AND EXTENDED ERROR REPORTS
                        ;                       IXE-INHIBIT EXTENDED ERROR REPORTS
                        ;                       PRI-DIRECT ALL ERROR, PASS, AND STATISTICAL
                        ;                           REPORTS TO THE LINE PRINTER.
                        ;                       BOE-AUDIO ERROR INDICATION
                        ;                       UAM-UNATTENDED MODE, NO OPERATOR INTERVENTION
                        ;                       PNT-PRINT NUMBER OF TEST BEING EXECUTED.)
```

```
                        ;3. TO RESTART
                        ;       THE RESTART COMMAND IS SIMILAR TO THE START COMMAND EXCEPT
                        ;THAT ALL PARAMETERS ARE ASSUMED TO BE ALREADY DEFINED, AND NO
                        ;OPERATOR DIALOGUE IS PERFORMED PRIOR TO RUNNING THE DIAGNOSTIC.
                        ;IF THE OPERATOR WISHES TO ALTER THE TYPE OF ADDITIONAL MEMORY
                        ;TO TEST, OR CHANGE THE ADDRESSES, LOCATION 'PASS'' MUST BE
                        ;CLEARED MANUALLY PRIOR TO RESTARTING, SINCE THIS INFORMATION
                        ;IS SET UP ON THE FIRST PASS OF THE DIAGNOSTIC.
                        ;
                        ;       RESTART/TEST:<TESTNOS>/PASS:<PASSCNT>/FLAG:<CF>:<CF>...
                        ;
                        ;4. TO RETURN TO PROGRAM
                        ;
                        ;       TO RESUME EXECUTION OF THE DIAGNOSTIC AT THE FIRST INSTRUCTION
                        ;FOLLOWING THE CURRENT SUPERVISOR CALL, AT WHICH TIME NEW FLAGS
                        ;MAY BE ASSIGNED.
                        ;
                        ;       CONTINUE/FLAG:<CF>:<CF>:...
                        ;
                        ;5. TO LOAD AND START THE DIAGNOSTIC
                        ;       TO LOAD AND START THE DIAGNOSTIC USING DEFAULT PARAMETERS
                        ;
                        ;     RUN<FILESPEC>/TEST:<TESTNOS>/PASS:<PASSCNT>/UNIT:<DEVN>/FLAG:<CF>...
                        ;
                        ;
                        ;NOTE:  TEST NUMBERS AND UNIT NUMBERS MAY BE SPECIFIED
                        ;       AS SINGLE NUMBERS, RANGES OF NUMBERS (I.E. 1-6 ),
                        ;       OR COMBINATIONS OF BOTH.
                        ;
                        ; SPECIAL ENVIRONMENTS: APT
                        ;       TEST 7, THE TEST OF ALL RESIDENT MEMORY, WILL NOT RUN
                        ;UNDER APT, AS IT REQUIRES USER INTERVENTION.
                        ;       THIS TEST DOES NOT RUN ON KDF11-B.
                        ;***
                        ;       FOR MORE INFORMATION ON DRS FLAGS REFER TO XXDP+  USER'S
                        ;       MANUAL
```

```
                        ; PROGRAM OPTIONS:
                        ;       THE HARDWARE PARAMETERS ARE STORED IN A PARAMETER TABLE WITH
                        ;DEFAULT VALUES. THE OPERATOR WILL HAVE THE OPTION OF CHANGING
                        ;THESE PARAMETERS BY RESPONDING TO THE APPROPRIATE QUESTIONS
                        ;GENERATED BY THE DIAGNOSTIC SUPERVISOR. THESE PARAMETERS
                        ;INCLUDE THE UNIT NUMBER,INTERRUPT VECTOR,PRIORITY LEVEL, AND
                        ;ROCKER SWITCH SETTINGS. THE DEFAULT VALUES WILL BE TYPED ALONG
                        ;WITH THE QUESTIONS.
                        ;
                        ;       THERE ARE 12 SWITCHES ON BDV11 AND ONLY 8 ON KDF11-B.
                        ;       THE ROCKER SWITCH SETTINGS ARE EXAMINED IN THE FOLLOWING
                        ;ORDER:
                        ;       B4  B3  B2  B1  A8  A7  A6  A5  A4  A3  A2  A1
                        ;FOR EXAMPLE, IF SWITCHES A1,A2,A6, AND B1 WERE ON, THE SWITCH
                        ;SETTING WOULD BE:
                        ;       B4  B3  B2  B1  A8  A7  A6  A5  A4  A3  A2  A1
                        ;                   1               1               1   1
                        ;WHICH HAS AN OCTAL VALUE OF 0443.
                        ;
                        ;       THE SOFTWARE P-TABLE CONTAINS FOUR TABLES WITH FIRST ONE
                        ;ALL ZEROES FOR MANUAL CHANGES. THE SECOND ONE HAS THE CHECKWORDS FOR
                        ;THE 2KOF DIAGNOSTIC ROM WHICH IS RESIDENT ON THE BDV11A(#23-045E2 AND
                        ;#23-046E2). THE PROGRAM ALSO WILL COMPARE CHECKWORDS FOR ROMS #23-
                        ;010E2 AND #23-011E2 OR #23-339E2 AND #23-340E2 WHICH ARE IN THE NEXT TWO
                        ;TABLES. TO INPUT DIFFERENT CHECKWORDS, THE OPERATOR MUST RESPOND WITH
                        ;A YES TO THE SUPERVISOR'S QUESTION "CHANGE SW (Y/N)?". ZEROES WILL
                        ;THEN BE PRINTED AS THE QUESTIONS ARE ASKED.

                        ;       TEST 7(FOR BDV11 ONLY) CHECKS ALL THE ADDITIONAL MEMORY THAT
                        ;IT IS INSTRUCTED TO TEST. THIS TEST IS SET UP BY THE OPERATOR ON THE
                        ;FIRST PASS OF THE DIAGNOSTIC. THE DIAGNOSTIC WILL ASK IF THERE
                        ;IS ANY ADDITIONAL MEMORY TO TEST, AND IF SO WILL ASK WHICH
                        ;TYPE OF MEMORY IT IS. (THE OPERATOR CAN ANSWER THESE QUESTIONS
                        ;WITH LOGICAL Y/N ANSWERS.) IF ANY ADDITIONAL MEMORY IS TO BE
                        ;TESTED, THE OPERATOR MUST SUPPLY THE CHECKWORDS FOR THOSE
                        ;ROMS/EPROMS. IN THE CASE OF SYSTEM ROM/EPROM, THE OPERATOR WILL
                        ;ALSO HAVE TO INDICATE HOW MANY CHECKWORDS WILL BE INPUT (IN DECIMAL).
                        ;NOTE THAT ONCE THIS DATA IS SET UP, THIS MEMORY WILL ALWAYS BE
                        ;TESTED, EVEN IF THE DIAGNOSTIC IS RESTARTED, UNLESS THE LOCATION
                        ;'PASS" IS CLEARED (SEE SEC.3 OF LOADING AND STARTING PROCEDURES).
                        ;
                        ; EXECUTION TIMES:  A SINGLE ERROR-FREE PASS WILL REQUIRE
                        ;                   LESS THAN 1 SEC. TO RUN UNDER APT. WHEN RUN
                        ;                   IN STAND-ALONE MODE, IT WILL REQUIRE LESS
                        ;                   THAN 3 SECS. TO RUN.
```

```
294
295                             .SBTTL  ERROR INFORMATION
296
297                             ; ERROR REPORTING PROCEDURES:
298                             ;       IN GENERAL, ALL ERROR REPORTS WILL CONTAIN THE FOLLOWING
299                             ;INFORMATION:
300                             ;       1. A HEADER OF TEST IDENTIFICATION INFORMATION.
301                             ;          THIS INCLUDES THE PROGRAM NAME, TYPE OF ERROR,
302                             ;          ERROR NUMBER, TEST AND SUBTEST NUMBERS, UNIT
303                             ;          NUMBER, AND AN OPTIONAL ADDITIONAL MESSAGE.
304                             ;
305                             ;       2. BASIC ERROR INFORMATION.
306                             ;          THIS IS A SPECIFIC STATEMENT OF WHAT THE ERROR
307                             ;          IS AND WHICH REGISTER OR ROM WAS INVOLVED.
308                             ;
309                             ;       3. EXTENDED ERROR INFORMATION.
310                             ;          THIS IS OPTIONAL INFORMATION WHICH IS USED
311                             ;          PRIMARILY TO GIVE THE EXPECTED AND ACTUAL
312                             ;          CONTENTS OF THE APPROPRIATE DEVICE REGISTER
313                             ;          DURING REGISTER TESTS.
```

```
.SBTTL  SUBTEST SUMMARIES
;
;       TEST NO.        SUBTEST NO.             PURPOSE
;          1                1          TO VERIFY THAT THE READ/WRITE
;                                      REGISTER CAN HOLD ALL ZEROES.
;                           2          TO VERIFY THAT THE READ/WRITE
;                                      REGISTER CAN HOLD ALL ONES.
;                           3          TO VERIFY THAT THE READ/WRITE
;                                      REGISTER CAN HOLD AN ALTER-
;                                      NATING 1'S AND 0'S BIT PATTERN.
;                           4          TO VERIFY THAT THE READ/WRITE
;                                      REGISTER IS BYTE ADDRESSABLE.
;                           5          TO VERIFY THAT THE READ/WRITE
;                                      REGISTER CAN SWAP BYTES.
;                           6          TO VERIFY THAT THE READ/WRITE
;                                      REGISTER CAN HOLD AN ALTER-
;                                      NATING 0' AND 1'S BIT PATTERN.
;                           7          TO VERIFY THAT THE READ/WRITE
;                                      REGISTER IS BYTE ADDRESSABLE.
;                           8          TO VERIFY THAT THE READ/WRITE
;                                      REGISTER CAN SWAP BYTES.
;                           9          TO VERIFY THAT THE READ/WRITE
;                                      REGISTER CAN ROTATE A SET
;                                      BIT WITHOUT PICKING UP ANY BITS.
;                           10         TO VERIFY THAT THE READ/WRITE
;                                      REGISTER CAN ROTATE A CLEAR
;                                      BIT WITHOUT PICKING UP ANY
;                                      BITS.
;          2                1          TEST 2 IS THE SAME AS TEST 1
;       *BDV11 ONLY*                   EXCEPT THAT THE PAGE CONTROL
;                                      REGISTER IS THE REGISTER
;                                      UNDER TEST.
;                           2          SAME AS TEST 1.
;                           3          SAME AS TEST 1.
;                           4          SAME AS TEST 1.
;                           5          SAME AS TEST 1.
;                           6          SAME AS TEST 1.
;                           7          SAME AS TEST 1.
;                           8          SAME AS TEST 1.
;                           9          SAME AS TEST 1.
;                           10         SAME AS TEST 1.
;          3                1          TO VERIFY THAT THE BEVENT
;                                      CLAMP DISABLE ALLOWS INTER-
;                                      RUPTS WHEN OFF.
;                           2          TO VERIFY THAT THE BEVENT
;                                      CLAMP DISABLE INHIBITS
;                                      INTERRUPTS WHEN ON.
;                           3          TO VERIFY THAT PRIORITY 5 ALLOWS
;                                      INTERRUPTS IF PRIORITY OF A DEVICE
;                                      IS 6 (KDF11-A,KDF11-B)
;                           4          TO VERIFY THAT PRIORITY 6 DOESN'T
;                                      ALLOW INTERRUPS IF PRIORITY OF
;                                      A DEVICE IS 6 (KDF11-A,KDF11-B)
;                           5          TO VERIFY THAT RESET WORKS FOR
;                                      KDF11-B
```

```
;                4               1          LIGHT DISPLAY TEST
;                5               1          ROCKER SWITCH TEST
;                6               1          TO VERIFY THAT THE LOW BYTE
;                                           DIAGNOSTIC ROM HAS GOOD DATA.
;                                2          TO VERIFY THAT THE HIGH BYTE
;                                           DIAGNOSTIC ROM HAS GOOD DATA.
;                                3          TO INSURE THAT THE DIAGNOSTIC
;                                4          ROMS HAVE NOT BEEN INTERCHANGED.
;                7               1          TO DETERMINE IF THERE IS ANY
;            *BDV11 ONLY*                   ADDITIONAL MEMORY TO TEST.
;                                           THIS INFORMATION IS OBTAINED
;                                           THROUGH USER DIALOGUE.
;                                2          TO TEST THE EXPANDED DIAGNOSTIC
;                                           ROM.FIRST THE REQUIRED CHECK-
;                                           WORDS MUST BE INPUT,AND THE
;                                           STARTING LOCATION IN MEMORY.
;                                           CHECKSUMS AND CHECKWORD
;                                           VERIFICATION CONFIRMS GOOD
;                                           DATA IN ROMS.
;                                3          TO TEST THE EPROM IN THE
;                                           SOCKETS. TEST PROCEDURE IS AS
;                                           IN SUBTEST 2.
;                                4          TO TEST SYSTEM ROM. SAME
;                                           TEST PROCEDURE AS IN SUBTEST 2.
;                                5          TO TEST SYSTEM EPROM. SAME
;                                           TEST PROCEDURE AS IN SUBTEST 2.
```

```
                                        SVC
                        000000          SVCINS=0
                        000000          SVCGBL=0
                        000000          SVCTAG=0
                                .TITLE PROGRAM HEADER AND TABLES
                                .SBTTL  IDENTIFICATION


                                .SBTTL  PROGRAM HEADER

002000                                  BGNMOD  MDHEDR
002000                          MDHEDR::

                                ;++
                                ; THE PROGRAM HEADER IS THE INTERFACE BETWEEN
                                ; THE DIAGNOSTIC PROGRAM AND THE SUPERVISOR.
                                ;--

002000                                  POINTER BGNSW,BGNSFT


002000                                  HEADER  CVM8A,E,0,7,0,340
002000                          L$NAME::                ;DIAGNOSTIC NAME
002000  103                             .ASCII /C/
002001  126                             .ASCII /V/
002002  115                             .ASCII /M/
002003  070                             .ASCII /8/
002004  101                             .ASCII /A/
002005  000                             .BYTE   0
002006  000                             .BYTE   0
002007  000                             .BYTE   0
002010                          L$REV::                 ;REVISION LEVEL
002010  105                             .ASCII  /E/
002011                          L$DEPO::                ;0
002011  060                             .ASCII  /0/
002012                          L$UNIT::                ;NUMBER OF UNITS
002012  000000                          .WORD   0
002014                          L$TIML::                ;LONGEST TEST TIME
002014  000007                          .WORD   7
002016                          L$HPCP::                ;POINTER TO H.W. QUES.
002016  016740                          .WORD   L$HARD
002020                          L$SPCP::                ;POINTER TO S.W. QUES.
002020  017160                          .WORD   L$SOFT
002022                          L$HPTP::                ;PTR. TO DEF. H.W. PTABLE
002022  002144                          .WORD   L$HW
002024                          L$SPTP::                ;PTR. TO S.W. PTABLE
002024  002160                          .WORD   L$SW
002026                          L$LADP::                ;DIAG. END ADDRESS
002026  017576                          .WORD   L$LAST
002030                          L$STA::                 ;RESERVED FOR APT STATS
002030  000000                          .WORD   0
002032                          L$CO::
002032  000000                          .WORD   0
002034                          L$DTYP::                ;DIAGNOSTIC TYPE
002034  000000                          .WORD   0
```

```
                                L$APT::                 ;APT EXPANSION
002036  000000                          .WORD   0
                                L$DTP::                 ;PTR. TO DISPATCH TABLE
002040  002124                          .WORD   L$DISPATCH
                                L$PRIO::                ;DIAGNOSTIC RUN PRIORITY
002042  000340                          .WORD   340
                                L$ENVI::                ;FLAGS DESCRIBE HOW IT WAS SETUP
002044  000000                          .WORD   0
                                L$EXP1::                ;EXPANSION WORD
002046  000000                          .WORD   0
                                L$MREV::                ;SVC REV AND EDIT #
002050      003                         .BYTE   C$REVISION
002051      003                         .BYTE   C$EDIT
                                L$EF::                  ;DIAG. EVENT FLAGS
002052  000000                          .WORD   0
002054  000000                          .WORD   0
                                L$SPC::
002056  000000                          .WORD   0
                                L$DEVP::                ; POINTER TO DEVICE TYPE LIST
002060  003176                          .WORD   L$DVTYP
                                L$REPP::                ;PTR. TO REPORT CODE
002062  000000                          .WORD   0
                                L$EXP4::
002064  000000                          .WORD   0
                                L$EXP5::
002066  000000                          .WORD   0
                                L$AUT::                 ;PTR. TO ADD UNIT CODE
002070  000000                          .WORD   0
                                L$DUT::                 ;PTR. TO DROP UNIT CODE
002072  000000                          .WORD   0
                                L$LUN::                 ;LUN FOR EXERCISERS TO FILL
002074  000000                          .WORD   0
                                L$DESP::                ;POINTER TO DIAG. DESCRIPTION
002076  003124                          .WORD   L$DESC
                                L$LOAD::                ;GENERATE SPECIAL AUTOLOAD EMT
002100  104035                          EMT     E$LOAD
                                L$ETP::                 ;POINTER TO ERRTBL
002102  000000                          .WORD   0
                                L$ICP::                 ;PTR. TO INIT CODE
002104  005272                          .WORD   L$INIT
                                L$CCP::                 ;PTR. TO CLEAN-UP CODE
002106  005352                          .WORD   L$CLEAN
                                L$ACP::                 ;PTR. TO AUTO CODE
002110  005350                          .WORD   L$AUTO
                                L$PRT::                 ;PTR. TO PROTECT TABLE
002112  005342                          .WORD   L$PROT
                                L$TEST::                ;TEST NUMBER
002114  000000                          .WORD   0
                                L$DLY::                 ;DELAY COUNT
002116  000000                          .WORD   0
                                L$HIME::                ;PTR. TO HIGH MEM
002120  000000                          .WORD   0
002122                          ENDMOD
```

```
                                .SBTTL  DISPATCH TABLE

                                ;++
                                ; THE DISPATCH TABLE CONTAINS THE STARTING ADDRESS OF EACH TEST.
                                ; IT IS USED BY THE SUPERVISOR TO DISPATCH TO EACH TEST.
                                ;--

002122                                  BGNMOD  DSPCODE
002122                          DSPCODE::
002122                                  DISPATCH 7
002122  000007                          .WORD   7
002124                          L$DISPATCH::
002124  005432                          .WORD   T1
002126  006276                          .WORD   T2
002130  007164                          .WORD   T3
002132  010560                          .WORD   T4
002134  010730                          .WORD   T5
002136  011562                          .WORD   T6
002140  014020                          .WORD   T7
002142                                  ENDMOD

                                .SBTTL  DEFAULT HARDWARE P-TABLE

                                ;++
                                ; THE DEFAULT HARDWARE P-TABLE CONTAINS DEFAULT VALUES OF
                                ; THE TEST-DEVICE PARAMETERS.  THE STRUCTURE OF THIS TABLE
                                ; IS IDENTICAL TO THE STRUCTURE OF THE RUN-TIME P-TABLE.
                                ;--

002142                                  BGNHW   DFPTBL
002142  000005                          .WORD   L10000-L$HW/2
002144                          L$HW::
002144                          DFPTBL::

                                        ;DEFAULT VALUES FOR UP TO SIX UNITS
002144  000000                          .WORD   0               ;UNIT NUMBER 0
002146  000100                          .WORD   100             ;INTERRUPT VECTOR
002150  000007                          .WORD   7               ;PRIORITY LEVEL
002152  007777                          .WORD   7777            ;ROCKER SWITCH SETTINGS
00215.  000000                          .WORD   0               ;BDV11 = 0, KDF11-B = 1

002156                                  ENDHW
002156                          L10000:

                                .SBTTL  SOFTWARE P-TABLE

                                ;++
                                ; THE SOFTWARE P-TABLE CONTAINS THE VALUES OF THE PROGRAM
                                ; PARAMETERS THAT CAN BE CHANGED BY THE OPERATOR.
                                ;--

002156                                  BGNSW   SFPTBL
002156  000040                          .WORD   L10001-L$SW/2
002160                          L$SW::
002160                          SFPTBL::
```

```
                                ;THE SOFTWARE P-TABLE IS USED TO STORE THE CHECKWORDS
                                ;FOR THE DIAGNOSTIC ROM WHICH IS TESTED IN TEST 6.

002160  000010                      .BLKW   10              ;RESERVE 8 LOC. FOR INPUT CHWS.
                              ;THE CHECKWORDS CORRESPONDING TO ROM CHIPS #23-045E2 AND #23-046E2 FOLLOW:
002200  017042                      .WORD   17042           ;ROMA: PAGE 0,1
002202  020656                      .WORD   20656           ;ROMB: PAGE 2,3
002204  065162                      .WORD   65162           ;ROMC: PAGE 4,5
002206  161744                      .WORD   161744          ;ROMD: PAGE 6,7
002210  124453                      .WORD   124453          ;ROME: PAGE 10,11
002212  113667                      .WORD   113667          ;ROMF: PAGE 12,13
002214  056040                      .WORD   56040           ;ROMG: PAGE 14,15
002216  044734                      .WORD   44734           ;ROMH: PAGE 16,17

                              ;THE CHECKWORDS CORRESPONDING TO ROM CHIPS #23-010E2 AND #23-011E2 FOLLOW:
002220  031547                      .WORD   31547           ;ROMA: PAGE 0,1
002222  014036                      .WORD   14036           ;ROMB: PAGE 2,3
002224  065162                      .WORD   65162           ;ROMC: PAGE 4,5
002226  124632                      .WORD   124632          ;ROMD: PAGE 6,7
002230  032040                      .WORD   32040           ;ROME: PAGE 10,11
002232  167124                      .WORD   167124          ;ROMF: PAGE 12,13
002234  155461                      .WORD   155461          ;ROMG: PAGE 14,15
002236  032257                      .WORD   32257           ;ROMH: PAGE 16,17

                              ;THE CHECKWORDS CORRESPONDING TO ROM CHIPS #23-339E2 AND #23-340E2 FOLLOW:
002240  166020                      .WORD   166020          ;ROMA: PAGE 0,1
002242  020232                      .WORD   020232          ;ROMB: PAGE 2,3
002244  045651                      .WORD   045651          ;ROMC: PAGE 4,5
002246  036474                      .WORD   036474          ;ROMD: PAGE 6,7
002250  066675                      .WORD   066675          ;ROME: PAGE 10,11
002252  163100                      .WORD   163100          ;ROMF: PAGE 12,13
002254  005407                      .WORD   005407          ;ROMG: PAGE 14,15
002256  022243                      .WORD   022243          ;ROMH: PAGE 16,17

002260                              ENDSW
002260                        L10001:


                              .TITLE GLOBAL AREAS
                              .SBTTL  IDENTIFICATION


                              .SBTTL  GLOBAL EQUATES SECTION

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

002260                              BGNMOD  GLBEQAT
002260                        GLBEQAT::
002260                              EQUALS
                              ;
                              ; BIT DIFINITIONS
                              ;
```

```
                100000          BIT15== 100000
                040000          BIT14== 40000
                020000          BIT13== 20000
                010000          BIT12== 10000
                004000          BIT11== 4000
                002000          BIT10== 2000
                001000          BIT09== 1000
                000400          BIT08== 400
                000200          BIT07== 200
                000100          BIT06== 100
                000040          BIT05== 40
                000020          BIT04== 20
                000010          BIT03== 10
                000004          BIT02== 4
                000002          BIT01== 2
                000001          BIT00== 1
                                .
                001000          BIT9==  BIT09
                000400          BIT8==  BIT08
                000200          BIT7==  BIT07
                000100          BIT6==  BIT06
                000040          BIT5==  BIT05
                000020          BIT4==  BIT04
                000010          BIT3==  BIT03
                000004          BIT2==  BIT02
                000002          BIT1==  BIT01
                000001          BIT0==  BIT00
                                ;
                                ; EVENT FLAG DEFINITIONS
                                ;   EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION
                                ;
                000040          EF.START==      32.                     ; START COMMAND WAS ISSUED
                000037          EF.RESTART==    31.                     ; RESTART COMMAND WAS ISSUED
                000036          EF.CONTINUE==   30.                     ; CONTINUE COMMAND WAS ISSUED
                000035          EF.NEW==        29.                     ; A NEW PASS HAS BEEN STARTED
                000034          EF.PWR==        28.                     ; A POWER-FAIL/POWER-UP OCCURRED
                                ;
                                ;
                                ; PRIORITY LEVEL DEFINITIONS
                                ;
                000340          PRI07== 340
                000300          PRI06== 300
                000240          PRI05== 240
                000200          PRI04== 200
                000140          PRI03== 140
                000100          PRI02== 100
                000040          PRI01== 40
                000000          PRI00== 0
                                ;
                                ;OPERATOR FLAG BITS
                                ;
                000004          EVI ==          4
                000010          LOT==          10
                000020          ADR==          20
                000040          IDU==          40
                000100          ISR==         100
```

```
                000200                  UAM==     200
                000400                  BOE==     400
                001000                  PNT==    1000
                002000                  PRI==    2000
                004000                  IXE==    4000
                010000                  IBE==   10000
                020000                  IER==   20000
                040000                  LOE==   40000
                100000                  HOE==  100000

                177520                  PCR=177520
                177524                  LSREG=177524
002260                                  ENDMOD
                                        .SBTTL  GLOBAL DATA SECTION

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

002260                                  BGNMOD  GLBDAT
002260                                  GLBDAT::
002260  000000                          KDF11B: .WORD   0               ;=1 IF RUNNING ON A KDF11-B
002262  000000                          VRTPCR: .WORD   0               ;VIRTUAL PAGE CONTROL REGISTER
002264  000000                          BCF:    .WORD   0
002266  000000                          REAL:   .WORD   0
002270  000000                          LOPAG:  .WORD   0
002272  000000                          COUNTR: .WORD   0
002274  000001                          ANSR:   .WORD   1
002276  000000                          RFLAG:  .WORD   0
002300  000000                          EXPSUM: .WORD   0
002302  000000                          ACTSUM: .WORD   0
002304  000000                          PASS:   .WORD   0
002306  000000                          PASCT:  .WORD   0
002310  000000                          ULIMIT: .WORD   0
002312  000000                          PAGE:   .WORD   0
002314  000100                          VECT:   .WORD   100
002316  000000                          SWSET:  .WORD   0
002320  000000                          STORE:  .WORD   0
002322  000000                          WORDCT: .WORD   0
002324  000000                          PRIOR:  .WORD   0
002326  000000                          CKWD:   .WORD   0
002330  000000                          BADWD:  .WORD   0
002332  000000                          RESPND: .WORD   0
002334  000001                          RSET:   .WORD   1
002336  000000                          LORANG: .WORD   0
002340  000000                          HIRANG: .WORD   0
002342  000000                          BYTLOC: .WORD   0
002344  000000                          ERRFLG: .WORD   0
002346  000000                          DELCNT: .WORD   0
002350  000010                          EXPDIA: .BLKW   10              ;EXPANDED DIAG. ROM CHECKWORDS
002370  000010                          EPROM:  .BLKW   10              ;EPROM CHECKWORDS
002410  000100                          SYSROM: .BLKW   100             ;SYSTEM ROM/EPROM CHECKWORDS
002610                                  ENDMOD
```

```
                                        .SBTTL  GLOBAL TEXT SECTION

                                        ;++
                                        ; THE GLOBAL TEXT SECTION CONTAINS FORMAT STATEMENTS,
                                        ; MESSAGES, AND ASCII INFORMATION THAT ARE USED IN
                                        ; MORE THAN ONE TEST.
                                        ;--


                                        ;GLOBAL MESSAGES

002610  042522  042101  053457  RWR:    .ASCIZ  'READ/WRITE REGISTER    ADDRESS: 177522''
002616  044522  042524  051040
002624  043505  051511  042524
002632  004522  042101  051104
002640  051505  035123  030440
002646  033467  031065  000062

002654  040520  042507  041440  PACR:   .ASCIZ  /PAGE CONTROL REGISTER  ADDRESS: 177520/
002662  047117  051124  046117
002670  051040  043505  051511
002676  042524  004522  042101
002704  051104  051505  035123
002712  030440  033467  031065
002720  000060

002722  044107  041505  051513  CKERR:  .ASCIZ  /CHECKSUM ERROR/
002730  046525  042440  051122
002736  051117     000

002741     111  041516  051117  CWDERR: .ASCIZ  /INCORRECT CHECKWORD/
002746  042522  052103  041440
002754  042510  045503  047527
002762  042122     000

002765     105  051122  051117  LOBYT:  .ASCIZ  /ERROR OCCURRED IN A LOW BYTE PAGE/
002772  047440  041503  051125
003000  042522  020104  047111
003006  040440  046040  053517
003014  041040  052131  020105
003022  040520  042507     000

003027     105  051122  051117  HIBYT:  .ASCIZ  /ERROR OCCURRED IN A HIGH BYTE PAGE/
003034  047440  041503  051125
003042  042522  020104  047111
003050  040440  044040  043511
003056  020110  054502  042524
003064  050040  043501  000105

003072  052123  051101  020124  LOADR:  .ASCIZ  /START OF MEMORY RANGE (K)/
003100  043117  046440  046505
003106  051117  020131  040522
003114  043516  020105  045450
003122  000051
```

```
                                        .EVEN


                                ;
                                ; NAMES OF DEVICES SUPPORTED BY PROGRAM
                                ;
                                        DESCRIPT        <CVM8AE BDV11\KDF11-B BOOTSTRAP DIAGNOSTIC>
                                L$DESC::
                                        .ASCIZ  /CVM8AE BDV11\KDF11-B BOOTSTRAP DIAGNOSTIC/



                                        .EVEN
                                        DEVTYP  <BDV11\KDF11-B>
                                L$DVTYP::
                                        .ASCIZ  /BDV11\KDF11-B/

                                        .EVEN


                                ;
                                ; FORMAT STATEMENTS USED IN PRINT CALLS
                                ;


003214  040445  042522  044507  ZERR:   .ASCIZ  /%AREGISTER CANNOT HOLD ALL ZEROES%N/
003222  052123  051105  041440
003230  047101  047516  020124
003236  047510  042114  040440
003244  046114  055040  051105
003252  042517  022523  000116

003260  040445  042522  044507  ONERR:  .ASCIZ  /%AREGISTER CANNOT HOLD ALL ONES%N/
003266  052123  051105  041440
003274  047101  047516  020124
003302  047510  042114  040440
003310  046114  047440  042516
003316  022523  000116

003322  040445  042522  044507  BDDAT:  .ASCIZ  /%AREGISTER CANNOT HOLD GOOD DATA%N/
003330  052123  051105  041440
003336  047101  047516  020124
003344  047510  042114  043440
003352  047517  020104  040504
003360  040524  047045     000

003365     045  051101  043505  BYTINS: .ASCIZ  /%AREGISTER IS NOT BYTE ADDRESSABLE%N/
003372  051511  042524  020122
003400  051511  047040  052117
003406  041040  052131  020105
003414  042101  051104  051505
003422  040523  046102  022505
```

```
  842  003430  000116
  843
  844  003432  040445  042522  044507  ROT1:   .ASCIZ  /%AREGISTER PICKED UP AN EXTRA SET BIT%N/
  845  003440  052123  051105  050040
  846  003446  041511  042513  020104
  847  003454  050125  040440  020116
  848  003462  054105  051124  020101
  849  003470  042523  020124  044502
  850  003476  022524  000116
  851
  852  003502  040445  042522  044507  ROT0:   .ASCIZ  /%AREGISTER PICKED UP AN EXTRA CLEAR BIT%N/
  853  003510  052123  051105  050040
  854  003516  041511  042513  020104
  855  003524  050125  040440  020116
  856  003532  054105  051124  020101
  857  003540  046103  040505  020122
  858  003546  044502  022524  000116
  859
  860  003554  040445  047125  041101  DIAGER: .ASCIZ  /%AUNABLE TO LOCATE CORRECT MEMORY PAGE%N/
  861  003562  042514  052040  020117
  862  003570  047514  040503  042524
  863  003576  041440  051117  042522
  864  003604  052103  046440  046505
  865  003612  051117  020131  040520
  866  003620  042507  047045     000
  867
  868  003625     045  046501  046505  VIRMSG: .ASCIZ  /%AMEMORY RANGE: %D2%A - %D2%AK%N/
  869  003632  051117  020131  040522
  870  003640  043516  035105  022440
  871  003646  031104  040445  026440
  872  003654  022440  031104  040445
  873  003662  022513  000116
  874
  875  003666  040445  054105  042520  REGDT:  .ASCIZ  /%AEXPECTED: %O6%S5%ARECEIVED: %O6%N/
  876  003674  052103  042105  020072
  877  003702  047445  022466  032523
  878  003710  040445  042522  042503
  879  003716  053111  042105  020072
  880  003724  047445  022466  000116
  881
  882                                   .EVEN
  883                           .SBTTL  GLOBAL ERROR REPORT SECTION
  884
  885                           ;++
  886                           ; THE GLOBAL ERROR REPORT SECTION CONTAINS THE PRINTB AND PRINTX CALLS
  887                           ; THAT ARE USED IN MORE THAN ONE TEST.  IT ALSO INCLUDES THE ASCII MESSAGES
  888                           ; THAT ARE USED BY THE PRINTB AND PRINTX CALLS.
  889                           ;--
  890
  891
  892
  893  003732                   BGNMSG  RERR1
  894  003732                   RERR1::
  895  003732                   PRINTB  #ZERR
  896  003732  012746  003214           MOV     #ZERR,-(SP)
  897  003736  012746  000001           MOV     #1,-(SP)
```

```
  898  003742  010600                        MOV     SP,R0
  899  003744  104414                        TRAP    C$PNTB
  900  003746  062706  000004                ADD     #4,SP
  901  003752                        PRINTX  #REGDT,R1,R2
  902  003752  010246                        MOV     R2,-(SP)
  903  003754  010146                        MOV     R1,-(SP)
  904  003756  012746  003666                MOV     #REGDT,-(SP)
  905  003762  012746  000003                MOV     #3,-(SP)
  906  003766  010600                        MOV     SP,R0
  907  003770  104415                        TRAP    C$PNTX
  908  003772  062706  000010                ADD     #10,SP
  909  003776                        ENDMSG
  910  003776                        L10002:
  911  003776  104423                        TRAP    C$MSG
  912
  913  004000                        BGNMSG  RERR2
  914  004000                        RERR2::
  915  004000                        PRINTB  #ONERR
  916  004000  012746  003260                MOV     #ONERR,-(SP)
  917  004004  012746  000001                MOV     #1,-(SP)
  918  004010  010600                        MOV     SP,R0
  919  004012  104414                        TRAP    C$PNTB
  920  004014  062706  000004                ADD     #4,SP
  921  004020                        PRINTX  #REGDT,R1,R2
  922  004020  010246                        MOV     R2,-(SP)
  923  004022  010146                        MOV     R1,-(SP)
  924  004024  012746  003666                MOV     #REGDT,-(SP)
  925  004030  012746  000003                MOV     #3,-(SP)
  926  004034  010600                        MOV     SP,R0
  927  004036  104415                        TRAP    C$PNTX
  928  004040  062706  000010                ADD     #10,SP
  929  004044                        ENDMSG
  930  004044                        L10003:
  931  004044  104423                        TRAP    C$MSG
  932
  933  004046                        BGNMSG  RERR3
  934  004046                        RERR3::
  935  004046                        PRINTB  #BDDAT
  936  004046  012746  003322                MOV     #BDDAT,-(SP)
  937  004052  012746  000001                MOV     #1,-(SP)
  938  004056  010600                        MOV     SP,R0
  939  004060  104414                        TRAP    C$PNTB
  940  004062  062706  000004                ADD     #4,SP
  941  004066                        PRINTX  #REGDT,R1,R2
  942  004066  010246                        MOV     R2,-(SP)
  943  004070  010146                        MOV     R1,-(SP)
  944  004072  012746  003666                MOV     #REGDT,-(SP)
  945  004076  012746  000003                MOV     #3,-(SP)
  946  004102  010600                        MOV     SP,R0
  947  004104  104415                        TRAP    C$PNTX
  948  004106  062706  000010                ADD     #10,SP
  949  004112                        ENDMSG
  950  004112                        L10004:
  951  004112  104423                        TRAP    C$MSG
  952
  953  004114                        BGNMSG  RERR4
```

```
  954  004114                          RERR4::
  955  004114                          PRINTB  #BYTINS
  956  004114  012746  003365                MOV     #BYTINS,-(SP)
  957  004120  012746  000001                MOV     #1,-(SP)
  958  004124  010600                        MOV     SP,R0
  959  004126  104414                        TRAP    C$PNTB
  960  004130  062706  000004                ADD     #4,SP
  961  004134                          PRINTX  #REGDT,R1,R2
  962  004134  010246                        MOV     R2,-(SP)
  963  004136  010146                        MOV     R1,-(SP)
  964  004140  012746  003666                MOV     #REGDT,-(SP)
  965  004144  012746  000003                MOV     #3,-(SP)
  966  004150  010600                        MOV     SP,R0
  967  004152  104415                        TRAP    C$PNTX
  968  004154  062706  000010                ADD     #10,SP
  969  004160                          ENDMSG
  970  004160                          L10005:
  971  004160  104423                        TRAP    C$MSG
  972
  973  004162                          BGNMSG  RERR5
  974  004162                          RERR5::
  975  004162                          PRINTB  #ROT1
  976  004162  012746  003432                MOV     #ROT1,-(SP)
  977  004166  012746  000001                MOV     #1,-(SP)
  978  004172  010600                        MOV     SP,R0
  979  004174  104414                        TRAP    C$PNTB
  980  004176  062706  000004                ADD     #4,SP
  981  004202                          ENDMSG
  982  004202                          L10006:
  983  004202  104423                        TRAP    C$MSG
  984
  985  004204                          BGNMSG  RERR6
  986  004204                          RERR6::
  987  004204                          PRINTB  #ROT0
  988  004204  012746  003502                MOV     #ROT0,-(SP)
  989  004210  012746  000001                MOV     #1,-(SP)
  990  004214  010600                        MOV     SP,R0
  991  004216  104414                        TRAP    C$PNTB
  992  004220  062706  000004                ADD     #4,SP
  993  004224                          ENDMSG
  994  004224                          L10007:
  995  004224  104423                        TRAP    C$MSG
  996
  997  004226                          BGNMSG  PAGERR
  998  004226                          PAGERR::
  999  004226                          PRINTB  #DIAGER
 1000  004226  012746  003554                MOV     #DIAGER,-(SP)
 1001  004232  012746  000001                MOV     #1,-(SP)
 1002  004236  010600                        MOV     SP,R0
 1003  004240  104414                        TRAP    C$PNTB
 1004  004242  062706  000004                ADD     #4,SP
 1005  004246                          ENDMSG
 1006  004246                          L10010:
 1007  004246  104423                        TRAP    C$MSG
 1008
 1009
```

```
1010
1011  004250                        VIPRI:  PRINTF  #VIRMSG,LORANG,HIRANG
1012  004250  013746  002340              MOV     HIRANG,-(SP)
1013  004254  013746  002336              MOV     LORANG,-(SP)
1014  004260  012746  003625              MOV     #VIRMSG,-(SP)
1015  004264  012746  000003              MOV     #3,-(SP)
1016  004270  010600                      MOV     SP,R0
1017  004272  104417                      TRAP    C$PNTF
1018  004274  062706  000010              ADD     #10,SP
1019
1020                                       .EVEN
1021
1022
1023
1024
1025
1026                                  .SBTTL  GLOBAL SUBROUTINES SECTION
1027
1028                                  ;++
1029                                  ; THE GLOBAL SUBROUTINES SECTION CONTAINS THE SUBROUTINES
1030                                  ; THAT ARE USED IN MORE THAN ONE TEST.
1031                                  ;--
1032
1033                                  ;++
1034                                  ;FUNCTIONAL DESCRIPTION:
1035                                  ;SUBROUTINE TO COMPUTE A CHECKSUM IN A ROM/EPROM
1036                                  ;INPUT: CONTENTS OF BCF
1037                                  ;IMPLICIT INPUTS: CONTENTS OF PCR
1038                                  ;OUTPUT: A CHECKSUM VALUE STORED IN LOCATION ACTSUM
1039                                  ;CALLING SEQUENCE: JSR PC,CHKSUM
1040                                  ;--
1041
1042  004300  012701  173776        CHKSUM: MOV     #173776,R1          ;STORE THE HIGHEST ADDRESS IN THE ROM
1043  004304  063701  002264              ADD     BCF,R1              ;FOR EITHER LOW OR HIGH BYTES
1044  004310  005037  002302              CLR     ACTSUM              ;CLEAR LOCATION WHICH WILL HOLD THE CHECKSUM
1045  004314  012702  173000              MOV     #173000,R2          ;COMPUTE THE LOWEST ADDRESS IN THE ROM
1046  004320  063702  002264              ADD     BCF,R2              ;WHERE THE DATA WILL START
1047  004324  111204                1$:   MOVB    (R2),R4             ;GET DATA IN BYTES
1048  004326  060437  002302              ADD     R4,ACTSUM           ;ADD CONTENTS OF EACH LOCATION TO THE CHECKSUM
1049  004332  062702  000002              ADD     #2,R2               ;ADJUST ADDRESS
1050  004336  020201                      CMP     R2,R1               ;COMPARE CURRENT ADDRESS WITH HIGHEST ADDRESS
1051  004340  002771                      BLT     1$                  ;BR IF LESS THAN
1052  004342  000207                      RTS     PC                  ;RETURN
1053
1054                                  ;++
1055                                  ;SUBROUTINE TO INPUT CHECKWORDS FROM THE OPERATOR
1056                                  ;INPUTS: NUMBER OF CHECKWORDS TO INPUT
1057                                  ;        POINTER TO STORAGE AREA
1058                                  ;OUTPUTS: CHECKWORDS STORED IN PROPER TABLE
1059                                  ;CALLING SEQUENCE: JSR  PC,INPUT
1060                                  ;--
1061
1062  004344                        INPUT:  PRINTF  #INSTR              ;PRINT INSTRUCTIONS
1063  004344  012746  004422              MOV     #INSTR,-(SP)
1064  004350  012746  000001              MOV     #1,-(SP)
1065  004354  010600                      MOV     SP,R0
```

```
1066  004356  104417                          TRAP    C$PNTF
1067  004360  062706  000004                  ADD     #4,SP
1068  004364                        INLP:     GMANID  INWORD,STORE,0,-1,0,177777,NO
1069  004364  104443                          TRAP    C$GMAN
1070  004366  000406                          BR      10000$
1071  004370  002320                          .WORD   STORE
1072  004372  000022                          .WORD   T$CODE
1073  004374  004510                          .WORD   INWORD
1074  004376  177777                          .WORD   -1
1075  004400  000000                          .WORD   T$LOLIM
1076  004402  177777                          .WORD   T$HILIM
1077  004404                        10000$:
1078  004404  013722  002320                  MOV     STORE,(R2)+             ;PUT CHECKWORD IN TABLE
1079  004410  005337  002322                  DEC     WORDCT                  ;DECREMENT WORD COUNT
1080  004414  001401                          BEQ     1$                      ;BR IF FINISHED
1081  004416  000762                          BR      INLP                    ;LOOP UNTIL TABLE IS COMPLETE
1082  004420  000207                1$:       RTS     PC                      ;RETURN
1083
1084  004422  040445  054524  042520  INSTR:  .ASCIZ  /%ATYPE IN THE CHECKWORDS AS LISTED IN THE PRINT SET%N/
1085  004430  044440  020116  044124
1086  004436  020105  044103  041505
1087  004444  053513  051117  051504
1088  004452  040440  020123  044514
1089  004460  052123  042105  044440
1090  004466  020116  044124  020105
1091  004474  051120  047111  020124
1092  004502  042523  022524  000116
1093
1094  004510  044103  041505  053513  INWORD: .ASCIZ  /CHECKWORD: /
1095  004516  051117  035104  000040
1096
1097                                          .EVEN
1098
1099                                  ;++
1100                                  ;SUBROUTINE TO COMPUTE THE VIRTUAL ADDRESS OF A BAD
1101                                  ;PAGE IN MEMORY
1102                                  ;INPUTS: PAGE IN PAGE CONTROL REGISTER
1103                                  ;        BYTE CONTROL FLAG (BCF)
1104                                  ;OUTPUTS: MEMORY RANGE IN WHICH ERROR OCCURRED
1105                                  ;CALLING SEQUENCE: JSR  PC,VIRTAD
1106                                  ;--
1107
1108  004524  005001                  VIRTAD: CLR     R1                      ;START AT BOTTOM OF RANGE
1109  004526  012737  000007  002310          MOV     #7,ULIMIT               ;SET UPPER LIMIT OF PAGE
1110  004534  113737  177520  002312          MOVB    PCR,PAGE                ;LOW PAGE ERROR
1111  004542  023737  002312  002310  LPADD:  CMP     PAGE,ULIMIT             ;IS PAGE <=ULIMIT
1112  004550  003430                          BLE     OUTPUT                  ;BR IF YES
1113  004552  022737  000057  002310          CMP     #57,ULIMIT              ;IS ULIMIT = 57
1114  004560  001006                          BNE     1$                      ;BR IF NO
1115  004562  012737  000207  002310          MOV     #207,ULIMIT             ;CHANGE UPPER LIMIT
1116  004570  012701  000020                  MOV     #20,R1                  ;ADJUST MEMORY POINTER
1117  004574  000762                          BR      LPADD                   ;CHECK PAGE AGAIN
1118  004576  062737  000010  002310  1$:     ADD     #10,ULIMIT              ;INCREASE UPPER LIMIT
1119  004604  022737  000377  002310          CMP     #377,ULIMIT             ;HAS THE UPPER LIMIT EXCEEDED THE MAX. PAGE
1120  004612  002004                          BGE     2$                      ;BR IF NO
1121  004614                                  ERRDF   40,,PAGERR              ;COULD NOT FIND THE PAGE OF MEMORY
```

```
1122  004614  104455                          TRAP    C$ERDF
1123  004616  000050                          .WORD   40
1124  004620  000000                          .WORD   0
1125  004622  004226                          .WORD   PAGERR
1126  004624                          2$:     CKLOOP
1127  004624  104406                          TRAP    C$CLP1
1128  004626  005201                          INC     R1                      ;ADJUST POINTER
1129  004630  000744                          BR      LPADD                   ;LOOP UNTIL UPPER LIMIT IS FOUND
1130  004632  010137  002336          OUTPUT: MOV     R1,LORANG               ;PULL THE LOW RANGE OUT OF THE TABLE
1131  004636  013737  002336  002340        MOV     LORANG,HIRANG           ;COPY THE DATA
1132  004644  005237  002340                INC     HIRANG                  ;INCREMENT TO OBTAIN 1K RANGE
1133  004650  005737  002276                TST     RFLAG                   ;IS IT ROM (2K SEGMENTS)
1134  004654  001402                        BEQ     3$                      ;BR IF NO
1135  004656  005237  002340                INC     HIRANG                  ;OBTAIN 2K RANGE
1136  004662  000207                  3$.     RTS     PC                      ;RETURN
1137
1138                                  ;++
1139                                  ;SUBROUTINE TO VERIFY THE CHECKSUM VALUE OF A PAGE
1140                                  ;OF EXISTENT MEMORY AND ALSO TEST FOR THE PROPER CHECKWORD.
1141                                  ;INPUTS: PAGE CONTROL REGISTER, PAGE CHECKWORD.
1142                                  ;OUTPUTS: ERROR FLAGS WHICH POINT TO THE PROPER ERROR MESSAGE
1143                                  ;SUBORDINATE ROUTINES USED: CHKSUM
1144                                  ;CALLING SEQUENCE: JSR  PC,MEMTST
1145                                  ;--
1146
1147  004664  005037  002266          MEMTST: CLR     REAL                    ;CLEAR MEMORY INDICATOR
1148  004670  005037  002264          LOBYTE: CLR     BCF                     ;SIGNAL LOW BYTES ARE BEING CHECKED
1149  004674  122737  177777  173774        CMPB    #-1,@#173774            ;DOES THE ROM EXIST
1150  004702  001421                        BEQ     HIBYTE                  ;BR IF NO
1151  004704  005237  002266                INC     REAL                    ;INDICATE THAT MEMORY EXISTS
1152  004710  004737  004300                JSR     PC,CHKSUM               ;COMPUTE THE ACTUAL CHECKSUM
1153  004714  113737  173776  002300        MOVB    @#173776,EXPSUM         ;GET THE STORED CHECKSUM
1154  004722  063737  002302  002300        ADD     ACTSUM,EXPSUM           ;ADD THE EXPECTED AND ACTUAL CHECKSUMS
1155  004730  105737  002300                TSTB    EXPSUM                  ;TEST RESULTING CHECKBYTE
1156  004734  001404                        BEQ     1$                      ;BR IF NO ERROR
1157  004736  012737  000001  002344        MOV     #1,ERRFLG               ;SET CHECHSUM ERROR FLAG
1158  004744  000207                        RTS     PC                      ;RETURN
1159  004746                          1$:
1160
1161  004746  012737  000001  002264  HIBYTE: MOV     #1,BCF                  ;SET BCF TO DENOTE HIGH BYTES
1162  004754  122737  177777  173775        CMPB    #-1,@#173775            ;DOES THE ROM EXIST
1163  004762  001427                        BEQ     TSTCKW                  ;BR IF NO
1164  004764  005737  002266                TST     REAL                    ;WAS THERE A LOW ROM?
1165  004770  001003                        BNE     2$                      ;BR IF YES
1166  004772  005037  002266                CLR     REAL                    ;DENOTE NON-EXISTENT LOW ROM
1167  004776  000207                        RTS     PC                      ;RETURN FOR ERROR MESSAGE
1168  005000  005237  002266          2$:   INC     REAL                    ;INDICATE MEMORY EXISTS
1169  005004  004737  004300                JSR     PC,CHKSUM               ;COMPUTE CHECKSUM
1170  005010  113737  173777  002300        MOVB    @#173777,EXPSUM         ;GET EXPECTED CHECKSUM
1171  005016  063737  002302  002300        ADD     ACTSUM,EXPSUM           ;ADD THE EXPECTED AND ACTUAL CHECKSUMS
1172  005024  105737  002300                TSTB    EXPSUM                  ;TEST RESULTING CHECKBYTE
1173  005030  001404                        BEQ     TSTCKW                  ;BR IF EQUAL
1174  005032  012737  000001  002344        MOV     #1,ERRFLG               ;SET CHECKSUM ERROR FLAG
1175  005040  000207                        RTS     PC                      ;RETURN
1176
1177  005042  005737  002266          TSTCKW: TST     REAL                    ;ANY MEMORY?
```

```
1178  005046  001434                        BEQ     5$                      ;BR IF NO
1179  005050  022737  000001  002266        CMP     #1,REAL                 ;SINGLE ROM?
1180  005056  001016                        BNE     3$                      ;BR IF NO
1181  005060  123737  002326  173776        CMPB    CKWD,@#173776           ;COMPARE CHECKBYTE ONLY
1182  005066  001001                        BNE     100$                    ;BR IF ERROR
1183  005070  000207                        RTS     PC                      ;RETURN -- NO ERROR
1184  005072  005037  002330        100$:   CLR     BADWD                   ;CLEAR LOCATION
1185  005076  012737  000002  002344        MOV     #2,ERRFLG               ;DENOTE CHECKSUM ERROR
1186  005104  113737  173776  002330        MOVB    @#173776,BADWD          ;STORE BAD BYTE
1187  005112  000207                        RTS     PC                      ;RETURN
1188  005114  023737  002326  173776  3$:   CMP     CKWD,@#173776           ;COMPARE CHECKWORD
1189  005122  001406                        BEQ     5$                      ;BR IF NO ERROR
1190  005124  012737  000002  002344  4$:   MOV     #2,ERRFLG               ;DENOTE CHECKSUM ERROR
1191  005132  013737  173776  002330        MOV     @#173776,BADWD          ;STORE WRONG CHECKWORD
1192  005140  000207                  5$:   RTS     PC                      ;RETURN
1193
1194                                  ;++
1195                                  ;SUBROUTINE TO COMPUTE THE ACTUAL STARTING PAGE
1196                                  ;OF MEMORY IN WHICH THE MEMORY CHIP IS TO BE
1197                                  ;ADDRESSED.
1198                                  ;INPUTS: THE LOW NUMBER IN THE MEMORY RANGE
1199                                  ;        (I.E. X IN X-Y K)
1200                                  ;OUTPUT: PAGE NUMBER IN PCR WHICH DENOTES WHERE TESTING
1201                                  ;        SHOULD BEGIN.
1202                                  ;CALLING SEQUENCE: JSR  PC,SETADR
1203                                  ;--
1204
1205  005142  013701  002320  SETADR: MOV     STORE,R1                ;COPY DATA
1206  005146  020127  000005          CMP     R1,#5                   ;IS THE NUMBER <=5?
1207  005152  003006                  BGT     1$                      ;BR IF NO
1208  005154  000241                  CLC                             ;CLEAR C-BIT FOR ROTATE
1209  005156  006101                  ROL     R1                      ;ROTATE TO MULTIPLY
1210  005160  006101                  ROL     R1                      ;  BY 10 (8)
1211  005162  006101                  ROL     R1                      ;
1212  005164  110104                  MOVB    R1,R4                   ;COPY DATA
1213  005166  000413                  BR      LOAD                    ;LOAD THE PCR
1214  005170  012704  000020  1$:     MOV     #20,R4                  ;START WITH 16 (10)
1215  005174  012705  000200          MOV     #200,R5                 ;CORRESPONDIGE PAGE IS 200
1216  005200  020104          LOOP:   CMP     R1,R4                   ;PAGE FOUND?
1217  005202  001404                  BEQ     2$                      ;BR IF YES
1218  005204  005204                  INC     R4                      ;NEXT PAGE
1219  005206  062705  000010          ADD     #10,R5                  ;NEXT PAGE
1220  005212  000772                  BR      LOOP                    ;LOOP UNTIL PAGE IS FOUND
1221  005214  010504          2$:     MOV     R5,R4                   ;GET PAGE FOR PCR
1222  005216  110437  002270  LOAD:   MOVB    R4,LOPAG                ;LOW STARTING PAGE
1223  005222  005204                  INC     R4                      ;INCREMENT
1224  005224  110437  002271          MOVB    R4,LOPAG+1              ;HIGH STARTING PAGE
1225  005230  000207                  RTS     PC
1226
1227
1228                                  ;++
1229                                  ;SUBROUTINE TO DELAY IN MSECS
1230                                  ;DELAY IS USED IN TWO TESTS
1231                                  ;TEST 3 - BEVENT CLAMP ENABLE TEST
1232                                  ;TEST 4 - LIGHT DISPLAY TEST
1233                                  ;TIMING LOOP IS NOT CRITICAL FOR TESTS,SO THE SAME
```

```
                                        ;TIMER LOOP IS USED FOR LSI-11 AND 11/23.
                                        ;LOOP WILL BE 2.5 TIMES SLOWER FOR LSI-11
                                        ;
                                        ;CALL
                                        ;       JSR     R5,WDELAY
                                        ;       40.                     ;40 MSECS
                                        ;
005232  010146                  WDELAY: MOV     R1,-(SP)
005234  010246                          MOV     R2,-(SP)
005236  012502                          MOV     (R5)+,R2                ;APPROX. MSEC DELAY
005240  012737  000502  002346  1$:     MOV     #322.,DELCNT            ;11/23 APPROX. 1 MSEC LOOP
                                                                        ;10% TOLERANCE
005246  013701  002346          2$:     MOV     DELCNT,R1
005252  005301                  3$:     DEC     R1                      ;START APPROX. 1 MSEC LOOP
005254  001376                          BNE     3$
005256  005302                          DEC     R2                      ;CHECK ON MSECS REQUESTED
005260  001372                          BNE     2$                      ;BRANCH AND DO ANOTHER MSEC
005262  012602                          MOV     (SP)+,R2                ;SETUP FOR RETURN AFTER DELAY
005264  012601                          MOV     (SP)+,R1
005266  000205                          RTS     R5
```

```
                                        .TITLE MISCELLANEOUS SECTIONS
                                        .SBTTL  IDENTIFICATION


                                        .SBTTL  REPORT CODING SECTION

005270                                          BGNRPT
005270                          L$RPT::
005270                                          ENDRPT
005270                          L10011:
005270  104425                                  TRAP    C$RPT


                                        .SBTTL  INITIALIZE SECTION

                                        ;++
                                        ; THE INITIALIZE SECTION CONTAINS THE CODING THAT IS PERFORMED
                                        ; AT THE BEGINNING OF EACH PASS.
                                        ;--
```

```
1290  005272                                  BGNINIT
1291  005272                            L$INIT::
1292  005272                                  GPHARD  #0,R1                   ;GET POINTER TO BASE ADDRESS OF P-TABLE
1293  005272  012700  000000                   MOV     #0,R0
1294  005276  104442                          TRAP    C$GPHRD
1295  005300  010001                          MOV     R0,R1
1296  005302  016137  000002  002314          MOV     2(R1),VECT              ;GET INTERRUPT VECTOR
1297  005310  016137  000004  002324          MOV     4(R1),PRIOR             ;GET PRIORITY LEVEL
1298  005316  016137  000006  002316          MOV     6(R1),SWSET             ;GET ROCKER SWITCH SETTINGS
1299  005324  016137  000010  002260          MOV     10(R1),KDF11B           ;GET KDF11-B INDICATOR
1300  005332                                  SETPRI  #PRI07                  ;INHIBIT INTERRUPTS
1301  005332  012700  000340                   MOV     #PRI07,R0
1302  005336  104441                          TRAP    C$SPRI
1303
1304
1305  005340                                  ENDINIT
1306  005340                            L10012:
1307  005340  104411                          TRAP    C$INIT
1308
1309  005342                                  BGNPROT
1310  005342                            L$PROT::
1311  005342  177777                          .WORD   -1              ;CSR OFFSET
1312  005344  177777                          .WORD   -1              ;MASS BUS OFFSET
1313  005346  177777                          .WORD   -1              ;DRIVE OFFSET
1314  005350                                  ENDPROT
1315
1316  005350                                  BGNAUTO
1317  005350                            L$AUTO::
1318  005350                                  ENDAUTO
1319  005350                            L10014:
1320  005350  104461                          TRAP    C$AUTO
1321                                    .SBTTL  CLEANUP CODING SECTION
1322
1323                                    ;++
1324                                    ; THE CLEANUP CODING SECTION CONTAINS THE CODING THAT IS PERFORMED
1325                                    ; AT THE END OF EACH PASS.
1326                                    ;--
1327
1328  005352                                  BGNCLN
1329  005352                            L$CLEAN::
1330
1331  005352  005037  177520                   CLR     PCR                     ;CLEAR PAGE CONTROL REGISTER
1332  005356  005037  177522                   CLR     RWREG                   ;CLEAR READ/WRITE REGISTER
1333  005362  012737  000001  002334          MOV     #1,RSET                 ;RESTORE DEFAULT VALUE
1334  005370  005037  002332                   CLR     RESPND                  ;RESTORE DEFAULT
1335  005374  005037  016114                   CLR     ADDON                   ;RESTORE DEFAULT
1336  005400  012737  000001  002274          MOV     #1,ANSR                 ;RESTORE DEFAULT
1337  005406  005237  002304                   INC     PASS                    ;INCREMENT PASS COUNT
1338  005412  005237  002306                   INC     PASCT                   ;INCREMENT TEST 4 PASS COUNT
1339  005416                                  CLRVEC  VECT                    ;CLEAR INTERRUPT VECTOR
1340  005416  013700  002314                   MOV     VECT,R0
1341  005422  104436                          TRAP    C$CVEC
1342
1343  005424                                  EXIT    CLN
1344  005424  104432                          TRAP    C$EXIT
1345  005426  000002                          .WORD   L10015-.
```

```
                                        ENDCLN
                                L10015:
005430  104412                          TRAP    C$CLEAN

                                .TITLE HARDWARE TESTS
                                .SBTTL  IDENTIFICATION


                                .SBTTL  TEST 1: READ/WRITE REGISTER TEST
                                ;++
                                ;TEST TO VERIFY THAT THE READ/WRITE REGISTER AT ADDRESS 177522
                                ;IS WORD AND BYTE ADDRESSABLE.
                                ;--

        177522                  RWREG=177522

005432                          BGNTST

005432                          BGNSUB
005432  104402                  TRAP    C$BSUB
005434  005037  177522          CLR     RWREG                   ;LOAD ALL ZEROS
005440  001412                  BEQ     1$                      ;BR IF CLEAR
005442  005001                  CLR     R1                      ;EXPECTED DATA
005444  013702  177522          MOV     RWREG,R2                ;COPY CONTENTS
005450                          ERRDF   1,RWR,RERR1             ;REGISTER CANNOT HOLD ALL ZEROS
005450  104455                  TRAP    C$ERDF
005452  000001                  .WORD   1
005454  002610                  .WORD   RWR
005456  003732                  .WORD   RERR1
005460                          CKLOOP                          ;LOOP ON ERROR IF SELECTED
005460  104406                  TRAP    C$CLP1
005462                          EXIT    TST                     ;ABORT TEST IF LOOP ON ERROR NOT SELECTED
005462  104432                  TRAP    C$EXIT
005464  000610                  .WORD   L10016-.
005466                  1$:     CKLOOP                          ;LOOP ON ERROR IF SELECTED
005466  104406                  TRAP    C$CLP1
005470                          ENDSUB
005470                  L10017:
005470  104403                  TRAP    C$ESUB

005472                          BGNSUB
005472  104402                  TRAP    C$BSUB
005474  012737  177777  177522  MOV     #-1,RWREG               ;LOAD ALL ONES
005502  022737  177777  177522  CMP     #177777,RWREG           ;CHECK THE REGISTER
005510  001413                  BEQ     2$                      ;BR IF HOLDING GOOD DATA
005512  012701  177777          MOV     #-1,R1                  ;EXPECTED DATA
005516  013702  177522          MOV     RWREG,R2                ;COPY CONTENTS
005522                          ERRDF   2,RWR,RERR2             ;REGISTER CANNOT HOLD ALL ONES
005522  104455                  TRAP    C$ERDF
005524  000002                  .WORD   2
005526  002610                  .WORD   RWR
005530  004000                  .WORD   RERR2
005532                          CKLOOP                          ;LOOP ON ERROR IF SELECTED
```

```
 1402  005532  104406                          TRAP    C$CLP1
 1403  005534                                  EXIT    TST                     ;ABORT TEST IF ERROR AND NO LOOPING
 1404  005534  104432                          TRAP    C$EXIT
 1405  005536  000536                          .WORD   L10016-.
 1406  005540                          2$:     CKLOOP                          ;LOOP ON ERROR IF SELECTED
 1407  005540  104406                          TRAP    C$CLP1
 1408  005542                                  ENDSUB
 1409  005542                          L10020:
 1410  005542  104403                          TRAP    C$ESUB
 1411
 1412  005544                                  BGNSUB
 1413  005544  104402                          TRAP    C$BSUB
 1414  005546  012737  125252  177522        MOV     #125252,RWREG           ;LOAD ALTERNATING 1'S AND 0'S BIT PATTERN
 1415  005554  022737  125252  177522        CMP     #125252,RWREG           ;CHECK DATA
 1416  005562  001413                        BEQ     3$                      ;BR IF GOOD
 1417  005564  012701  125252                MOV     #125252,R1              ;EXPECTED DATA
 1418  005570  013702  177522                MOV     RWREG,R2                ;COPY CONTENTS
 1419  005574                                  ERRDF   3,RWR,RERR3             ;CANNOT HOLD GOOD DATA
 1420  005574  104455                          TRAP    C$ERDF
 1421  005576  000003                          .WORD   3
 1422  005600  002610                          .WORD   RWR
 1423  005602  004046                          .WORD   RERR3
 1424  005604                                  CKLOOP                          ;LOOP ON ERROR IF SELECTED
 1425  005604  104406                          TRAP    C$CLP1
 1426  005606                                  EXIT    TST                     ;ABORT TEST IF ERROR DETECTED
 1427  005606  104432                          TRAP    C$EXIT
 1428  005610  000464                          .WORD   L10016-.
 1429  005612                          3$:     CKLOOP                          ;CHECK FOR LOOP ON ERROR AGAIN
 1430  005612  104406                          TRAP    C$CLP1
 1431  005614                                  ENDSUB
 1432  005614                          L10021:
 1433  005614  104403                          TRAP    C$ESUB
 1434
 1435  005616                                  BGNSUB
 1436  005616  104402                          TRAP    C$BSUB
 1437  005620  105037  177522                CLRB    RWREG                   ;CLEAR THE REGISTER'S LOW BYTE
 1438  005624  022737  125000  177522        CMP     #125000,RWREG           ;DID IT CLEAR PROPERLY?
 1439  005632  001413                        BEQ     4$                      ;BR IF YES
 1440  005634  012701  125000                MOV     #125000,R1              ;EXPECTED DATA
 1441  005640  013702  177522                MOV     RWREG,R2                ;COPY CONTENTS
 1442  005644                                  ERRDF   4,RWR,RERR4             ;DID NOT RESPOND PROPERLY TO BYTE INSTRUCTION
 1443  005644  104455                          TRAP    C$ERDF
 1444  005646  000004                          .WORD   4
 1445  005650  002610                          .WORD   RWR
 1446  005652  004114                          .WORD   RERR4
 1447  005654                                  CKLOOP                          ;LOOP ON ERROR IF SELECTED
 1448  005654  104406                          TRAP    C$CLP1
 1449  005656                                  EXIT    TST                     ;ABORT TEST IF ERROR DETECTED
 1450  005656  104432                          TRAP    C$EXIT
 1451  005660  000414                          .WORD   L10016-.
 1452  005662                          4$:     CKLOOP                          ;CHECK FOR LOOP ON ERROR AGAIN
 1453  005662  104406                          TRAP    C$CLP1
 1454  005664                                  ENDSUB
 1455  005664                          L10022:
 1456  005664  104403                          TRAP    C$ESUB
 1457
```

```
1458  005666                                    BGNSUB
1459  005666  104402                            TRAP    C$BSUB
1460  005670  000337  177522                    SWAB    RWREG                   ;SWAP BYTES IN THE REGISTER
1461  005674  022737  000252  177522            CMP     #252,RWREG              ;GOOD DATA?
1462  005702  001407                            BEQ     5$                      ;BR IF YES
1463  005704                                    ERRDF   5,RWR,RERR4             ;BYTE INSTRUCTION ERROR
1464  005704  104455                            TRAP    C$ERDF
1465  005706  000005                            .WORD   5
1466  005710  002610                            .WORD   RWR
1467  005712  004114                            .WORD   RERR4
1468  005714                                    CKLOOP                          ;LOOP ON ERROR IF SELECTED
1469  005714  104406                            TRAP    C$CLP1
1470  005716                                    EXIT    TST                     ;ABORT TEST IF ERROR DETECTED
1471  005716  104432                            TRAP    C$EXIT
1472  005720  000354                            .WORD   L10016-.
1473  005722                            5$:     CKLOOP                          ;CHECK FOR LOOP ON ERROR AGAIN
1474  005722  104406                            TRAP    C$CLP1
1475  005724                                    ENDSUB
1476  005724                            L10023:
1477  005724  104403                            TRAP    C$ESUB
1478
1479  005726                                    BGNSUB
1480  005726  104402                            TRAP    C$BSUB
1481  005730  012737  052525  177522            MOV     #052525,RWREG           ;LOAD AN ALTERNATING 0'S AND 1'S BIT PATTERN
1482  005736  022737  052525  177522            CMP     #052525,RWREG           ;CHECK IT
1483  005744  001413                            BEQ     6$                      ;BR IF GOOD DATA
1484  005746  012701  052525                    MOV     #052525,R1              ;EXPECTED DATA
1485  005752  013702  177522                    MOV     RWREG,R2                ;COPY CONTENTS
1486  005756                                    ERRDF   6,RWR,RERR3             ;CANNOT HOLD GOOD DATA
1487  005756  104455                            TRAP    C$ERDF
1488  005760  000006                            .WORD   6
1489  005762  002610                            .WORD   RWR
1490  005764  004046                            .WORD   RERR3
1491  005766                                    CKLOOP                          ;LOOP ON ERROR IF SELECTED
1492  005766  104406                            TRAP    C$CLP1
1493  005770                                    EXIT    TST                     ;ABORT TEST IF ERROR DETECTED
1494  005770  104432                            TRAP    C$EXIT
1495  005772  000302                            .WORD   L10016-.
1496  005774                            6$:     CKLOOP                          ;CHECK FOR LOOP ON ERROR AGAIN
1497  005774  104406                            TRAP    C$CLP1
1498  005776                                    ENDSUB
1499  005776                            L10024:
1500  005776  104403                            TRAP    C$ESUB
1501
1502  006000                                    BGNSUB
1503  006000  104402                            TRAP    C$BSUB
1504  006002  105037  177523                    CLRB    RWREG+1                 ;CLEAR HIGH BYTE OF REGISTER
1505  006006  022737  000125  177522            CMP     #125,RWREG              ;CHECK THE RESULTING CONTENTS OF THE REGISTER
1506  006014  001413                            BEQ     7$                      ;BR IF GOOD DATA
1507  006016  012701  000125                    MOV     #125,R1                 ;EXPECTED DATA
1508  006022  013702  177522                    MOV     RWREG,R2                ;COPY CONTENTS
1509  006026                                    ERRDF   7,RWR,RERR4             ;BYTE INSTRUCTION ERROR
1510  006026  104455                            TRAP    C$ERDF
1511  006030  000007                            .WORD   7
1512  006032  002610                            .WORD   RWR
1513  006034  004114                            .WORD   RERR4
```

```
1514  006036                                    CKLOOP                          ;LOOP ON ERROR IF SELECTED
1515  006036  104406                           TRAP    C$CLP1
1516  006040                                    EXIT    TST                     ;ABORT TEST IF ERROR DETECTED
1517  006040  104432                           TRAP    C$EXIT
1518  006042  000232                           .WORD   L10016-.
1519  006044                            7$:     CKLOOP                          ;CHECK FOR LOOP ON ERROR AGAIN
1520  006044  104406                           TRAP    C$CLP1
1521  006046                                    ENDSUB
1522  006046                            L10025:
1523  006046  104403                           TRAP    C$ESUB
1524
1525  006050                                    BGNSUB
1526  006050  104402                           TRAP    C$BSUB
1527  006052  000337  177522                   SWAB    RWREG                   ;SWAP BYTES
1528  006056  022737  052400  177522           CMP     #052400,RWREG           ;DATA GOOD?
1529  006064  001413                           BEQ     10$                     ;BR IF YES
1530  006066  012701  052400                   MOV     #52400,R1               ;EXPECTED DATA
1531  006072  013702  177522                   MOV     RWREG,R2                ;COPY CONTENTS
1532  006076                                    ERRDF   10,RWR,RERR4            ;BYTE INSTRUCTION ERROR
1533  006076  104455                           TRAP    C$ERDF
1534  006100  000012                           .WORD   10
1535  006102  002610                           .WORD   RWR
1536  006104  004114                           .WORD   RERR4
1537  006106                                    CKLOOP                          ;LOOP ON ERROR IF SELECTED
1538  006106  104406                           TRAP    C$CLP1
1539  006110                                    EXIT    TST                     ;ABORT TEST IF ERROR DETECTED
1540  006110  104432                           TRAP    C$EXIT
1541  006112  000162                           .WORD   L10016-.
1542  006114                            10$:    CKLOOP                          ;CHECK FOR LOOP ON ERROR AGAIN
1543  006114  104406                           TRAP    C$CLP1
1544  006116                                    ENDSUB
1545  006116                            L10026:
1546  006116  104403                           TRAP    C$ESUB
1547
1548  006120                                    BGNSUB
1549  006120  104402                           TRAP    C$BSUB
1550  006122  005037  177522                   CLR     RWREG                   ;MAKE SURE THE C-BIT IS CLEAR
1551  006126  052737  100000  177522           BIS     #BIT15,RWREG            ;SET MSB
1552  006134  013703  177522                   MOV     RWREG,R3                ;COPY DATA IN RWREG
1553  006140  023703  177522           ROTLP1: CMP     RWREG,R3                ;ARE THEY THE SAME?
1554  006144  001005                           BNE     11$                     ;BR IF NO
1555  006146  006003                           ROR     R3                      ;ROTATE THE SET BIT
1556  006150  001412                           BEQ     12$                     ;BR WHEN FINISHED
1557  006152  006037  177522                   ROR     RWREG                   ;REPEAT ROTATE
1558  006156  000770                           BR      ROTLP1                  ;LOOP UNTIL ROTATE IS COMPLETE
1559  006160                            11$:    ERRDF   11,RWR,RERR5
1560  006160  104455                           TRAP    C$ERDF
1561  006162  000013                           .WORD   11
1562  006164  002610                           .WORD   RWR
1563  006166  004162                           .WORD   RERR5
1564  006170                                    CKLOOP                          ;LOOP ON ERROR IF SELECTED
1565  006170  104406                           TRAP    C$CLP1
1566  006172                                    EXIT    TST                     ;SKIP REST OF TEST
1567  006172  104432                           TRAP    C$EXIT
1568  006174  000100                           .WORD   L10016-.
1569  006176                            12$:    CKLOOP                          ;CHECK FOR LOOP ON ERROR
```

```
1570  006176  104406                          TRAP    C$CLP1
1571  006200                                  ENDSUB
1572  006200                          L10027:
1573  006200  104403                          TRAP    C$ESUB
1574
1575  006202                                  BGNSUB
1576  006202  104402                          TRAP    C$BSUB
1577  006204  012737  177777  177522          MOV     #-1,RWREG               ;SET ALL ONES
1578  006212  042737  100000  177522          BIC     #BIT15,RWREG            ;CLEAR MSB
1579  006220  013703  177522                  MOV     RWREG,R3                ;COPY DATA
1580  006224  023703  177522          ROTLP2: CMP     RWREG,R3                ;ARE THEY THE SAME?
1581  006230  001010                          BNE     13$                     ;BR IF NO
1582  006232  000261                          SEC                             ;SET C-BIT FOR ROTATE
1583  006234  006037  177522                  ROR     RWREG                   ;ROTATE CLEAR BIT
1584  006240  006003                          ROR     R3                      ;REPEAT
1585  006242  022703  077777                  CMP     #077777,R3              ;FINISHED?
1586  006246  001366                          BNE     ROTLP2                  ;BR IF NOT YET
1587  006250  000407                          BR      14$                     ;SUBTEST FINISHED
1588  006252                          13$:    ERRDF   12,RWR,RERR6
1589  006252  104455                          TRAP    C$ERDF
1590  006254  000014                          .WORD   12
1591  006256  002610                          .WORD   RWR
1592  006260  004204                          .WORD   RERR6
1593  006262                                  CKLOOP                          ;LOOP ON ERROR IF SELECTED
1594  006262  104406                          TRAP    C$CLP1
1595  006264                                  EXIT TST
1596  006264  104432                          TRAP    C$EXIT
1597  006266  000006                          .WORD   L10016-.
1598  006270                          14$:    CKLOOP
1599  006270  104406                          TRAP    C$CLP1
1600  006272                                  ENDSUB
1601  006272                          L10030:
1602  006272  104403                          TRAP    C$ESUB
1603
1604  006274                                  ENDTST
1605  006274                          L10016:
1606  006274  104401                          TRAP    C$ETST
1607                                  .SBTTL  TEST 2: PAGE CONTROL REGISTER TEST
1608                                  ;++
1609                                  ;TEST TO VERIFY THAT THE PAGE CONTROL REGISTER IS WORD
1610                                  ;AND BYTE ADDRESSABLE.
1611                                  ;--
1612
1613  006276                                  BGNTST
1614
1615  006276  005737  002260                  TST     KDF11B                  ;IF THIS IS A KDF11-B...
1616  006302  001402                          BEQ     15$
1617  006304                                  EXIT    TST                     ;...THEN SKIP THIS TEST
1618  006304  104432                          TRAP    C$EXIT
1619  006306  000654                          .WORD   L10031-.
1620
1621  006310                          15$:    BGNSUB
1622  006310  104402                          TRAP    C$BSUB
1623  006312  005037  177520                  CLR     PCR                     ;LOAD ALL ZEROS
1624  006316  001412                          BEQ     1$                      ;BR IF CLEARED
1625  006320  005001                          CLR     R1                      ;EXPECTED DATA
```

```
1626  006322  013702  177520              MOV     PCR,R2                  ;COPY CONTENTS
1627  006326                              ERRDF   13,PACR,RERR1           ;REGISTER CANNOT HOLD ALL ZEROS
1628  006326  104455                      TRAP    C$ERDF
1629  006330  000015                      .WORD   13
1630  006332  002654                      .WORD   PACR
1631  006334  003732                      .WORD   RERR1
1632  006336                              CKLOOP                          ;LOOP ON ERROR IF SELECTED
1633  006336  104406                      TRAP    C$CLP1
1634  006340                              EXIT    TST                     ;ABORT TEST IF ERROR DETECTED
1635  006340  104432                      TRAP    C$EXIT
1636  006342  000620                      .WORD   L10031-.
1637  006344                      1$:     CKLOOP                          ;CHECK FOR LOOP ON ERROR AGAIN
1638  006344  104406                      TRAP    C$CLP1
1639  006346                              ENDSUB
1640  006346                      L10032:
1641  006346  104403                      TRAP    C$ESUB
1642
1643  006350                              BGNSUB
1644  006350  104402                      TRAP    C$BSUB
1645  006352  012737  177777  177520      MOV     #-1,PCR                 ;LOAD ALL ONES
1646  006360  022737  177777  177520      CMP     #177777,PCR             ;CHECK FOR GOOD DATA
1647  006366  001413                      BEQ     2$                      ;BR IF GOOD
1648  006370  012701  177777              MOV     #-1,R1                  ;EXPECTED DATA
1649  006374  013702  177520              MOV     PCR,R2                  ;COPY CONTENTS
1650  006400                              ERRDF   14,PACR,RERR2           ;REGISTER CANNOT HOLD ALL ONES
1651  006400  104455                      TRAP    C$ERDF
1652  006402  000016                      .WORD   14
1653  006404  002654                      .WORD   PACR
1654  006406  004000                      .WORD   RERR2
1655  006410                              CKLOOP                          ;LOOP ON ERROR IF SELECTED
1656  006410  104406                      TRAP    C$CLP1
1657  006412                              EXIT    TST                     ;ABORT TEST IF ERROR DETECTED
1658  006412  104432                      TRAP    C$EXIT
1659  006414  000546                      .WORD   L10031-.
1660  006416                      2$:     CKLOOP                          ;CHECK FOR LOOP ON ERROR AGAIN
1661  006416  104406                      TRAP    C$CLP1
1662  006420                              ENDSUB
1663  006420                      L10033:
1664  006420  104403                      TRAP    C$ESUB
1665
1666
1667  006422                              BGNSUB
1668  006422  104402                      TRAP    C$BSUB
1669  006424  012737  125252  177520      MOV     #125252,PCR             ;LOAD AN ALTERNATING 1'S AND 0'S BIT PATTERN
1670  006432  022737  125252  177520      CMP     #125252,PCR             ;CHECK THE RESULTS
1671  006440  001413                      BEQ     3$                      ;BR IF GOOD DATA
1672  006442  012701  125252              MOV     #125252,R1              ;EXPECTED DATA
1673  006446  013702  177520              MOV     PCR,R2                  ;COPY CONTENTS
1674  006452                              ERRDF   15,PACR,RERR3           ;REGISTER CANNOT HOLD GOOD DATA
1675  006452  104455                      TRAP    C$ERDF
1676  006454  000017                      .WORD   15
1677  006456  002654                      .WORD   PACR
1678  006460  004046                      .WORD   RERR3
1679  006462                              CKLOOP                          ;LOOP ON ERROR IF SELECTED
1680  006462  104406                      TRAP    C$CLP1
1681  006464                              EXIT    TST                     ;ABORT TEST IF ERROR DETECTED
```

```
1682  006464  104432                          TRAP    C$EXIT
1683  006466  000474                          .WORD   L10031-.
1684  006470                          3$:     CKLOOP                  ;CHECK FOR LOOP ON ERROR AGAIN
1685  006470  104406                          TRAP    C$CLP1
1686  006472                                  ENDSUB
1687  006472                          L10034:
1688  006472  104403                          TRAP    C$ESUB
1689
1690  006474                                  BGNSUB
1691  006474  104402                          TRAP    C$BSUB
1692  006476  105037  177520                  CLRB    PCR             ;CLEAR THE REGISTER'S LOW BYTE
1693  006502  022737  125000  177520          CMP     #125000,PCR     ;COMPARE THE RESULTS
1694  006510  001413                          BEQ     4$              ;BR IF GOOD DATA
1695  006512  012701  125000                  MOV     #125000,R1      ;EXPECTED DATA
1696  006516  013702  177520                  MOV     PCR,R2          ;COPY CONTENTS
1697  006522                                  ERRDF   16,PACR,RERR4   ;BYTE INSTRUCTION ERROR
1698  006522  104455                          TRAP    C$ERDF
1699  006524  000020                          .WORD   16
1700  006526  002654                          .WORD   PACR
1701  006530  004114                          .WORD   RERR4
1702  006532                                  CKLOOP                  ;LOOP ON ERROR IF SELECTED
1703  006532  104406                          TRAP    C$CLP1
1704  006534                                  EXIT    TST             ;ABORT TEST IF ERROR DETECTED
1705  006534  104432                          TRAP    C$EXIT
1706  006536  000424                          .WORD   L10031-.
1707  006540                          4$:     CKLOOP                  ;CHECK FOR LOOP ON ERROR
1708  006540  104406                          TRAP    C$CLP1
1709  006542                                  ENDSUB
1710  006542                          L10035:
1711  006542  104403                          TRAP    C$ESUB
1712
1713  006544                                  BGNSUB
1714  006544  104402                          TRAP    C$BSUB
1715  006546  000337  177520                  SWAB    PCR             ;SWAP BYTES
1716  006552  022737  000252  177520          CMP     #252,PCR        ;CHECK THE RESULTS
1717  006560  001413                          BEQ     5$              ;BR IF GOOD DATA
1718  006562  012701  000252                  MOV     #252,R1         ;EXPECTED DATA
1719  006566  013702  177520                  MOV     PCR,R2          ;COPY CONTENTS
1720  006572                                  ERRDF   17,PACR,RERR4   ;BYTE INSTRUCTION ERROR
1721  006572  104455                          TRAP    C$ERDF
1722  006574  000021                          .WORD   17
1723  006576  002654                          .WORD   PACR
1724  006600  004114                          .WORD   RERR4
1725  006602                                  CKLOOP                  ;LOOP ON ERROR IF SELECTED
1726  006602  104406                          TRAP    C$CLP1
1727  006604                                  EXIT    TST             ;ABORT TEST IF ERROR DETECTED
1728  006604  104432                          TRAP    C$EXIT
1729  006606  000354                          .WORD   L10031-.
1730  006610                          5$:     CKLOOP                  ;CHECK FOR LOOP ON ERROR
1731  006610  104406                          TRAP    C$CLP1
1732  006612                                  ENDSUB
1733  006612                          L10036:
1734  006612  104403                          TRAP    C$ESUB
1735  006614                                  BGNSUB
1736  006614  104402                          TRAP    C$BSUB
1737  006616  012737  052525  177520          MOV     #052525,PCR     ;LOAD AN ALTERNATING 0'S AND 1'S BIT PATTERN
```

```
1738  006624  022737  052525  177520          CMP     #052525,PCR             ;CHECK THE RESULTS
1739  006632  001413                          BEQ     6$                      ;BR IF GOOD DATA
1740  006634  012701  052525                  MOV     #052525,R1              ;EXPECTED DATA
1741  006640  013702  177520                  MOV     PCR,R2                  ;COPY CONTENTS
1742  006644                                  ERRDF   20,PACR,RERR3           ;REGISTER CANNOT HOLD GOOD DATA
1743  006644  104455                          TRAP    C$ERDF
1744  006646  000024                          .WORD   20
1745  006650  002654                          .WORD   PACR
1746  006652  004046                          .WORD   RERR3
1747  006654                                  CKLOOP                          ;LOOP ON ERROR IF SELECTED
1748  006654  104406                          TRAP    C$CLP1
1749  006656                                  EXIT    TST                     ;ABORT TEST IF ERROR DETECTED
1750  006656  104432                          TRAP    C$EXIT
1751  006660  000302                          .WORD   L10031-.
1752  006662                          6$:     CKLOOP                          ;CHECK FOR LOOP ON ERROR
1753  006662  104406                          TRAP    C$CLP1
1754  006664                                  ENDSUB
1755  006664                          L10037:
1756  006664  104403                          TRAP    C$ESUB
1757  006666                                  BGNSUB
1758  006666  104402                          TRAP    C$BSUB
1759  006670  105037  177521                  CLRB    PCR+1                   ;CLEAR THE HIGH BYTE
1760  006674  022737  000125  177520          CMP     #125,PCR                ;CHECK THE REGISTER CONTENTS
1761  006702  001413                          BEQ     7$                      ;BR IF GOOD DATA
1762  006704  012701  000125                  MOV     #125,R1                 ;EXPECTED DATA
1763  006710  013702  177520                  MOV     PCR,R2                  ;COPY CONTENTS
1764  006714                                  ERRDF   21,PACR,RERR4           ;BYTE INSTRUCTION ERROR
1765  006714  104455                          TRAP    C$ERDF
1766  006716  000025                          .WORD   21
1767  006720  002654                          .WORD   PACR
1768  006722  004114                          .WORD   RERR4
1769  006724                                  CKLOOP                          ;LOOP ON ERROR IF SELECTED
1770  006724  104406                          TRAP    C$CLP1
1771  006726                                  EXIT    TST                     ;ABORT TEST IF ERROR DETECTED
1772  006726  104432                          TRAP    C$EXIT
1773  006730  000232                          .WORD   L10031-.
1774  006732                          7$:     CKLOOP                          ;CHECK FOR LOOP ON ERROR
1775  006732  104406                          TRAP    C$CLP1
1776  006734                                  ENDSUB
1777  006734                          L10040:
1778  006734  104403                          TRAP    C$ESUB
1779
1780  006736                                  BGNSUB
1781  006736  104402                          TRAP    C$BSUB
1782  006740  000337  177520                  SWAB    PCR                     ;SWAP BYTES
1783  006744  022737  052400  177520          CMP     #052400,PCR             ;CHECK RESULTING CONTENTS
1784  006752  001413                          BEQ     10$                     ;BR IF GOOD DATA
1785  006754  012701  052400                  MOV     #52400,R1               ;EXPECTED DATA
1786  006760  013702  177520                  MOV     PCR,R2                  ;COPY CONTENTS
1787  006764                                  ERRDF   22,PACR,RERR4           ;BYTE INSTRUCTION ERROR
1788  006764  104455                          TRAP    C$ERDF
1789  006766  000026                          .WORD   22
1790  006770  002654                          .WORD   PACR
1791  006772  004114                          .WORD   RERR4
1792  006774                                  CKLOOP                          ;LOOP ON ERROR IF SELECTED
1793  006774  104406                          TRAP    C$CLP1
```

```
1794  006776                                        EXIT    TST                     ;ABORT TEST IF ERROR DETECTED
1795  006776  104432                                TRAP    C$EXIT
1796  007000  000162                                .WORD   L10031-.
1797  007002                                10$:     CKLOOP                          ;CHECK FOR LOOP ON ERROR
1798  007002  104406                                TRAP    C$CLP1
1799  007004                                        ENDSUB
1800  007004                                L10041:
1801  007004  104403                                TRAP    C$ESUB
1802
1803  007006                                        BGNSUB
1804  007006  104402                                TRAP    C$BSUB
1805  007010  005037  177520                        CLR     PCR                     ;MAKE SURE THE C-BIT IS CLEAR
1806  007014  052737  100000  177520                BIS     #BIT15,PCR              ;SET MSB
1807  007022  013703  177520                        MOV     PCR,R3                  ;COPY DATA IN PCR
1808  007026  023703  177520              ROTLP3:   CMP     PCR,R3                  ;ARE THEY THE SAME?
1809  007032  001005                                BNE     11$                     ;BR IF NO
1810  007034  006003                                ROR     R3                      ;ROTATE THE SET BIT
1811  007036  001412                                BEQ     12$                     ;BR IF FINISHED
1812  007040  006037  177520                        ROR     PCR                     ;REPEAT ROTATE
1813  007044  000770                                BR      ROTLP3                  ;LOOP UNTIL ROTATE IS COMPLETE
1814  007046                                11$:     ERRDF   23,PACR,RERR5
1815  007046  104455                                TRAP    C$ERDF
1816  007050  000027                                .WORD   23
1817  007052  002654                                .WORD   PACR
1818  007054  004162                                .WORD   RERR5
1819  007056                                        CKLOOP                          ;LOOP ON ERROR IF SELECTED
1820  007056  104406                                TRAP    C$CLP1
1821  007060                                        EXIT    TST                     ;SKIP REST OF TEST
1822  007060  104432                                TRAP    C$EXIT
1823  007062  000100                                .WORD   L10031-.
1824  007064                                12$:     CKLOOP                          ;CHECK FOR LOOP ON ERROR
1825  007064  104406                                TRAP    C$CLP1
1826  007066                                        ENDSUB
1827  007066                                L10042:
1828  007066  104403                                TRAP    C$ESUB
1829
1830  007070                                        BGNSUB
1831  007070  104402                                TRAP    C$BSUB
1832  007072  012737  177777  177520                MOV     #-1,PCR                 ;SET ALL ONES
1833  007100  042737  100000  177520                BIC     #BIT15,PCR              ;CLEAR MSB
1834  007106  013703  177520                        MOV     PCR,R3                  ;COPY DATA
1835  007112  023703  177520              ROTLP4:   CMP     PCR,R3                  ;ARE THEY THE SAME?
1836  007116  001010                                BNE     13$                     ;BR IF NO
1837  007120  000261                                SEC                             ;SET C-BIT FOR ROTATE
1838  007122  006037  177520                        ROR     PCR                     ;ROTATE CLEAR BIT
1839  007126  006003                                ROR     R3                      ;REPEAT
1840  007130  022703  077777                        CMP     #077777,R3              ;ALL ONES?
1841  007134  001366                                BNE     ROTLP4                  ;BR IF NOT YET
1842  007136  000407                                BR      14$                     ;SUBTEST FINISHED
1843  007140                                13$:     ERRDF   24,PACR,RERR6
1844  007140  104455                                TRAP    C$ERDF
1845  007142  000030                                .WORD   24
1846  007144  002654                                .WORD   PACR
1847  007146  004204                                .WORD   RERR6
1848  007150                                        CKLOOP                          ;LOOP ON ERROR IF SELECTED
1849  007150  104406                                TRAP    C$CLP1
```

```
                                        EXIT TST
                                        TRAP    C$EXIT
                                        .WORD   L10031-.
                                14$:    CKLOOP
                                        TRAP    C$CLP1
                                        ENDSUB
                                L10043:
                                        TRAP    C$ESUB
                                        ENDTST
                                L10031:
                                        TRAP    C$ETST

                                .SBTTL  TEST 3: BEVENT CLAMP ENABLE TEST
                                ;++
                                ;TEST TO VERIFY THAT THE BEVENT CLAMP CAN BE ENABLED. (IF TESTING A BDV11, THIS
                                ;TEST ASSUMES THAT SWITCH #5 OF E21 IS IN THE ON POSITION, AND THE M8012
                                ;MODULE IS LOCATED IN THE SAME BACKPLANE THAT THE LINE TIME CLOCK
                                ;IS GENERATED FROM.) CHECKS PRIORITY INTERRUPT LEVEL 6 IF IT WAS
                                ;CHANGED IN HARDWARE TABLE AND IF THE DEVICE UNDER TEST IS KDF11-B.

                                ;--

007164                                  BGNTST

        177546                          BEVREG=177546

007164  005737  002304                  TST     PASS            ;IF THIS IS FIRST PASS
007170  001402                          BEQ     1$              ;THEN DO THE TEST
007172                                  EXIT    TST             ;ELSE DON'T
007172  104432                          TRAP    C$EXIT
007174  001362                          .WORD   L10044-.
007176  005037  007670          1$:     CLR     ICOUNT
007202                                  BGNSUB
007202  104402                          TRAP    C$BSUB
007204                                  SETVEC  VECT,#INTSR,#PRI07      ;SET INTERRUPT VECTOR,INHIBIT INTERRUPTS
007204  012746  000340                  MOV     #PRI07,-(SP)
007210  012746  007662                  MOV     #INTSR,-(SP)
007214  013746  002314                  MOV     VECT,-(SP)
007220  012746  000003                  MOV     #3,-(SP)
007224  104437                          TRAP    C$SVEC
007226  062706  000010                  ADD     #10,SP
007232  052737  000100  177546          BIS     #BIT06,BEVREG           ;REMOVE BEVENT CLAMP
007240                                  SETPRI  #PRI00                  ;ALLOW INTERRUPTS
007240  012700  000000                  MOV     #PRI00,R0
007244  104441                          TRAP    C$SPRI
007246  004537  005232                  JSR     R5,WDELAY               ;DELAY APPROX. 40 MSECS.
007252  000050                          40.
007254                                  SETPRI  #PRI07                  ;INHIBIT FURTHER INTERRUPTS
007254  012700  000340                  MOV     #PRI07,R0
007260  104441                          TRAP    C$SPRI
007262  022737  000002  007670          CMP     #2,ICOUNT               ;DID THE MINIMUM OF TWO INTERRUPTS OCCUR?
007270  003404                          BLE     2$                      ;BR IF YES
007272                                  ERRDF   25,,BVERR1              ;BEVENT CLAMP ENABLE FAILED
007272  104455                          TRAP    C$ERDF
007274  000031                          .WORD   25
007276  000000                          .WORD   0
```

```
1906  007300  007672                          .WORD   BVERR1
1907  007302                          2$:     CKLOOP                  ;CHECK FOR LOOP ON ERROR
1908  007302  104406                          TRAP    C$CLP1
1909  007304  005037  007670                  CLR     ICOUNT          ;CLEAR INTERRUPT COUNT
1910  007310                                  ENDSUB
1911  007310                          L10045:
1912  007310  104403                          TRAP    C$ESUB
1913
1914  007312                                  BGNSUB
1915  007312  104402                          TRAP    C$BSUB
1916  007314  042737  000100  177546          BIC     #BIT06,BEVREG   ;SET BEVENT CLAMP
1917  007322                                  SETPRI  #PRI00          ;ALLOW INTERRUPTS
1918  007322  012700  000000                  MOV     #PRI00,R0
1919  007326  104441                          TRAP    C$SPRI
1920  007330  004537  005232                  JSR     R5,WDELAY       ;DELAY APPROX. 40 MSECS
1921  007334  000050                          40.                     ;DELAY COUNT
1922  007336                                  SETPRI  #PRI07          ;SET HIGHEST PRIORITY
1923  007336  012700  000340                  MOV     #PRI07,R0
1924  007342  104441                          TRAP    C$SPRI
1925  007344  022737  000001  007670          CMP     #1,ICOUNT       ;CHECK INTERRUPT COUNT
1926  007352  002004                          BGE     4$              ;BR IF NO INTERRUPTS OCCURRED
1927  007354                                  ERRDF   26,,BVERR2      ;BEVENT CLAMP DID NOT PREVENT INTERRUPTS
1928  007354  104455                          TRAP    C$ERDF
1929  007356  000032                          .WORD   26
1930  007360  000000                          .WORD   0
1931  007362  007740                          .WORD   BVERR2
1932  007364                          4$:     CKLOOP                  ;CHECK FOR LOOP ON ERROR
1933  007364  104406                          TRAP    C$CLP1
1934  007366  005037  007670                  CLR     ICOUNT          ;CLEAR INTERRUPT COUNT
1935  007372                                  ENDSUB
1936  007372                          L10046:
1937  007372  104403                          TRAP    C$ESUB
1938
1939  007374  022737  000006  002324          CMP     #6,PRIOR        ;WAS PRIORITY CHANGED?
1940  007402  001405                          BEQ     100$            ;IF YES, BRANCH
1941  007404  005737  002260                  TST     KDF11B          ;KDF11B ?
1942  007410  001002                          BNE     100$            ;IF YES, BRANCH
1943  007412                                  EXIT    TST             ;NO,EXIT
1944  007412  104432                          TRAP    C$EXIT
1945  007414  001142                          .WORD   L10044-.
1946
1947  007416                          100$:   BGNSUB
1948  007416  104402                          TRAP    C$BSUB
1949  007420  052737  000100  177546          BIS     #BIT06,BEVREG   ;REMOVE BEVENT CLAMP
1950  007426                                  SETPRI  #PRI05          ;ALLOW INTERRUPTS AT 5
1951  007426  012700  000240                  MOV     #PRI05,R0
1952  007432  104441                          TRAP    C$SPRI
1953  007434  004537  005232                  JSR     R5,WDELAY       ;DELAY APPROX. 40 MSECS.
1954  007440  000050                          40.
1955  007442                                  SETPRI  #PRI07          ;INHIBIT FURTHER INTERRUPTS
1956  007442  012700  000340                  MOV     #PRI07,R0
1957  007446  104441                          TRAP    C$SPRI
1958  007450  022737  000002  007670          CMP     #2,ICOUNT       ;DID THE MINIMUM OF TWO INTERRUPTS OCCUR?
1959  007456  003404                          BLE     101$            ;BR IF YES
1960  007460                                  ERRDF   52,,BVERR4      ;PRIORITY IS WRONG
1961  007460  104455                          TRAP    C$ERDF
```

```
1962  007462  000064                          .WORD   52
1963  007464  000000                          .WORD   0
1964  007466  010054                          .WORD   BVERR4
1965  007470                          101$:   CKLOOP                  ;CHECK FOR LOOP ON ERROR
1966  007470  104406                          TRAP    C$CLP1
1967  007472  005037  007670                  CLR     ICOUNT          ;CLEAR INTERRUPT COUNT
1968  007476                                  ENDSUB
1969  007476                          L10047:
1970  007476  104403                          TRAP    C$ESUB
1971
1972  007500                                  BGNSUB
1973  007500  104402                          TRAP    C$BSUB
1974  007502  052737  000100  177546          BIS     #BIT06,BEVREG   ;REMOVE BEVENT CLAMP
1975  007510                                  SETPRI  #PRI06          ;DON'T ALLOW INTERRUPTS
1976  007510  012700  000300                  MOV     #PRI06,R0
1977  007514  104441                          TRAP    C$SPRI
1978  007516  004537  005232                  JSR     R5,WDELAY       ;DELAY APPROX. 40 MSECS
1979  007522  000050                          40.                     ;DELAY COUNT
1980  007524                                  SETPRI  #PRI07          ;SET PRIORITY 7
1981  007524  012700  000340                  MOV     #PRI07,R0
1982  007530  104441                          TRAP    C$SPRI
1983  007532  022737  000001  007670          CMP     #1,ICOUNT       ;CHECK INTERRUPT COUNT
1984  007540  002004                          BGE     102$            ;BR IF NO INTERRUPTS OCCURRED
1985  007542                                  ERRDF   53,,BVERR5      ;PRIOR. 6 DIDN'T PREVENT INTERR.
1986  007542  104455                          TRAP    C$ERDF
1987  007544  000065                          .WORD   53
1988  007546  000000                          .WORD   0
1989  007550  010122                          .WORD   BVERR5
1990  007552                          102$:   CKLOOP                  ;CHECK FOR LOOP ON ERROR
1991  007552  104406                          TRAP    C$CLP1
1992  007554  005037  007670                  CLR     ICOUNT          ;CLEAR INTERRUPT COUNT
1993  007560                                  ENDSUB
1994  007560                          L10050:
1995  007560  104403                          TRAP    C$ESUB
1996
1997  007562  005737  002260                  TST     KDF11B          ;KDF11B ?
1998  007566  001002                          BNE     5$
1999  007570                          EXIT    TST
2000  007570  104432                          TRAP    C$EXIT
2001  007572  000764                          .WORD   L10044-.
2002
2003  007574                          5$:     BGNSUB                  ;SET INTERRUPTS
2004  007574  104402                          TRAP    C$BSUB
2005  007576  052737  000100  177546          BIS     #BIT06,BEVREG
2006  007604                                  BRESET                  ;RESET INTERRUPTS
2007  007604  104433                          TRAP    C$RESET
2008  007606                                  SETPRI  #PRI00          ;WITH LOW PRIORITY
2009  007606  012700  000000                  MOV     #PRI00,R0
2010  007612  104441                          TRAP    C$SPRI
2011  007614  004537  005232                  JSR     R5,WDELAY       ;DELAY APPROX. 40 MSECS
2012  007620  000050                          40.
2013  007622                                  SETPRI  #PRI07
2014  007622  012700  000340                  MOV     #PRI07,R0
2015  007626  104441                          TRAP    C$SPRI
2016  007630  005737  007670                  TST     ICOUNT          ;0 INTERRUPTS ?
2017  007634  001404                          BEQ     6$              ;IF YES BRANCH
```

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2018  007636                        ERRDF   51,,BVERR3          ;RESET DIDN'T WORK
2019  007636  104455                TRAP    C$ERDF
2020  007640  000063                .WORD   51
2021  007642  000000                .WORD   0
2022  007644  010006                .WORD   BVERR3
2023  007646                  6$:   CKLOOP                      ;CHECK FOR LOOP ON ERROR
2024  007646  104406                TRAP    C$CLP1
2025  007650  005037  007670        CLR     ICOUNT
2026  007654                        ENDSUB
2027  007654                  L10051:
2028  007654  104403                TRAP    C$ESUB
2029  007656                        EXIT    TST
2030  007656  104432                TRAP    C$EXIT
2031  007660  000676                .WORD   L10044-.
2032
2033  007662                  INTSR:
2034  007662                        BGNSRV  BEVENT              ;INTERRUPT SERVICE ROUTINE
2035  007662                  BEVENT::
2036  007662  005237  007670        INC     ICOUNT              ;INCREMENT COUNTER
2037  007666                        ENDSRV
2038  007666                  L10052:
2039  007666  000002                RTI
2040
2041  007670  000000          ICOUNT: .WORD   0
2042
2043  007672                        BGNMSG  BVERR1
2044  007672                  BVERR1::
2045  007672                        PRINTB  #MSG1
2046  007672  012746  010170        MOV     #MSG1,-(SP)
2047  007676  012746  000001        MOV     #1,-(SP)
2048  007702  010600                MOV     SP,R0
2049  007704  104414                TRAP    C$PNTB
2050  007706  062706  000004        ADD     #4,SP
2051  007712                        PRINTB  #INTCT,ICOUNT
2052  007712  013746  007670        MOV     ICOUNT,-(SP)
2053  007716  012746  010244        MOV     #INTCT,-(SP)
2054  007722  012746  000002        MOV     #2,-(SP)
2055  007726  010600                MOV     SP,R0
2056  007730  104414                TRAP    C$PNTB
2057  007732  062706  000006        ADD     #6,SP
2058  007736                        ENDMSG
2059  007736                  L10053:
2060  007736  104423                TRAP    C$MSG
2061
2062  007740                        BGNMSG  BVERR2
2063  007740                  BVERR2::
2064  007740                        PRINTB  #MSG2
2065  007740  012746  010313        MOV     #MSG2,-(SP)
2066  007744  012746  000001        MOV     #1,-(SP)
2067  007750  010600                MOV     SP,R0
2068  007752  104414                TRAP    C$PNTB
2069  007754  062706  000004        ADD     #4,SP
2070  007760                        PRINTB  #INTCT,ICOUNT
2071  007760  013746  007670        MOV     ICOUNT,-(SP)
2072  007764  012746  010244        MOV     #INTCT,-(SP)
2073  007770  012746  000002        MOV     #2,-(SP)
```

```
2074  007774  010600                          MOV     SP,R0
2075  007776  104414                          TRAP    C$PNTB
2076  010000  062706  000006                  ADD     #6,SP
2077  010004                                  ENDMSG
2078  010004                          L10054:
2079  010004  104423                          TRAP    C$MSG
2080
2081  010006                                  BGNMSG  BVERR3
2082  010006                          BVERR3::
2083  010006                                  PRINTB  #MSG3
2084  010006  012746  010367                  MOV     #MSG3,-(SP)
2085  010012  012746  000001                  MOV     #1,-(SP)
2086  010016  010600                          MOV     SP,R0
2087  010020  104414                          TRAP    C$PNTB
2088  010022  062706  000004                  ADD     #4,SP
2089  010026                                  PRINTB  #INTCT,ICOUNT
2090  010026  013746  007670                  MOV     ICOUNT,-(SP)
2091  010032  012746  010244                  MOV     #INTCT,-(SP)
2092  010036  012746  000002                  MOV     #2,-(SP)
2093  010042  010600                          MOV     SP,R0
2094  010044  104414                          TRAP    C$PNTB
2095  010046  062706  000006                  ADD     #6,SP
2096  010052                                  ENDMSG
2097  010052                          L10055:
2098  010052  104423                          TRAP    C$MSG
2099
2100  010054                                  BGNMSG  BVERR4
2101  010054                          BVERR4::
2102  010054                                  PRINTB  #MSG4
2103  010054  012746  010434                  MOV     #MSG4,-(SP)
2104  010060  012746  000001                  MOV     #1,-(SP)
2105  010064  010600                          MOV     SP,R0
2106  010066  104414                          TRAP    C$PNTB
2107  010070  062706  000004                  ADD     #4,SP
2108  010074                                  PRINTB  #INTCT,ICOUNT
2109  010074  013746  007670                  MOV     ICOUNT,-(SP)
2110  010100  012746  010244                  MOV     #INTCT,-(SP)
2111  010104  012746  000002                  MOV     #2,-(SP)
2112  010110  010600                          MOV     SP,R0
2113  010112  104414                          TRAP    C$PNTB
2114  010114  062706  000006                  ADD     #6,SP
2115  010120                                  ENDMSG
2116  010120                          L10056:
2117  010120  104423                          TRAP    C$MSG
2118
2119  010122                                  BGNMSG  BVERR5
2120  010122                          BVERR5::
2121  010122                                  PRINTB  #MSG5
2122  010122  012746  010504                  MOV     #MSG5,-(SP)
2123  010126  012746  000001                  MOV     #1,-(SP)
2124  010132  010600                          MOV     SP,R0
2125  010134  104414                          TRAP    C$PNTB
2126  010136  062706  000004                  ADD     #4,SP
2127  010142                                  PRINTB  #INTCT,ICOUNT
2128  010142  013746  007670                  MOV     ICOUNT,-(SP)
2129  010146  012746  010244                  MOV     #INTCT,-(SP)
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 2130  010152  012746  000002                    MOV     #2,-(SP)
 2131  010156  010600                            MOV     SP,R0
 2132  010160  104414                            TRAP    C$PNTB
 2133  010162  062706  000006                    ADD     #6,SP
 2134  010166                                    ENDMSG
 2135  010166                            L10057:
 2136  010166  104423                            TRAP    C$MSG
 2137
 2138  010170  040445  042502  042526  MSG1:    .ASCIZ  /%ABEVENT CLAMP FAILED TO ALLOW INTERRUPTS%N/
 2139  010176  052116  041440  040514
 2140  010204  050115  043040  044501
 2141  010212  042514  020104  047524
 2142  010220  040440  046114  053517
 2143  010226  044440  052116  051105
 2144  010234  052522  052120  022523
 2145  010242  000116
 2146  010244  040445  052516  041115  INTCT:   .ASCIZ  /%ANUMBER OF INTERRUPTS RECEIVED: %03%N/
 2147  010252  051105  047440  020106
 2148  010260  047111  042524  051122
 2149  010266  050125  051524  051040
 2150  010274  041505  044505  042526
 2151  010302  035104  022440  031517
 2152  010310  047045     000
 2153  010313     045  041101  053105  MSG2:    .ASCIZ  /%ABEVENT CLAMP DID NOT PREVENT INTERRUPTS%N/
 2154  010320  047105  020124  046103
 2155  010326  046501  020120  044504
 2156  010334  020104  047516  020124
 2157  010342  051120  053105  047105
 2158  010350  020124  047111  042524
 2159  010356  051122  050125  051524
 2160  010364  047045     000
 2161  010367     045  051101  051505  MSG3:    .ASCIZ  /%ARESET DID NOT PREVENT INTERRUPTS%N/
 2162  010374  052105  042040  042111
 2163  010402  047040  052117  050040
 2164  010410  042522  042526  052116
 2165  010416  044440  052116  051105
 2166  010424  052522  052120  022523
 2167  010432  000116
 2168  010434  040445  051120  047511  MSG4:    .ASCIZ  /%APRIORITY 5 DID NOT ALLOW INTERRUPTS%N/
 2169  010442  044522  054524  032440
 2170  010450  042040  042111  047040
 2171  010456  052117  040440  046114
 2172  010464  053517  044440  052116
 2173  010472  051105  052522  052120
 2174  010500  022523  000116
 2175  010504  040445  051120  047511  MSG5:    .ASCIZ  /%APRIORITY 6 DID NOT PREVENT INTERRUPTS%N/
 2176  010512  044522  054524  033040
 2177  010520  042040  042111  047040
 2178  010526  052117  050040  042522
 2179  010534  042526  052116  044440
 2180  010542  052116  051105  052522
 2181  010550  052120  022523  000116
 2182                                      .EVEN
 2183  010556                              ENDTST
 2184  010556                            L10044:
 2185  010556  104401                            TRAP    C$ETST
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                                        .SBTTL  TEST 4: LIGHT DISPLAY TEST
                                        ;++
                                        ;TEST TO VERIFY THAT THE FOUR RED LED'S ARE WORKING AND CAN BE
                                        ;TURNED ON INDIVIDUALLY.
                                        ;--

010560                                          BGNTST

010560  005037  177524                        CLR     LSREG                   ;TURN ON ALL FOUR LED'S
010564  004537  005232                        JSR     R5,WDELAY               ;DELAY APPROX. 200MS
010570  000310                                200.
010572                                          BREAK                           ;CHECK SUPERVISOR FOR CONTROL REQUESTS
010572  104422                                  TRAP    C$BRK
010574  012737  000017  177524                MOV     #17,LSREG               ;TURN OFF ALL FOUR LED'S
010602  004537  005232                        JSR     R5,WDELAY               ;DELAY APPROX. 200 MS
010606  000310                                200.
010610                                          MANUAL                          ;IS MANUAL INTERVENTION ALLOWED?
010610  104450                                  TRAP    C$MANI
010612                                          BCOMPLETE       2$              ;BR IF YES
010612  103410                                  BCS     2$
010614  022737  000030  002306                CMP     #30,PASCT               ;IS PASS COUNT >= 30?
010622  003402                                BLE     1$                      ;BR IF YES
010624                                          EXIT    TST
010624  104432                                  TRAP    C$EXIT
010626  000100                                  .WORD   L10060-.
010630  005037  002306          1$:             CLR     PASCT                   ;EXIT TEST
010634  012737  000016  177524  2$:             MOV     #16,LSREG               ;TURN ON THE LED CORRESPONDING TO THE LSB
010642  004537  005232                        JSR     R5,WDELAY               ;DELAY APPROX. 200MS
010646  000310                                200.
010650                                          BREAK                           ;CHECK SUPR FOR CONTROL REQUESTS
010650  104422                                  TRAP    C$BRK
010652  012737  000015  177524                MOV     #15,LSREG               ;TURN ON 2ND LED
010660  004537  005232                        JSR     R5,WDELAY               ;DELAY APPROX 200 MS
010664  000310                                200.
010666                                          BREAK                           ;CHECK SUPERVISOR FOR CONTROL COMMANDS
010666  104422                                  TRAP    C$BRK
010670  012737  000013  177524                MOV     #13,LSREG               ;TURN ON 3RD LED
010676  004537  005232                        JSR     R5,WDELAY               ;DELAY APPROX 200MS
010702  000310                                200.
010704                                          BREAK                           ;CHECK SUPR FOR CONTROL REQUESTS
010704  104422                                  TRAP    C$BRK
010706  012737  000007  177524                MOV     #7,LSREG                ;TURN ON LED CORRESPONDING TO MSB
010714  004537  005232                        JSR     R5,WDELAY               ;DELAY APPROX 200MS
010720  000310                                200.
010722                                          EXIT    TST                     ;EXIT
010722  104432                                  TRAP    C$EXIT
010724  000002                                  .WORD   L10060-.

010726                                          ENDTST
010726                          L10060:
010726  104401                                  TRAP    C$ETST

                                        .SBTTL  TEST 5: ROCKER SWITCHES TEST
                                        ;TEST TO CONFIRM THE ROCKER SWITCH SETTINGS. THIS TEST ASSUMES THAT,
                                        ;IN MANUFACTURING, THE ROCKER SWITCHES ARE ALL IN THE ON POSITION.
                                        ;THIS INCLUDES BOTH E21 AND E15 ON THE BDV11, OR SWITCH E102 ON THE KDF11-B. IN
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                        ;MANUFACTURING, THIS TEST WILL VERIFY THAT ALL SWITCHES CAN BE READ AS ON. IN,
                        ;OTHER ENVIRONMENTS THE OPERATOR MAY SPECIFY WHAT THE SWITCH SETTINGS ARE BEFORE
                        ;THE DIAGNOSTIC IS STARTED (SEE PROGRAM OPTIONS UNDER OPERATING
                        ;INSTRUCTIONS). SWITCHES A1-A8 CORRESPOND TO E15 AND SWITCHES
                        ;B1-B4 TO E21 ON THE BDV11.
010730                          BGNTST

010730                          MANUAL                          ;IS MANUAL INTERVENTION ALLOWED?
010730  104450                  TRAP    C$MANI
010732                          BCOMPLETE       PRTSW           ;BR IF YES
010732  103420                  BCS     PRTSW
010734  005737  002260          TST     KDF11B                  ;IF THIS IS A KDF11-B...
010740  001402                  BEQ     3$
010742  105037  002317          CLRB    SWSET+1                 ;...THEN JUST LOOK AT 8 SWITCHES
010746  023737  002316  177524  3$:     CMP     SWSET,LSREG     ;ALL SWITCHES SHOULD BE ON & BITS 0-11..
                                                                ;...(OR BITS 0-7 IF ON A KDF11-B)...
                                                                ;...SHOULD BE SET.
010754  001404                  BEQ     1$                      ;BR IF SWITCH READINGS ARE OK
010756                          ERRDF   27,,SWERR               ;CANNOT READ SWITCHES PROPERLY
010756  104455                  TRAP    C$ERDF
010760  000033                  .WORD   27
010762  000000                  .WORD   0
010764  011326                  .WORD   SWERR
010766                  1$:     CKLOOP                          ;CHECK FOR LOOP ON ERROR
010766  104406                  TRAP    C$CLP1
010770                          EXIT    TST                     ;EXIT
010770  104432                  TRAP    C$EXIT
010772  000566                  .WORD   L10061-.
010774  013737  177524  011322  PRTSW:  MOV     LSREG,TEMP      ;COPY CONTENTS OF LSREG
011002  005037  011324          CLR     SWCHON                  ;CLEAR MASK
011006  012737  000014  011320  MOV     #14,SWCNT               ;SET SWITCH COUNT
011014  005737  002260          TST     KDF11B                  ;IF THIS IS A KDF11-B...
011020  001403                  BEQ     LP
011022  012737  000010  011320  MOV     #10,SWCNT               ;...THEN JUST TEST FOR 8 SWITCHES
011030  032737  000001  011322  LP:     BIT     #BIT0,TEMP      ;TEST FOR SWITCH SET
011036  001412                  BEQ     2$                      ;BR IF NOT SET
011040  005737  002260          TST     KDF11B                  ;SEE IF WE ARE ON A KDF11B
011044  001404                  BEQ     4$                      ;BRANCH IF NOT
011046  052737  004000  011324  BIS     #BIT11,SWCHON           ;SET CORRESPONDING BIT IN MASK
011054  000403                  BR      2$
011056  052737  100000  011324  4$:     BIS     #BIT15,SWCHON   ;IF SET, THEN SET CORRESPNDING BIT IN MASK
011064  000241                  2$:     CLC                     ;CLEAR C-BIT FOR ROTATE
011066  006037  011324          ROR     SWCHON                  ;ROTATE SWSET
011072  006037  011322          ROR     TEMP                    ;GET READY TO TEST NEXT SWITCH
011076  005337  011320          DEC     SWCNT                   ;DECREMENT SWITCH COUNT
011102  001352                  BNE     LP                      ;LOOP UNTIL ALL SWITCHES HAVE BEEN CHECKED
011104  000241                  CLC                             ;CLEAR C-BIT FOR ROTATE
011106  006037  011324          ROR     SWCHON                  ;ROTATE DATA
011112  006037  011324          ROR     SWCHON                  ;ROTATE DATA
011116  006037  011324          ROR     SWCHON                  ;ROTATE DATA
011122                          PRINTF  #READN,SWCHON           ;PRINT SWITCH SETTINGS
011122  013746  011324          MOV     SWCHON,-(SP)
011126  012746  011360          MOV     #READN,-(SP)
011132  012746  000002          MOV     #2,-(SP)
011136  010600                  MOV     SP,R0
011140  104417                  TRAP    C$PNTF
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2298  011142  062706  000006                  ADD     #6,SP
2299
2300  011146  013702  011324                  MOV     SWCHON,R2               ;COPY SWITCH SETTINGS
2301  011152  012701  000001                  MOV     #1,R1                   ;SET SWITCH NUMBER = 1
2302  011156  032702  000001          TAG1:   BIT     #BIT0,R2                ;IS THIS SWITCH ON?
2303  011162  001411                          BEQ     TAG2                    ;BR IF NO
2304  011164                                  PRINTF  #MESSG1,R1              ;PRINT SWITCH NUMBER
2305  011164  010146                          MOV     R1,-(SP)
2306  011166  012746  011413                  MOV     #MESSG1,-(SP)
2307  011172  012746  000002                  MOV     #2,-(SP)
2308  011176  010600                          MOV     SP,R0
2309  011200  104417                          TRAP    C$PNTF
2310  011202  062706  000006                  ADD     #6,SP
2311  011206  005201          TAG2:   INC     R1                      ;INCREMENT SWITCH NUMBER
2312  011210  006002                          ROR     R2                      ;ROTATE SWITCH REGISTER
2313  011212  022701  000010                  CMP     #10,R1                  ;;FINISHED WITH E15 ON BDV11
2314                                                                          ;;OR E102 ON KDF11-B?
2315  011216  002357                          BGE     TAG1                    ;BR IF NO
2316  011220  005737  002260                  TST     KDF11B                  ;SEE IF WE ARE ON A KDF11-B
2317  011224  001023                          BNE     TAG4A                   ;BRANCH IF YES
2318  011226  012701  000001                  MOV     #1,R1                   ;RESET SWITCH NUMBER FOR E21 ON BDV11
2319  011232  032702  000001          TAG3:   BIT     #BIT0,R2                ;IS THIS SWITCH SET?
2320  011236  001411                          BEQ     TAG4                    ;BR IF NO
2321  011240                                  PRINTF  #MESSG2,R1              ;PRINT SWITCH NUMBER
2322  011240  010146                          MOV     R1,-(SP)
2323  011242  012746  011426                  MOV     #MESSG2,-(SP)
2324  011246  012746  000002                  MOV     #2,-(SP)
2325  011252  010600                          MOV     SP,R0
2326  011254  104417                          TRAP    C$PNTF
2327  011256  062706  000006                  ADD     #6,SP
2328  011262  005201          TAG4:   INC     R1                      ;INCREMENT SWITCH NUMBER
2329  011264  006002                          ROR     R2                      ;ROTATE SWITCH REGISTER
2330  011266  022701  000004                  CMP     #4,R1                   ;FINISHED?
2331  011272  002357                          BGE     TAG3                    ;BR IF NO
2332  011274                          TAG4A:  PRINTF  #NEWLIN
2333  011274  012746  011441                  MOV     #NEWLIN,-(SP)
2334  011300  012746  000001                  MOV     #1,-(SP)
2335  011304  010600                          MOV     SP,R0
2336  011306  104417                          TRAP    C$PNTF
2337  011310  062706  000004                  ADD     #4,SP
2338
2339  011314                                  EXIT TST
2340  011314  104432                          TRAP    C$EXIT
2341  011316  000242                          .WORD   L10061-.
2342
2343  011320  000000          SWCNT:  .WORD   0
2344  011322  000000          TEMP:   .WORD   0
2345  011324  000000          SWCHON: .WORD   0
2346
2347  011326                                  BGNMSG  SWERR
2348  011326                          SWERR::
2349  011326                                  PRINTB  #SERR1,SWSET,LSREG
2350  011326  013746  177524                  MOV     LSREG,-(SP)
2351  011332  013746  002316                  MOV     SWSET,-(SP)
2352  011336  012746  011444                  MOV     #SERR1,-(SP)
2353  011342  012746  000003                  MOV     #3,-(SP)
```

```
 2354  011346  010600                          MOV     SP,R0
 2355  011350  104414                          TRAP    C$PNTB
 2356  011352  062706  000010                  ADD     #10,SP
 2357  011356                                  ENDMSG
 2358  011356                          L10062:
 2359  011356  104423                          TRAP    C$MSG
 2360
 2361  011360  047045  040445  053523  READN:  .ASCIZ  /%N%ASWITCHES ON : %O6%A : /
 2362  011366  052111  044103  051505
 2363  011374  047440  020116  020072
 2364  011402  047445  022466  020101
 2365  011410  020072     000
 2366  011413     045  040501  042045  MESSG1: .ASCIZ  /%AA%D1%A, /
 2367  011420  022461  026101  000040
 2368  011426  040445  022502  030504  MESSG2: .ASCIZ  /%AB%D1%A, /
 2369  011434  040445  020054     000
 2370  011441     045  000116          NEWLIN: .ASCIZ  /%N/
 2371  011444  040445  044504  020104  SERR1:  .ASC I  /%ADID NOT RECOGNIZE ALL SWITCHES AS ON%N/
 2372  011452  047516  020124  042522
 2373  011460  047503  047107  055111
 2374  011466  020105  046101  020114
 2375  011474  053523  052111  044103
 2376  011502  051505  040440  020123
 2377  011510  047117  047045
 2378  011514  040445  054105  042520          .ASCIZ  /%AEXPECTED: %O6%S5%ARECEIVED:%O6%N/
 2379  011522  052103  042105  020072
 2380  011530  047445  022466  032523
 2381  011536  040445  042522  042503
 2382  011544  053111  042105  022472
 2383  011552  033117  047045     000
 2384          011560                          .EVEN
 2385  011560                                  ENDTST
 2386  011560                          L10061:
 2387  011560  104401                          TRAP    C$ETST
 2388
 2389                                  .SBTTL  TEST 6: 2K DIAGNOSTIC ROM
 2390                                  ;++
 2391                                  ;TEST TO PERFORM CHECKSUM AND CHECKWORD VERIFICATION ON THE 2K
 2392                                  ;OF DIAGNOSTIC ROM. IN UNATTENDED MODE, THE ROM WILL BE ADDRESSED
 2393                                  ;FROM 0-2K. IN STAND-ALONE MODE, THE OPERATOR MAY CHANGE THE
 2394                                  ;ADDRESS BY RESPONDING TO QUESTIONS GENERATED ON THE FIRST PASS.
 2395                                  ;--
 2396  011562                          BGNTST
 2397
 2398  011562                          BGNSUB
 2399  011562  104402                  TRAP    C$BSUB
 2400  011564                          MANUAL                          ;MANUAL INTERVENTION OK?
 2401  011564  104450                  TRAP    C$MANI
 2402  011566                          BNCOMPLETE      STRT            ;BR IF NO
 2403  011566  103014                  BCC     STRT
 2404  011570  005737  002304         TST     PASS                    ;FIRST PASS?
 2405  011574  001032                  BNE     RSTRT                   ;BR IF NO
 2406  011576                          GMANIL  DADDR,RSET,1,YES
 2407  011576  104443                  TRAP    C$GMAN
 2408  011600  000404                  BR      10000$
 2409  011602  002334                  .WORD   RSET
```

```
2410  011604  000130                          .WORD   T$CODE
2411  011606  013774                          .WORD   DADDR
2412  011610  000001                          .WORD   1
2413  011612                          10000$:
2414  011612  005737  002334                  TST     RSET                    ;STANDARD JUMPERS?
2415  011616  001404                          BEQ     GETAD                   ;BR IF NO
2416  011620  012737  000400  012564  STRT:   MOV     #400,DRLP               ;STORE STARTING ADDRESS
2417  011626  000415                          BR      RSTRT                   ;GO PERFORM TEST
2418  011630                          GETAD:  GMANID  LOADR,STORE,D,-1,0,24,NO
2419  011630  104443                          TRAP    C$GMAN
2420  011632  000406                          BR      10001$
2421  011634  002320                          .WORD   STORE
2422  011636  000042                          .WORD   T$CODE
2423  011640  003072                          .WORD   LOADR
2424  011642  177777                          .WORD   -1
2425  011644  000000                          .WORD   T$LOLIM
2426  011646  000024                          .WORD   T$HILIM
2427  011650                          10001$:
2428  011650  004737  005142                  JSR     PC,SETADR               ;GET STARTING ADDRESS
2429  011654  013737  002270  012564          MOV     LOPAG,DRLP              ;STORE STARTING ADDRESS
2430  011662  013737  012564  002262  RSTRT:  MOV     DRLP,VRTPCR             ;SET UP PCR
2431  011670  013737  002262  177520          MOV     VRTPCR,PCR
2432  011676  012737  000010  002272  DRTST:  MOV     #10,COUNTR              ;SET NUMBER OF CHECKWORDS TO CHECK
2433  011704  012705  002160                  MOV     #SFPTBL,R5              ;LOCATION OF CHECKWORDS
2434  011710  012737  000001  002276          MOV     #1,RFLAG                ;INDICATE ROM
2435  011716  005037  002264          DLOOP:  CLR     BCF                     ;SIGNAL LOW BYTES ARE BEING CHECKED
2436  011722  122737  177777  173774          CMPB    #-1,@#173774            ;DOES THE ROM EXIST?
2437  011730  001007                          BNE     1$                      ;BR IF YES
2438  011732                                  ERRDF   30,,DERR1               ;LOW BYTE DIAGNOSTIC ROM NOT FOUND
2439  011732  104455                          TRAP    C$ERDF
2440  011734  000036                          .WORD   30
2441  011736  000000                          .WORD   0
2442  011740  012566                          .WORD   DERR1
2443  011742                                  CKLOOP                          ;LOOP ON ERROR IF SELECTED
2444  011742  104406                          TRAP    C$CLP1
2445  011744                                  EXIT    TST                     ;EXIT TEST,ROM NOT FOUND
2446  011744  104432                          TRAP    C$EXIT
2447  011746  002050                          .WORD   L10063-.
2448  011750                          1$:     CKLOOP                          ;CHECK FOR LOOP ON ERROR
2449  011750  104406                          TRAP    C$CLP1
2450  011752  004737  004300                  JSR     PC,CHKSUM               ;COMPUTE THE ACTUAL CHECKSUM
2451  011756  113737  173776  002300          MOVB    @#173776,EXPSUM         ;GET THE STORED CHECKSUM
2452  011764  063737  002302  002300          ADD     ACTSUM,EXPSUM           ;ADD THE EXPECTED AND ACTUAL CHECKSUMS
2453  011772  105737  002300                  TSTB    EXPSUM                  ;BYTE RESULT = 0?
2454  011776  001404                          BEQ     2$                      ;BR IF YES
2455  012000                                  ERRDF   31,,DERR2               ;CHECKSUM ERROR IN DIAGNOSTIC ROM
2456  012000  104455                          TRAP    C$ERDF
2457  012002  000037                          .WORD   31
2458  012004  000000                          .WORD   0
2459  012006  012614                          .WORD   DERR2
2460  012010                          2$:     CKLOOP                          ;CHECK FOR LOOP ON ERROR
2461  012010  104406                          TRAP    C$CLP1
2462  012012                                  ENDSUB
2463  012012                          L10064:
2464  012012  104403                          TRAP    C$ESUB
2465
```

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012014                                  BGNSUB
012014  104402                          TRAP    C$BSUB
012016  012737  000001  002264          MOV     #1,BCF                  ;SET BCF TO DENOTE HIGH BYTES
012024  122737  177777  173775          CMPB    #-1,@#173775            ;DOES THE ROM EXIST?
012032  001007                          BNE     3$                      ;BR IF YES
012034                                  ERRDF   32,,DERR3               ;HIGH BYTE DIAGNOSTIC ROM NOT FOUND
012034  104455                          TRAP    C$ERDF
012036  000040                          .WORD   32
012040  000000                          .WORD   0
012042  012642                          .WORD   DERR3
012044                                  CKLOOP                          ;LOOP ON ERROR IF SELECTED
012044  104406                          TRAP    C$CLP1
012046                                  EXIT    TST                     ;EXIT TEST, ROM NOT FOUND
012046  104432                          TRAP    C$EXIT
012050  001746                          .WORD   L10063-.
012052                          3$:     CKLOOP                          ;CHECK FOR LOOP ON ERROR
012052  104406                          TRAP    C$CLP1
012054  004737  004300                  JSR     PC,CHKSUM               ;COMPUTE THE ACTUAL CHECKSUM
012060  113737  173777  002300          MOVB    @#173777,EXPSUM         ;GET EXPECTED CHECKSUM
012066  063737  002302  002300          ADD     ACTSUM,EXPSUM           ;ADD THE EXPECTED AND ACTUAL CHECKSUMS
012074  105737  002300                  TSTB    EXPSUM                  ;BYTE RESULT = 0?
012100  001404                          BEQ     4$                      ;BR IF YES
012102                                  ERRDF   33,,DERR4               ;CHECKSUM ERROR IN DIAGNOSTIC ROM
012102  104455                          TRAP    C$ERDF
012104  000041                          .WORD   33
012106  000000                          .WORD   0
012110  012670                          .WORD   DERR4
012112                          4$:     CKLOOP
012112  104406                          TRAP    C$CLP1
012114                                  ENDSUB
012114                          L10065:
012114  104403                          TRAP    C$ESUB

012116                                  BGNSUB
012116  104402                          TRAP    C$BSUB
012120  062737  001002  002262          ADD     #1002,VRTPCR            ;NEXT PAGE IN PCR
012126  013737  002262  177520          MOV     VRTPCR,PCR
012134  005337  002272                  DEC     COUNTR                  ;DECREMENT CHECKWORD COUNT
012140  001266                          BNE     DLOOP                   ;LOOP UNTIL ALL 20 PAGES HAVE BEEN CHECKED
012142                                  ENDSUB
012142                          L10066:
012142  104403                          TRAP    C$ESUB


                                        ;GET THE CHECKWORDS FROM THE ROMS AND PUT INTO TABLE 'CHKWRD'
012144                                  BGNSUB
012144  104402                          TRAP    C$BSUB
012146  012702  012744                  MOV     #CHKWRD,R2
012152  012737  000001  002262          MOV     #1,VRTPCR
012160  012737  000010  002272          MOV     #10,COUNTR
012166  013737  002262  177520  5$:     MOV     VRTPCR,PCR
012174  013722  173376                  MOV     @#173376,(R2)+
012200  062737  000002  002262          ADD     #2,VRTPCR
012206  005337  002272                  DEC     COUNTR
012212  001365                          BNE     5$
```

```
012214                                       ENDSUB
012214                              L10067:
012214  104403                               TRAP    C$ESUB


                                             ;TRY TO IDENTIFY THE ROM CHIPS
012216                                       BGNSUB
012216  104402                               TRAP    C$BSUB
012220  013701  012764                       MOV     TABLES,R1
012224  012737  002200  012766               MOV     #SFPTBL+20,PNTR
012232  020127  000001          6$:          CMP     R1,#1               ;CHECK IF IS THE LAST TABLE
012236  001455                               BEQ     119$                ;YES, GO CKECK WITH OPERATOR'S INPUT
012240  013700  012766                       MOV     PNTR,R0
012244  012702  012744                       MOV     #CHKWRD,R2
012250  012737  000010  002272               MOV     #10,COUNTR
012256  022022                  7$:          CMP     (R0)+,(R2)+         ;ARE THE CHECKWORDS EQUAL?
012260  001071                               BNE     9$                  ;BRANCH IF NOT
012262  005337  002272                       DEC     COUNTR              ;DONE CHECKING THIS TABLE?
012266  001373                               BNE     7$                  ;BRANCH IF NOT
012270  020127  000004                       CMP     R1,#4           ;DID THE FIRST TABLE OF CHECKWORDS COMPARE?
012274  001011                               BNE     8$              ;BRANCH IF NOT
012276                                       PRINTF  #TABL1              ;PRINT OUT ROM CHIP NUMBERS
012276  012746  013306                       MOV     #TABL1,-(SP)
012302  012746  000001                       MOV     #1,-(SP)
012306  010600                               MOV     SP,R0
012310  104417                               TRAP    C$PNTF
012312  062706  000004                       ADD     #4,SP
012316  000517                               BR      11$
012320  020127  000003          8$:          CMP     R1,#3           ;DID THE SECOND TABLE OF CHECKWORDS COMPARE?
012324  001011                               BNE     20$             ;BRANCH IF NOT
012326                                       PRINTF  #TABL2              ;PRINT OUT ROM CHIP NUMBERS
012326  012746  013405                       MOV     #TABL2,-(SP)
012332  012746  000001                       MOV     #1,-(SP)
012336  010600                               MOV     SP,R0
012340  104417                               TRAP    C$PNTF
012342  062706  000004                       ADD     #4,SP
012346  000503                               BR      11$
012350                          20$:         PRINTF  #TABL3
012350  012746  013504                       MOV     #TABL3,-(SP)
012354  012746  000001                       MOV     #1,-(SP)
012360  010600                               MOV     SP,R0
012362  104417                               TRAP    C$PNTF
012364  062706  000004                       ADD     #4,SP
012370  000472                               BR      11$
012372  012700  002160          119$:        MOV     #SFPTBL,R0      ;PREPARE TO CHECK INPUT TABLE
012376  012702  012744                       MOV     #CHKWRD,R2      ;STORE ADDRESS OF INPUT TABLE
012402  012737  000010  002272               MOV     #10,COUNTR      ;DO FOR 8 CHECKWORDS
012410  022022                  121$:        CMP     (R0)+,(R2)+     ;COMPARE INPUT AND FOUND CHWS
012412  001014                               BNE     9$              ;IF NOT, BRANCH
012414  005337  002272                       DEC     COUNTR          ;ALL DONE?
012420  001373                               BNE     121$            ;IF NOT, BRANCH TO CONTINUE
012422                                       PRINTF  #OPTBL          ;PRINT MSG TO INDICATE IT'S OPERATOR'S CHKWRD
012422  012746  013226                       MOV     #OPTBL,-(SP)
012426  012746  000001                       MOV     #1,-(SP)
012432  010600                               MOV     SP,R0
012434  104417                               TRAP    C$PNTF
```

```
2578  012436  062706  000004                  ADD     #4,SP
2579  012442  000445                          BR      11$                     ;IF DONE, BRANCH TO EXIT
2580  012444  062737  000020  012766  9$:     ADD     #20,PNTR
2581  012452  005301                          DEC     R1                              ;ANY MORE TABLES TO CHECK?
2582  012454  001266                          BNE     6$                              ;BRANCH IF YES
2583  012456                                  MANUAL                          ;APT MODE?
2584  012456  104450                          TRAP    C$MANI
2585  012460                                  BCOMPLETE       100$                    ;PRINT UNKNOWN
2586  012460  103405                          BCS     100$
2587  012462                                  ERRDF   34,,DERR5                       ;CHECKWORD ERROR
2588  012462  104455                          TRAP    C$ERDF
2589  012464  000042                          .WORD   34
2590  012466  000000                          .WORD   0
2591  012470  012716                          .WORD   DERR5
2592  012472                                  CKLOOP                          ;ROMS DO NOT MATCH
2593  012472  104406                          TRAP    C$CLP1
2594  012474                          100$:   PRINTF  #UNKNWN                 ;PRINT OUT UNIDENTIFIED ROM CHIPS CHECKWORDS
2595  012474  012746  013603                  MOV     #UNKNWN,-(SP)
2596  012500  012746  000001                  MOV     #1,-(SP)
2597  012504  010600                          MOV     SP,R0
2598  012506  104417                          TRAP    C$PNTF
2599  012510  062706  000004                  ADD     #4,SP
2600  012514  012737  000010  002272          MOV     #10,COUNTR
2601  012522  012701  012744                  MOV     #CHKWRD,R1
2602  012526                          10$:    PRINTF  #CHECKW,(R1)+
2603  012526  012146                          MOV     (R1)+,-(SP)
2604  012530  012746  013667                  MOV     #CHECKW,-(SP)
2605  012534  012746  000002                  MOV     #2,-(SP)
2606  012540  010600                          MOV     SP,R0
2607  012542  104417                          TRAP    C$PNTF
2608  012544  062706  000006                  ADD     #6,SP
2609  012550  005337  002272                  DEC     COUNTR
2610  012554  001364                          BNE     10$
2611  012556                          11$:    ENDSUB
2612  012556                          L10070:
2613  012556  104403                          TRAP    C$ESUB
2614
2615
2616
2617  012560                                  EXIT    TST
2618  012560  104432                          TRAP    C$EXIT
2619  012562  001234                          .WORD   L10063-.
2620
2621  012564  000000                          DRLP:   .WORD   0
2622
2623  012566                          BGNMSG  DERR1
2624  012566                          DERR1::
2625  012566                          PRINTB  #LRAERR,#NODR
2626  012566  012746  013750                  MOV     #NODR,-(SP)
2627  012572  012746  012770                  MOV     #LRAERR,-(SP)
2628  012576  012746  000002                  MOV     #2,-(SP)
2629  012602  010600                          MOV     SP,R0
2630  012604  104414                          TRAP    C$PNTB
2631  012606  062706  000006                  ADD     #6,SP
2632  012612                          ENDMSG
2633  012612                          L10071:
```

```
 2634  012612  104423                          TRAP    C$MSG
 2635
 2636  012614                          BGNMSG  DERR2
 2637  012614                          DERR2::
 2638  012614                          PRINTB  #LOWROM,#CKERR
 2639  012614  012746  002722                  MOV     #CKERR,-(SP)
 2640  012620  012746  013046                  MOV     #LOWROM,-(SP)
 2641  012624  012746  000002                  MOV     #2,-(SP)
 2642  012630  010600                          MOV     SP,R0
 2643  012632  104414                          TRAP    C$PNTB
 2644  012634  062706  000006                  ADD     #6,SP
 2645  012640                          ENDMSG
 2646  012640                          L10072:
 2647  012640  104423                          TRAP    C$MSG
 2648
 2649  012642                          BGNMSG  DERR3
 2650  012642                          DERR3::
 2651  012642                          PRINTB  #HRAERR,#NODR
 2652  012642  012746  013750                  MOV     #NODR,-(SP)
 2653  012646  012746  013106                  MOV     #HRAERR,-(SP)
 2654  012652  012746  000002                  MOV     #2,-(SP)
 2655  012656  010600                          MOV     SP,R0
 2656  012660  104414                          TRAP    C$PNTB
 2657  012662  062706  000006                  ADD     #6,SP
 2658  012666                          ENDMSG
 2659  012666                          L10073:
 2660  012666  104423                          TRAP    C$MSG
 2661
 2662  012670                          BGNMSG  DERR4
 2663  012670                          DERR4::
 2664  012670                          PRINTB  #HIROM,#CKERR
 2665  012670  012746  002722                  MOV     #CKERR,-(SP)
 2666  012674  012746  013165                  MOV     #HIROM,-(SP)
 2667  012700  012746  000002                  MOV     #2,-(SP)
 2668  012704  010600                          MOV     SP,R0
 2669  012706  104414                          TRAP    C$PNTB
 2670  012710  062706  000006                  ADD     #6,SP
 2671  012714                          ENDMSG
 2672  012714                          L10074:
 2673  012714  104423                          TRAP    C$MSG
 2674
 2675  012716                          BGNMSG  DERR5
 2676  012716                          DERR5::
 2677  012716                          PRINTB  #MISTAK
 2678  012716  012746  013676                  MOV     #MISTAK,-(SP)
 2679  012722  012746  000001                  MOV     #1,-(SP)
 2680  012726  010600                          MOV     SP,R0
 2681  012730  104414                          TRAP    C$PNTB
 2682  012732  062706  000004                  ADD     #4,SP
 2683  012736  004737  004524          JSR     PC,VIRTAD
 2684  012742                          ENDMSG
 2685  012742                          L10075:
 2686  012742  104423                          TRAP    C$MSG
 2687
 2688  012744  000010                  CHKWRD: .BLKW   10              ;TABLE TO STORE THE CHECKWORDS
 2689
```

```
2690  012764  000004                  TABLES: .WORD   4               ;NUMBER OF CHECKWORD TABLES
2691  012766  000000                  PNTR:   .WORD   0               ;WILL BE USED AS A POINTER
2692
2693
2694  012770  052045  047045  040445  LRAERR: .ASCIZ  /%T%N%ACANNOT ACCESS LOW BYTE DIAGNOSTIC ROM%N/
2695  012776  040503  047116  052117
2696  013004  040440  041503  051505
2697  013012  020123  047514  020127
2698  013020  054502  042524  042040
2699  013026  040511  047107  051517
2700  013034  044524  020103  047522
2701  013042  022515  000116
2702
2703  013046  052045  047045  040445  LOWROM: .ASCIZ  /%T%N%ALOW BYTE DIAGNOSTIC ROM%N/
2704  013054  047514  020127  054502
2705  013062  042524  042040  040511
2706  013070  047107  051517  044524
2707  013076  020103  047522  022515
2708  013104  000116
2709
2710  013106  052045  047045  040445  HRAERR: .ASCIZ  /%T%N%ACANNOT ACCESS HIGH BYTE DIAGNOSTIC ROM%N/
2711  013114  040503  047116  052117
2712  013122  040440  041503  051505
2713  013130  020123  044510  044107
2714  013136  041040  052131  020105
2715  013144  044504  043501  047516
2716  013152  052123  041511  051040
2717  013160  046517  047045     000
2718
2719  013165     045  022524  022516  HIROM:  .ASCIZ  /%T%N%AHIGH BYTE DIAGNOSTIC ROM%N/
2720  013172  044101  043511  020110
2721  013200  054502  042524  042040
2722  013206  040511  047107  051517
2723  013214  044524  020103  047522
2724  013222  022515  000116
2725
2726  013226  047045  040445  044103  OPTBL:  .ASCIZ  /%N%ACHECKWORDS CORRESPOND TO OPERATOR'S INPUT%N/
2727  013234  041505  053513  051117
2728  013242  051504  041440  051117
2729  013250  042522  050123  047117
2730  013256  020104  047524  047440
2731  013264  042520  040522  047524
2732  013272  023522  020123  047111
2733  013300  052520  022524  000116
2734
2735  013306  047045  040445  044103  TABL1:  .ASCIZ  /%N%ACHECKWORDS CORRESPOND TO ROM CHIPS #23-045E2 & #23-046E2%N/
2736  013314  041505  053513  051117
2737  013322  051504  041440  051117
2738  013330  042522  050123  047117
2739  013336  020104  047524  051040
2740  013344  046517  041440  044510
2741  013352  051520  021440  031462
2742  013360  030055  032464  031105
2743  013366  023040  021440  031462
2744  013374  030055  033064  031105
2745  013402  047045     000
```

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2746
2747  013405     045  022516  041501  TABL2:  .ASCIZ  /%N%ACHECKWORDS CORRESPOND TO ROM CHIPS #23-010E2 & #23-011E2%N/
2748  013412  042510  045503  047527
2749  013420  042122  020123  047503
2750  013426  051122  051505  047520
2751  013434  042116  052040  020117
2752  013442  047522  020115  044103
2753  013450  050111  020123  031043
2754  013456  026463  030460  042460
2755  013464  020062  020046  031043
2756  013472  026463  030460  042461
2757  013500  022462  000116
2758
2759  013504  047045  040445  044103  TABL3:  .ASCIZ  /%N%ACHECKWORDS CORRESPOND TO ROM CHIPS #23-339E2 & #23-340E2%N/
2760  013512  041505  053513  051117
2761  013520  051504  041440  051117
2762  013526  042522  050123  047117
2763  013534  020104  047524  051040
2764  013542  046517  041440  044510
2765  013550  051520  021440  031462
2766  013556  031455  034463  031105
2767  013564  023040  021440  031462
2768  013572  031455  030064  031105
2769  013600  047045     000
2770
2771  013603     045  022516  052501  UNKNWN: .ASCIZ  /%N%AUNKNOWN ROM CHIPS FOUND.  THEIR CHECKWORDS ARE:/
2772  013610  045516  047516  047127
2773  013616  051040  046517  041440
2774  013624  044510  051520  043040
2775  013632  052517  042116  020056
2776  013640  052040  042510  051111
2777  013646  041440  042510  045503
2778  013654  047527  042122  020123
2779  013662  051101  035105     000
2780
2781  013667     045  022516  030517  CHECKW: .ASCIZ  /%N%012/
2782  013674  000062
2783
2784  013676  040445  047111  047503  MISTAK: .ASCIZ  /%AINCORRECT CHECKWORD IN DIAGNOSTIC ROM%N/
2785  013704  051122  041505  020124
2786  013712  044103  041505  053513
2787  013720  051117  020104  047111
2788  013726  042040  040511  047107
2789  013734  051517  044524  020103
2790  013742  047522  022515  000116
2791
2792  013750  047516  026516  054105  NODR:   .ASCIZ  /NON-EXISTENT MEMORY/
2793  013756  051511  042524  052116
2794  013764  046440  046505  051117
2795  013772  000131
2796
2797  013774  052123  047101  040504  DADDR:  .ASCIZ  /STANDARD JUMPERS/
2798  014002  042122  045040  046525
2799  014010  042520  051522     000
2800
2801          014016                          .EVEN
```

```
                                        ENDTST
                                L10063:
                                        TRAP    C$ETST
                                .SBTTL  TEST 7: TEST ALL ADDITIONAL MEMORY
                                ;++
                                ;TEST TO LOCATE AND VERIFY CHECKSUMS IN ALL RESIDENT   MORY
                                ;ON A PAGE BASIS. THERE ARE FOUR STORAGE AREAS ASSOCI  ED
                                ;WITH THIS TEST WHICH HOLD THE CHECKWORDS OF ALL THE MEMORY
                                ;THAT IS TO BE TESTED. THESE TABLES WILL HAVE DEFAULT VALUES
                                ;ONLY IF THE ASSOCIATED MEMORY CHIP IS A STANDARD COMPONENT
                                ;ON THE BOARD. IF NO DEFAULT VALUES EXIST, THE OPERATOR MUST
                                ;INPUT THE CHECKWORDS AS LISTED ON THE PRINT SET. THE MEMORY
                                ;WILL BE TESTED IN THE FOLLOWING LOCATIONS BY DEFAULT:
                                ;
                                ;       EXPANDABLE DIAGNOSTIC ROM       2-4K
                                ;       EPROM IN SOCKETS                4-6K
                                ;       SYSTEM ROM                      16-32K
                                ;       SYSTEM EPROM                    16-24K
                                ;
                                ;THE TEST WILL FIRST VERIFY THE CHECKSUMS IN ALL RESIDENT ROM,
                                ;THEN COMPARE THE ACTUAL CHECKWORDS. ERROR INFORMATION WILL
                                ;INCLUDE THE SPECIFIC TYPE OF ERROR THAT OCCURRS, THE VIRTUAL
                                ;ADDRESS, AND WHETHER IT WAS THE HIGH BYTE OR LOW BYTE ROM/EPROM.
                                ;THIS INFORMATION SHOULD ALLOW A KNOWLEDGEABLE OPERATOR TO ISOLATE
                                ;THE ERROR DOWN TO A SINGLE ROM/EPROM WITH THE AID OF THE
                                ;ADDRESS MAP IN THE PRINT SET.
                                ;--
                                        BGNTST

                                        BGNSUB
                                        TRAP    C$BSUB
                                        TST     KDF11B                  ;IF THIS IS A KDF11-B...
                                        BEQ     1$
                                EXIT    TST                             ;...THEN SKIP THIS TEST
                                        TRAP    C$EXIT
                                        .WORD   L10076-.
                                1$:     MANUAL                          ;UNDER APT?
                                        TRAP    C$MANI
                                        BNCOMPLETE      DFLTST          ;SKIP TEST IF YES
                                        BCC     DFLTST
                                        CLR     ADDON                   ;RESTORE DEFAULT
                                        TST     PASS                    ;FIRST PASS?
                                        BEQ     GET                     ;BR IF YES
                                        TST     LOD1                    ;EXPANDED DIAGNOSTIC ROM?
                                        BNE     LD1                     ;BR IF YES
                                        TST     LOD2                    ;EPROM IN SOCKETS?
                                        BEQ     P1                      ;BR IF NO
                                        JMP     LD2                     ;TEST EPROM
                                P1:     TST     LOD3                    ;SYSTEM ROM ?
                                        BEQ     P2                      ;BR IF NO
                                        JMP     LD3                     ;TEST ROM
                                P2:     TST     LOD4                    ;SYSTEM EPROM?
                                        BEQ     DFLTST                  ;EXIT IF NO
                                        JMP     LD4                     ;TEST EPROM
                                GET:    GMANIL  EXEC,ADDON,1,YES
                                        TRAP    C$GMAN
```

```
2858  014120  000404                    BR      10000$
2859  014122  016114                    .WORD   ADDON
2860  014124  000130                    .WORD   T$CODE
2861  014126  016455                    .WORD   EXEC
2862  014130  000001                    .WORD   1
2863  014132                    10000$:
2864  014132  005737  016114            TST     ADDON                   ;ADDITIONAL MEMORY?
2865  014136  001452                    BEQ     DFLTST                  ;BR IF NO
2866  014140                    DIAIN:  GMANIL  EXPND,RESPND,1,NO
2867  014140  104443                    TRAP    C$GMAN
2868  014142  000404                    BR      10001$
2869  014144  002332                    .WORD   RESPND
2870  014146  000120                    .WORD   T$CODE
2871  014150  016504                    .WORD   EXPND
2872  014152  000001                    .WORD   1
2873  014154                    10001$:
2874  014154  005737  002332            TST     RESPND                  ;EXPANDED DIAGNOSTIC ROM?
2875  014160  001045                    BNE     EXPROM                  ;BR IF YES
2876  014162                    EPRIN:  GMANIL  EPRM,RESPND,1,NO
2877  014162  104443                    TRAP    C$GMAN
2878  014164  000404                    BR      10002$
2879  014166  002332                    .WORD   RESPND
2880  014170  000120                    .WORD   T$CODE
2881  014172  016534                    .WORD   EPRM
2882  014174  000001                    .WORD   1
2883  014176                    10002$:
2884  014176  005737  002332            TST     RESPND                  ;EPROM IN SOCKETS?
2885  014202  001402                    BEQ     SYSRIN                  ;BR IF NO
2886  014204  000137  014630            JMP     EPRMT                   ;JUMP TO ACCEPT INPUT
2887  014210                    SYSRIN: GMANIL  SYSR,RESPND,1,NO
2888  014210  104443                    TRAP    C$GMAN
2889  014212  000404                    BR      10003$
2890  014214  002332                    .WORD   RESPND
2891  014216  000120                    .WORD   T$CODE
2892  014220  016555                    .WORD   SYSR
2893  014222  000001                    .WORD   1
2894  014224                    10003$:
2895  014224  005737  002332            TST     RESPND                  ;SYSTEM ROM?
2896  014230  001402                    BEQ     SYSEIN                  ;BR IF NO
2897  014232  000137  015176            JMP     SYSRT                   ;INPUT CHECKWORDS
2898  014236                    SYSEIN: GMANIL  SYSE,RESPND,1,NO
2899  014236  104443                    TRAP    C$GMAN
2900  014240  000404                    BR      10004$
2901  014242  002332                    .WORD   RESPND
2902  014244  000120                    .WORD   T$CODE
2903  014246  016570                    .WORD   SYSE
2904  014250  000001                    .WORD   1
2905  014252                    10004$:
2906  014252  005737  002332            TST     RESPND                  ;SYSTEM EPROM?
2907  014256  001402                    BEQ     DFLTST                  ;BR IF NO
2908  014260  000137  015542            JMP     SYSET                   ;INPUT CHECKWORDS
2909  014264                    DFLTST: EXIT    TST                     ;NO ADDTL. MEMORY -- EXIT
2910  014264  104432                    TRAP    C$EXIT
2911  014266  002446                    .WORD   L10076-.
2912  014270                            ENDSUB
2913  014270                    L10077:
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014270  104403                                  TRAP    C$ESUB
014272                                          BGNSUB
014272  104402                                  TRAP    C$BSUB
014274  005037  002344                  EXPROM: CLR     ERRFLG                  ;CLEAR ERROR FLAG
014300  012737  000010  002322                  MOV     #10,WORDCT              ;COUNT 8 CHECKWORDS
014306  012702  002350                          MOV     #EXPDIA,R2              ;POINTER TO STORAGE TABLE
014312  004737  004344                          JSR     PC,INPUT                ;INPUT CHECKWORDS
014316                                          GMANIL  EXADD,ANSR,1,YES
014316  104443                                  TRAP    C$GMAN
014320  000404                                  BR      10000$
014322  002274                                  .WORD   ANSR
014324  000130                                  .WORD   T$CODE
014326  016605                                  .WORD   EXADD
014330  000001                                  .WORD   1
014332                                  10000$:
014332  005737  002274                          TST     ANSR                    ;STANDARD MEMORY RANGE?
014336  001020                                  BNE     1$                      ;BR IF YES
014340  005237  002274                          INC     ANSR                    ;RESTORE DEFAULT VALUE
014344                                          GMANID  LOADR,STORE,D,-1,0,30,NO
014344  104443                                  TRAP    C$GMAN
014346  000406                                  BR      10001$
014350  002320                                  .WORD   STORE
014352  000042                                  .WORD   T$CODE
014354  003072                                  .WORD   LOADR
014356  177777                                  .WORD   -1
014360  000000                                  .WORD   T$LOLIM
014362  000030                                  .WORD   T$HILIM
014364                                  10001$:
014364  004737  005142                          JSR     PC,SETADR               ;GET FIRST PAGE ADDRESS
014370  013737  002270  016120                  MOV     LOPAG,LOD1              ;STORE LOW PAGE NO.
014376  000403                                  BR      LD1                     ;SKIP NEXT INSTRUCTION
014400  012737  010420  016120  1$:             MOV     #010420,LOD1            ;STANDARD PAGE = 20,21  2-4K RANGE
014406  013737  016120  177520  LD1:            MOV     LOD1,PCR                ;LOAD STARTING PAGE
014414  012737  000001  002276                  MOV     #1,RFLAG                ;INDICATE ROM
014422  012703  002350                          MOV     #EXPDIA,R3              ;POINTER TO CHECKWORDS
014426  012737  000010  002272                  MOV     #10,COUNTR              ;PAGE COUNT
014434  012337  002326                  EXPTST: MOV     (R3)+,CKWD              ;GET CHECKWORD FOR THIS PAGE
014440  004737  004664                          JSR     PC,MEMTST               ;TEST MEMORY
014444  005737  002266                          TST     REAL                    ;DOES THE MEMORY EXIST?
014450  001457                                  BEQ     E3                      ;BR IF NO
014452  005737  002344                          TST     ERRFLG                  ;ANY OTHER ERRORS?
014456  001421                                  BEQ     NOERR                   ;BR IF NO
014460  004737  004524                          JSR     PC,VIRTAD               ;GET ADDRESS OF ERROR
014464  005737  002264                          TST     BCF                     ;LOW BYTE PAGE?
014470  001004                                  BNE     HIGH                    ;BR IF NO
014472  012737  002765  002342                  MOV     #LOBYT,BYTLOC           ;SET POINTER FOR ERROR MSG.
014500  000403                                  BR      DATOUT                  ;PRINT ERROR MESSAGE
014502  012737  003027  002342  HIGH:           MOV     #HIBYT,BYTLOC           ;POINTER FOR ERROR MSG.
014510  022737  000001  002344  DATOU1:         CMP     #1,ERRFLG               ;CHECKSUM ERROR?
014516  001420                                  BEQ     E1                      ;BR IF YES
014520  000425                                  BR      E2                      ;ELSE CHECKWORD ERROR
014522  062737  001002  177520  NOERR:          ADD     #1002,PCR               ;ADJUST PCR
014530  005337  002272                          DEC     COUNTR                  ;DEC PAGE COUNT
014534  001337                                  BNE     EXPTST                  ;LOOP UNTIL ALL PAGES ARE TESTED
```

```
 2970  014536  005737  002304          MORE:   TST     PASS                    ;FIRST PASS?
 2971  014542  001002                          BNE     1$                      ;BR IF NO
 2972  014544  000137  014162                  JMP     EPRIN                   ;TEST ANY ADDITIONAL MEMORY
 2973  014550  000137  014072          1$:     JMP     P1                      ;FIND ANY ADDITIONAL MEMORY
 2974  014554                                  EXIT    SUB                     ;END OF SUBTEST
 2975  014554  104432                          TRAP    C$EXIT
 2976  014556  000046                          .WORD   L10100-.
 2977  014560                          E1:     ERRDF   35,EXPND,CKSME
 2978  014560  104455                          TRAP    C$ERDF
 2979  014562  000043                          .WORD   35
 2980  014564  016504                          .WORD   EXPND
 2981  014566  016132                          .WORD   CKSME
 2982  014570                                  CKLOOP
 2983  014570  104406                          TRAP    C$CLP1
 2984  014572  000761                          BR      MORE
 2985  014574                          E2:     ERRDF   36,EXPND,CWKDE
 2986  014574  104455                          TRAP    C$ERDF
 2987  014576  000044                          .WORD   36
 2988  014600  016504                          .WORD   EXPND
 2989  014602  016170                          .WORD   CWKDE
 2990  014604                                  CKLOOP
 2991  014604  104406                          TRAP    C$CLP1
 2992  014606  000753                          BR      MORE
 2993  014610                          E3:     ERRDF   37,EXPND,NONXT
 2994  014610  104455                          TRAP    C$ERDF
 2995  014612  000045                          .WORD   37
 2996  014614  016504                          .WORD   EXPND
 2997  014616  016252                          .WORD   NONXT
 2998  014620                                  CKLOOP
 2999  014620  104406                          TRAP    C$CLP1
 3000  014622  000745                          BR      MORE
 3001  014624                                  ENDSUB
 3002  014624                          L10100:
 3003  014624  104403                          TRAP    C$ESUB
 3004
 3005  014626                                  BGNSUB
 3006  014626  104402                          TRAP    C$BSUB
 3007  014630  005037  002344          EPRMT:  CLR     ERRFLG                  ;CLEAR ERROR FLAG
 3008  014634                                  GMANID  RWDCT,WORD,D,-1,1,10,NO
 3009  014634  104443                          TRAP    C$GMAN
 3010  014636  000406                          BR      10000$
 3011  014640  016130                          .WORD   WORD
 3012  014642  000042                          .WORD   T$CODE
 3013  014644  016413                          .WORD   RWDCT
 3014  014646  177777                          .WORD   -1
 3015  014650  000001                          .WORD   T$LOLIM
 3016  014652  000010                          .WORD   T$HILIM
 3017  014654                          10000$:
 3018  014654  013737  016130  002322          MOV     WORD,WORDCT             ;STORE CHECKWORD COUNT
 3019  014662  012702  002370                  MOV     #EPROM,R2               ;POINTER TO STORAGE TABLE
 3020  014666  004737  004344                  JSR     PC,INPUT                ;INPUT CHECKWORDS
 3021  014672                                  GMANIL  EPADD,ANSR,1,YES
 3022  014672  104443                          TRAP    C$GMAN
 3023  014674  000404                          BR      10001$
 3024  014676  002274                          .WORD   ANSR
 3025  014700  000130                          .WORD   T$CODE
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3026  014702  016633                        .WORD   EPADD
3027  014704  000001                        .WORD   1
3028  014706                        10001$:
3029  014706  005737  002274                TST     ANSR                    ;STANDARD MEMORY RANGE?
3030  014712  001020                        BNE     1$                      ;BR IF YES
3031  014714  005237  002274                INC     ANSR                    ;RESTORE DEFAULT
3032  014720                                GMANID  LOADR,STORE,D,-1,0,30,NO
3033  014720  104443                        TRAP    C$GMAN
3034  014722  000406                        BR      10002$
3035  014724  002320                        .WORD   STORE
3036  014726  000042                        .WORD   T$CODE
3037  014730  003072                        .WORD   LOADR
3038  014732  177777                        .WORD   -1
3039  014734  000000                        .WORD   T$LOLIM
3040  014736  000030                        .WORD   T$HILIM
3041  014740                        10002$:
3042  014740  004737  005142                JSR     PC,SETADR               ;GET FIRST PAGE ADDRESS
3043  014744  013737  002270  016122        MOV     LOPAG,LOD2              ;STORE LOW PAGE NO.
3044  014752  000403                        BR      LD2                     ;SKIP NEXT INSTRUCTION
3045  014754  012737  020440  016122  1$:   MOV     #020440,LOD2            ;STANDARD PAGE = 40,41  4-6K RANGE
3046  014762  013737  016122  177520  LD2:  MOV     LOD2,PCR                ;LOAD STARTING ADDRESS
3047  014770  013737  016130  002272        MOV     WORD,COUNTR             ;PAGE COUNT
3048  014776  005037  002276                CLR     RFLAG                   ;INDICATE EPROM
3049  015002  012703  002370                MOV     #EPROM,R3               ;POINT TO CHECKWORDS
3050  015006  012337  002326        EPRTST: MOV     (R3)+,CKWD              ;GET CHECKWORD FOR THIS PAGE
3051  015012  004737  004664                JSR     PC,MEMTST               ;TEST MEMORY
3052  015016  005737  002266                TST     REAL                    ;DOES THE MEMORY EXIST?
3053  015022  001455                        BEQ     E6                      ;BR IF NO
3054  015024  005737  002344                TST     ERRFLG                  ;ANY OTHER ERRORS?
3055  015030  001421                        BEQ     NONE                    ;BR IF NO
3056  015032  004737  004524                JSR     PC,VIRTAD               ;GET ADDRESS OF ERROR
3057  015036  005737  002264                TST     BCF                     ;LOW BYTE PAGE?
3058  015042  001004                        BNE     HIADD                   ;BR IF NO
3059  015044  012737  002765  002342        MOV     #LOBYT,BYTLOC           ;SET POINTER FOR ERROR MSG.
3060  015052  000403                        BR      PRIOUT                  ;PRINT ERROR MESSAGE
3061  015054  012737  003027  002342  HIADD: MOV     #HIBYT,BYTLOC           ;POINTER FOR ERROR MSG.
3062  015062  022737  000001  002344  PRIOUT: CMP     #1,ERRFLG               ;CHECKSUM ERROR?
3063  015070  001416                        BEQ     E4                      ;BR IF YES
3064  015072  000423                        BR      E5                      ;ELSE CHECKWORD ERROR
3065  015074  062737  001002  177520  NONE: ADD     #1002,PCR               ;ADJUST PAGE IN PCR
3066  015102  005337  002272                DEC     COUNTR                  ;DEC PAGE COUNT
3067  015106  001337                        BNE     EPRTST                  ;LOOP UNTIL FINISHED
3068  015110  005737  002304        ADDTL:  TST     PASS                    ;FIRST PASS?
3069  015114  001002                        BNE     1$                      ;BR IF NO
3070  015116  000137  014210                JMP     SYSRIN                  ;TEST ANY ADDITIONAL MEMORY
3071  015122  000137  014104          1$:   JMP     P2                      ;FIND ANY ADDITIONAL MEMORY
3072  015126                          E4:   ERRDF   40,EPRM,CKSME
3073  015126  104455                        TRAP    C$ERDF
3074  015130  000050                        .WORD   40
3075  015132  016534                        .WORD   EPRM
3076  015134  016132                        .WORD   CKSME
3077  015136                                CKLOOP
3078  015136  104406                        TRAP    C$CLP1
3079  015140  000763                        BR      ADDTL
3080  015142                          E5:   ERRDF   41,EPRM,CWKDE
3081  015142  104455                        TRAP    C$ERDF
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3082  015144  000051                          .WORD   41
3083  015146  016534                          .WORD   EPRM
3084  015150  016170                          .WORD   CWKDE
3085  015152                                  CKLOOP
3086  015152  104406                          TRAP    C$CLP1
3087  015154  000755                          BR      ADDTL
3088  015156                          E6:     ERRDF   42,EPRM,NONXT
3089  015156  104455                          TRAP    C$ERDF
3090  015160  000052                          .WORD   42
3091  015162  016534                          .WORD   EPRM
3092  015164  016252                          .WORD   NONXT
3093  015166                                  CKLOOP
3094  015166  104406                          TRAP    C$CLP1
3095  015170  000747                          BR      ADDTL
3096  015172                                  ENDSUB
3097  015172                          L10101:
3098  015172  104403                          TRAP    C$ESUB
3099
3100  015174                                  BGNSUB
3101  015174  104402                          TRAP    C$BSUB
3102  015176  005037  002344          SYSRT:  CLR     ERRFLG                  ;CLEAR ERROR FLAG
3103  015202                                  GMANID  RWDCT,RESPND,D,-1,10,100,NO
3104  015202  104443                          TRAP    C$GMAN
3105  015204  000406                          BR      10000$
3106  015206  002332                          .WORD   RESPND
3107  015210  000042                          .WORD   T$CODE
3108  015212  016413                          .WORD   RWDCT
3109  015214  177777                          .WORD   -1
3110  015216  000010                          .WORD   T$LOLIM
3111  015220  000100                          .WORD   T$HILIM
3112  015222                          10000$:
3113  015222  013737  002332  016116          MOV     RESPND,PGCT             ;STORE PAGE COUNT
3114  015230  013737  002332  002322          MOV     RESPND,WORDCT           ;COPY WORD COUNT
3115  015236  012702  002410                  MOV     #SYSROM,R2              ;POINTER TO STORAGE TABLE
3116  015242  004737  004344                  JSR     PC,INPUT                ;INPUT CHECKWORDS
3117  015246                                  GMANIL  SRR,ANSR,1,YES
3118  015246  104443                          TRAP    C$GMAN
3119  015250  000404                          BR      10001$
3120  015252  002274                          .WORD   ANSR
3121  015254  000130                          .WORD   T$CODE
3122  015256  016652                          .WORD   SRR
3123  015260  000001                          .WORD   1
3124  015262                          10001$:
3125  015262  005737  002274                  TST     ANSR                    ;STANDARD MEMORY RANGE?
3126  015266  001020                          BNE     1$                      ;BR IF YES
3127  015270  005237  002274                  INC     ANSR                    ;RESTORE DEFAULT VALUE
3128  015274                                  GMANID  LOADR,STORE,D,-1,0,30,NO
3129  015274  104443                          TRAP    C$GMAN
3130  015276  000406                          BR      10002$
3131  015300  002320                          .WORD   STORE
3132  015302  000042                          .WORD   T$CODE
3133  015304  003072                          .WORD   LOADR
3134  015306  177777                          .WORD   -1
3135  015310  000000                          .WORD   T$LOLIM
3136  015312  000030                          .WORD   T$HILIM
3137  015314                          10002$:
```

```
015314  004737  005142                    JSR     PC,SETADR        ;GET FIRST PAGE ADDRESS
015320  013737  002270  016124            MOV     LOPAG,LOD3       ;STORE LOW PAGE NO.
015326  000403                            BR      LD3              ;SKIP NEXT INSTRUCTION
015330  012737  100600  016124  1$:       MOV     #100600,LOD3     ;STANDARD PAGE = 200,201  16-32K RANGE
015336  013737  016124  177520  LD3:      MOV     LOD3,PCR         ;LOAD STARTING ADDRESS
015344  012737  000001  002276            MOV     #1,RFLAG         ;INDICATE ROM
015352  012703  002410                    MOV     #SYSROM,R3       ;POINT TO CHECKWORDS
015356  013737  016116  002272            MOV     PGCT,COUNTR      ;PAGE COUNT
015364  012337  002326          SYRTST:   MOV     (R3)+,CKWD       ;GET CHECKWORD FOR THIS PAGE
015370  004737  004664                    JSR     PC,MEMTST        ;TEST MEMORY
015374  005737  002266                    TST     REAL             ;DOES THE MEMORY EXIST?
015400  001450                            BEQ     E11              ;BR IF NO
015402  005737  002344                    TST     ERRFLG           ;ANY OTHER ERRORS?
015406  001421                            BEQ     PASSED           ;BR IF NO
015410  004737  004524                    JSR     PC,VIRTAD        ;GET ADDRESS OF ERROR
015414  005737  002264                    TST     BCF              ;LOW BYTE PAGE?
015420  001004                            BNE     HIGHB            ;BR IF NO
015422  012737  002765  002342            MOV     #LOBYT,BYTLOC    ;SET POINTER FOR ERROR MSG.
015430  000403                            BR      MSGOUT           ;PRINT ERROR MESSAGE
015432  012737  003027  002342  HIGHB:    MOV     #HIBYT,BYTLOC    ;POINTER FOR ERROR MSG.
015440  022737  000001  002344  MSGOUT:   CMP     #1,ERRFLG        ;CHECKSUM ERROR?
015446  001411                            BEQ     E7               ;BR IF YES
015450  000416                            BR      E10              ;ELSE CHECKWORD ERROR
015452  062737  001002  177520  PASSED:   ADD     #1002,PCR        ;ADJUST PAGE IN PCR
015460  005337  002272                    DEC     COUNTR           ;DEC PAGE COUNT
015464  001337                            BNE     SYRTST           ;LOOP UNTIL FINISHED
015466                          NEXT:     EXIT    TST              ;TEST IS FINISHED
015466  104432                            TRAP    C$EXIT
015470  001244                            .WORD   L10076-.
015472                          E7:       ERRDF   43,SYSR,CKSME
015472  104455                            TRAP    C$ERDF
015474  000053                            .WORD   43
015476  016555                            .WORD   SYSR
015500  016132                            .WORD   CKSME
015502                                    CKLOOP
015502  104406                            TRAP    C$CLP1
015504  000770                            BR      NEXT
015506                          E10:      ERRDF   44,SYSR,CWKDE
015506  104455                            TRAP    C$ERDF
015510  000054                            .WORD   44
015512  016555                            .WORD   SYSR
015514  016170                            .WORD   CWKDE
015516                                    CKLOOP
015516  104406                            TRAP    C$CLP1
015520  000762                            BR      NEXT
015522                          E11:      ERRDF   45,SYSR,NONXT
015522  104455                            TRAP    C$ERDF
015524  000055                            .WORD   45
015526  016555                            .WORD   SYSR
015530  016252                            .WORD   NONXT
015532                                    CKLOOP
015532  104406                            TRAP    C$CLP1
015534  000754                            BR      NEXT
015536                                    ENDSUB
015536                          L10102:
015536  104403                            TRAP    C$ESUB
```

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3194
3195  015540                                    BGNSUB
3196  015540  104402                            TRAP    C$BSUB
3197  015542  005037  002344            SYSET:  CLR     ERRFLG                  ;CLEAR ERROR FLAG
3198  015546                                    GMANID  RWDCT,RESPND,D,-1,10,40,NO
3199  015546  104443                            TRAP    C$GMAN
3200  015550  000406                            BR      10000$
3201  015552  002332                            .WORD   RESPND
3202  015554  000042                            .WORD   T$CODE
3203  015556  016413                            .WORD   RWDCT
3204  015560  177777                            .WORD   -1
3205  015562  000010                            .WORD   T$LOLIM
3206  015564  000040                            .WORD   T$HILIM
3207  015566                            10000$:
3208  015566  013737  002332  016116            MOV     RESPND,PGCT             ;STORE PAGE COUNT
3209  015574  013737  002332  002322            MOV     RESPND,WORDCT           ;COPY WORD COUNT
3210  015602  012702  002410                    MOV     #SYSROM,R2              ;POINTER TO STORAGE TABLE
3211  015606  004737  004344                    JSR     PC,INPUT                ;INPUT CHECKWORDS
3212  015612                                    GMANIL  SYEE,ANSR,1,YES
3213  015612  104443                            TRAP    C$GMAN
3214  015614  000404                            BR      10001$
3215  015616  002274                            .WORD   ANSR
3216  015620  000130                            .WORD   T$CODE
3217  015622  016702                            .WORD   SYEE
3218  015624  000001                            .WORD   1
3219  015626                            10001$:
3220  015626  005737  002274                    TST     ANSR                    ;STANDARD MEMORY RANGE?
3221  015632  001020                            BNE     1$                      ;BR IF YES
3222  015634  005237  002274                    INC     ANSR                    ;RESTORE DEFAULT VALUE
3223  015640                                    GMANID  LOADR,STORE,D,-1,0,30,NO
3224  015640  104443                            TRAP    C$GMAN
3225  015642  000406                            BR      10002$
3226  015644  002320                            .WORD   STORE
3227  015646  000042                            .WORD   T$CODE
3228  015650  003072                            .WORD   LOADR
3229  015652  177777                            .WORD   -1
3230  015654  000000                            .WORD   T$LOLIM
3231  015656  000030                            .WORD   T$HILIM
3232  015660                            10002$:
3233  015660  004737  005142                    JSR     PC,SETADR               ;GET FIRST PAGE ADDRESS
3234  015664  013737  002270  016126            MOV     LOPAG,LOD4              ;STORE LOW PAGE NO.
3235  015672  000403                            BR      LD4                     ;SKIP NEXT INSTRUCTION
3236  015674  012737  100600  016126  1$:       MOV     #100600,LOD4            ;STANDARD PAGE = 200,201  16-24K RANGE
3237  015702  013737  016126  177520  LD4:     MOV     LOD4,PCR                ;LOAD STARTING ADDRESS
3238  015710  005037  002276                    CLR     RFLAG                   ;INDICATE EPROM
3239  015714  012703  002410                    MOV     #SYSROM,R3              ;POINT TO CHECKWORDS
3240  015720  013737  016116  002272            MOV     PGCT,COUNTR             ;PAGE COUNT
3241  015726  012337  002326            SYETST: MOV     (R3)+,CKWD              ;GET CHECKWORD FOR THIS PAGE
3242  015732  004737  004664                    JSR     PC,MEMTST               ;TEST MEMORY
3243  015736  005737  002266                    TST     REAL                    ;DOES THIS MEMORY EXIST?
3244  015742  001452                            BEQ     E14                     ;BR IF NO
3245  015744  005737  002344                    TST     ERRFLG                  ;ANY ERRORS?
3246  015750  001421                            BEQ     CONT                    ;BR IF NO
3247  015752  004737  004524                    JSR     PC,VIRTAD               ;GET ADDRESS OF ERROR
3248  015756  005737  002264                    TST     BCF                     ;LOW BYTE PAGE?
3249  015762  001004                            BNE     HBYTE                   ;BR IF NO
```

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3250  015764  012737  002765  002342          MOV     #LOBYT,BYTLOC           ;SET POINTER FOR ERROR MSG.
3251  015772  000403                          BR      PRIN                    ;PRINT ERROR MESSAGE
3252  015774  012737  003027  002342  HBYTE:  MOV     #HIBYT,BYTLOC           ;POINTER FOR ERROR MSG.
3253  016002  022737  000001  002344  PRIN:   CMP     #1,ERRFLG               ;CHECKSUM ERROR?
3254  016010  001411                          BEQ     E12                     ;BR IF YES
3255  016012  000417                          BR      E13                     ;ELSE CHECKWORD ERROR
3256  016014  062737  001002  177520  CONT:   ADD     #1002,PCR               ;ADJUST PAGE IN PCR
3257  016022  005337  002272                  DEC     COUNTR                  ;DEC PAGE COUNT
3258  016026  001337                          BNE     SYETST                  ;LOOP UNTIL FINISHED
3259  016030                                  EXIT    TST                     ;TEST IS FINISHED
3260  016030  104432                          TRAP    C$EXIT
3261  016032  000702                          .WORD   L10076-.
3262  016034                          E12:    ERRDF   46,SYSE,CKSME
3263  016034  104455                          TRAP    C$ERDF
3264  016036  000056                          .WORD   46
3265  016040  016570                          .WORD   SYSE
3266  016042  016132                          .WORD   CKSME
3267  016044                                  CKLOOP
3268  016044  104406                          TRAP    C$CLP1
3269  016046                                  EXIT    TST
3270  016046  104432                          TRAP    C$EXIT
3271  016050  000664                          .WORD   L10076-.
3272  016052                          E13:    ERRDF   47,SYSE,CWKDE
3273  016052  104455                          TRAP    C$ERDF
3274  016054  000057                          .WORD   47
3275  016056  016570                          .WORD   SYSE
3276  016060  016170                          .WORD   CWKDE
3277  016062                                  CKLOOP
3278  016062  104406                          TRAP    C$CLP1
3279  016064                                  EXIT    TST
3280  016064  104432                          TRAP    C$EXIT
3281  016066  000646                          .WORD   L10076-.
3282  016070                          E14:    ERRDF   50,SYSE,NONXT
3283  016070  104455                          TRAP    C$ERDF
3284  016072  000062                          .WORD   50
3285  016074  016570                          .WORD   SYSE
3286  016076  016252                          .WORD   NONXT
3287  016100                                  CKLOOP
3288  016100  104406                          TRAP    C$CLP1
3289  016102                                  EXIT    TST
3290  016102  104432                          TRAP    C$EXIT
3291  016104  000630                          .WORD   L10076-.
3292  016106                                  ENDSUB
3293  016106                          L10103:
3294  016106  104403                          TRAP    C$ESUB
3295
3296  016110                                  EXIT TST
3297  016110  104432                          TRAP    C$EXIT
3298  016112  000622                          .WORD   L10076-.
3299
3300  016114  000000          ADDON:  .WORD   0
3301  016116  000000          PGCT:   .WORD   0
3302  016120  000000          LOD1:   .WORD   0
3303  016122  000000          LOD2:   .WORD   0
3304  016124  000000          LOD3:   .WORD   0
3305  016126  000000          LOD4:   .WORD   0
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3306  016130  000000                  WORD:   .WORD   0
3307
3308
3309  016132                          BGNMSG  CKSME
3310  016132                          CKSME::
3311  016132                          PRINTB  #ERM6,BYTLOC
3312  016132  013746  002342                  MOV     BYTLOC,-(SP)
3313  016136  012746  016334                  MOV     #ERM6,-(SP)
3314  016142  012746  000002                  MOV     #2,-(SP)
3315  016146  010600                          MOV     SP,R0
3316  016150  104414                          TRAP    C$PNTB
3317  016152  062706  000006                  ADD     #6,SP
3318  016156  004737  004524          JSR     PC,VIRTAD
3319  016162  004737  004250          JSR     PC,VIPRI
3320  016166                          ENDMSG
3321  016166                          L10104:
3322  016166  104423                          TRAP    C$MSG
3323
3324  016170                          BGNMSG  CWKDE
3325  016170                          CWKDE::
3326  016170                          PRINTB  #ERM5
3327  016170  012746  016304                  MOV     #ERM5,-(SP)
3328  016174  012746  000001                  MOV     #1,-(SP)
3329  016200  010600                          MOV     SP,R0
3330  016202  104414                          TRAP    C$PNTB
3331  016204  062706  000004                  ADD     #4,SP
3332  016210  004737  004524          JSR     PC,VIRTAD
3333  016214  004737  004250          JSR     PC,VIPRI
3334  016220                          PRINTB  #REGDT,CKWD,BADWD
3335  016220  013746  002330                  MOV     BADWD,-(SP)
3336  016224  013746  002326                  MOV     CKWD,-(SP)
3337  016230  012746  003666                  MOV     #REGDT,-(SP)
3338  016234  012746  000003                  MOV     #3,-(SP)
3339  016240  010600                          MOV     SP,R0
3340  016242  104414                          TRAP    C$PNTB
3341  016244  062706  000010                  ADD     #10,SP
3342  016250                          ENDMSG
3343  016250                          L10105:
3344  016250  104423                          TRAP    C$MSG
3345
3346  016252                          BGNMSG  NONXT
3347  016252                          NONXT::
3348  016252                          PRINTB  #LOST
3349  016252  012746  016363                  MOV     #LOST,-(SP)
3350  016256  012746  000001                  MOV     #1,-(SP)
3351  016262  010600                          MOV     SP,R0
3352  016264  104414                          TRAP    C$PNTB
3353  016266  062706  000004                  ADD     #4,SP
3354  016272  004737  004524          JSR     PC,VIRTAD
3355  016276  004737  004250          JSR     PC,VIPRI
3356  016302                          ENDMSG
3357  016302                          L10106:
3358  016302  104423                          TRAP    C$MSG
3359
3360  016304  040445  047111  047503  ERM5:   .ASCIZ  /%AINCORRECT CHECKWORD%N/
3361  016312  051122  041505  020124
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3362  016320  044103  041505  053513
3363  016326  051117  022504  000116
3364
3365  016334  040445  044103  041505  ERM6:   .ASCIZ  /%ACHECKSUM ERROR%N%T%N/
3366  016342  051513  046525  042440
3367  016350  051122  051117  047045
3368  016356  052045  047045     000
3369
3370  016363     045  047101  047117  LOST:   .ASCIZ  /%ANON-EXISTENT MEMORY%N/
3371  016370  042455  044530  052123
3372  016376  047105  020124  042515
3373  016404  047515  054522  047045
3374  016412     000
3375
3376  016413     110  053517  046440  RWDCT:  .ASCIZ  /HOW MANY CHECKWORDS WILL BE INPUT/
3377  016420  047101  020131  044103
3378  016426  041505  053513  051117
3379  016434  051504  053440  046111
3380  016442  020114  042502  044440
3381  016450  050116  052125     000
3382
3383  016455     101  054516  040440  EXEC:   .ASCIZ  /ANY ADDITIONAL MEMORY /
3384  016462  042104  052111  047511
3385  016470  040516  020114  042515
3386  016476  047515  054522  000040
3387
3388  016504  054105  040520  042116  EXPND:  .ASCIZ  /EXPANDED DIAGNOSTIC ROM/
3389  016512  042105  042040  040511
3390  016520  047107  051517  044524
3391  016526  020103  047522  000115
3392
3393  016534  050105  047522  020115  EPRM:   .ASCIZ  /EPROM IN SOCKETS/
3394  016542  047111  051440  041517
3395  016550  042513  051524     000
3396
3397  016555     123  051531  042524  SYSR:   .ASCIZ  /SYSTEM ROM/
3398  016562  020115  047522  000115
3399
3400  016570  054523  052123  046505  SYSE:   .ASCIZ  /SYSTEM EPROM/
3401  016576  042440  051120  046517
3402  016604     000
3403
3404  016605     105  050130  047101  EXADD:  .ASCIZ  /EXPANDED ROM IN 2-4K /
3405  016612  042504  020104  047522
3406  016620  020115  047111  031040
3407  016626  032055  020113     000
3408
3409  016633     105  051120  046517  EPADD:  .ASCIZ  /EPROM IN 4-6K /
3410  016640  044440  020116  026464
3411  016646  045466  000040
3412
3413  016652  054523  052123  046505  SRR:    .ASCIZ  /SYSTEM ROM START AT 16K/
3414  016660  051040  046517  051440
3415  016666  040524  052122  040440
3416  016674  020124  033061  000113
3417
```

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3418  016702  054523  052123  046505  SYEE:   .ASCIZ  /SYSTEM EPROM START AT 16k/
3419  016710  042440  051120  046517
3420  016716  051440  040524  052122
3421  016724  040440  020124  033061
3422  016732  000113
3423
3424
3425                                          .EVEN
3426  016734                                  ENDTST
3427  016734                          L10076:
3428  016734  104401                         TRAP    C$ETST
3429
3430
3431
3432
3433
3434
3435
3436
3437
3438                            .TITLE PARAMETER CODING
3439                            .SBTTL  IDENTIFICATION
3440
3441
3442                            .SBTTL  HARDWARE PARAMETER CODING SECTION
3443
3444
3445                            ;++
3446                            ; THE HARDWARE PARAMETER CODING SECTION CONTAINS MACROS
3447                            ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
3448                            ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
3449                            ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
3450                            ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
3451                            ; WITH THE OPERATOR.
3452                            ;--
3453
3454  016736                            BGNHRD
3455  016736  000107                    .WORD L10107-L$HARD/2
3456  016740                    L$HARD::
3457
3458  016740                            GPRMD   UNIT,0,0,160000,0,16,YES
3459  016740  000032                    .WORD   T$CODE
3460  016742  017020                    .WORD   UNIT
3461  016744  160000                    .WORD   160000
3462  016746  000000                    .WORD   T$LOLIM
3463  016750  000016                    .WORD   T$HILIM
3464  016752                            GPRMD   INTVEC,2,0,-1,66,100,YES
3465  016752  001032                    .WORD   T$CODE
3466  016754  017034                    .WORD   INTVEC
3467  016756  177777                    .WORD   -1
3468  016760  000066                    .WORD   T$LOLIM
3469  016762  000100                    .WORD   T$HILIM
3470  016764                            GPRMD   LEV,4,0,-1,6,7,YES
3471  016764  002032                    .WORD   T$CODE
3472  016766  017065                    .WORD   LEV
3473  016770  177777                    .WORD   -1
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3474  016772  000006                          .WORD   T$LOLIM
3475  016774  000007                          .WORD   T$HILIM
3476  016776                                  GPRMD   RKSW,6,0,-1,0,7777,YES
3477  016776  003032                          .WORD   T$CODE
3478  017000  017105                          .WORD   RKSW
3479  017002  177777                          .WORD   -1
3480  017004  000000                          .WORD   T$LOLIM
3481  017006  007777                          .WORD   T$HILIM
3482  017010                                  GPRML   PAX,10,1,NO
3483  017010  004120                          .WORD   T$CODE
3484  017012  017134                          .WORD   PAX
3485  017014  000001                          .WORD   1
3486
3487  017016                                  EXIT HRD
3488  017016  060004                          .WORD   T$CODE
3489
3490  017020  047125  052111  047040          UNIT:   .ASCIZ  /UNIT NUMBER/
3491  017026  046525  042502  000122
3492  017034  047111  042524  051122          INTVEC: .ASCIZ  /INTERRUPT VECTOR ADDRESS/
3493  017042  050125  020124  042526
3494  017050  052103  051117  040440
3495  017056  042104  042522  051523
3496  017064     000
3497  017065     111  052116  051105          LEV:    .ASCIZ  /INTERRUPT LEVEL/
3498  017072  052522  052120  046040
3499  017100  053105  046105     000
3500  017105     122  041517  042513          RKSW:   .ASCIZ  /ROCKER SWITCH SETTINGS/
3501  017112  020122  053523  052111
3502  017120  044103  051440  052105
3503  017126  044524  043516  000123
3504  017134  042524  052123  047111          PAX:    .ASCIZ  /TESTING A KDF11-B/
3505  017142  020107  020101  042113
3506  017150  030506  026461  000102
3507                                          .EVEN
3508
3509  017156                                  ENDHRD
3510                                          .EVEN
3511  017156                          L10107:
3512                                  .SBTTL  SOFTWARE PARAMETER CODING SECTION
3513
3514                                  ;++
3515                                  ; THE SOFTWARE PARAMETER CODING SECTION CONTAINS MACROS
3516                                  ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
3517                                  ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
3518                                  ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
3519                                  ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
3520                                  ; WITH THE OPERATOR.
3521                                  ;--
3522
3523  017156                                  BGNSFT
3524  017156  000161                          .WORD L10110-L$SOFT/2
3525  017160                          L$SOFT::
3526  017160                                  GPRMD   CKW1,0,0,-1,0,177777,YES
3527  017160  000032                          .WORD   T$CODE
3528  017162  017302                          .WORD   CKW1
3529  017164  177777                          .WORD   -1
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3530  017166  000000                          .WORD   T$LOLIM
3531  017170  177777                          .WORD   T$HILIM
3532  017172                                  GPRMD   CKW2,2,0,-1,0,177777,YES
3533  017172  001032                          .WORD   T$CODE
3534  017174  017357                          .WORD   CKW2
3535  017176  177777                          .WORD   -1
3536  017200  000000                          .WORD   T$LOLIM
3537  017202  177777                          .WORD   T$HILIM
3538  017204                                  GPRMD   CKW3,4,0,-1,0,177777,YES
3539  017204  002032                          .WORD   T$CODE
3540  017206  017375                          .WORD   CKW3
3541  017210  177777                          .WORD   -1
3542  017212  000000                          .WORD   T$LOLIM
3543  017214  177777                          .WORD   T$HILIM
3544  017216                                  GPRMD   CKW4,6,0,-1,0,177777,YES
3545  017216  003032                          .WORD   T$CODE
3546  017220  017413                          .WORD   CKW4
3547  017222  177777                          .WORD   -1
3548  017224  000000                          .WORD   T$LOLIM
3549  017226  177777                          .WORD   T$HILIM
3550  017230                                  GPRMD   CKW5,10,0,-1,0,177777,YES
3551  017230  004032                          .WORD   T$CODE
3552  017232  017431                          .WORD   CKW5
3553  017234  177777                          .WORD   -1
3554  017236  000000                          .WORD   T$LOLIM
3555  017240  177777                          .WORD   T$HILIM
3556  017242                                  GPRMD   CKW6,12,0,-1,0,177777,YES
3557  017242  005032                          .WORD   T$CODE
3558  017244  017447                          .WORD   CKW6
3559  017246  177777                          .WORD   -1
3560  017250  000000                          .WORD   T$LOLIM
3561  017252  177777                          .WORD   T$HILIM
3562  017254                                  GPRMD   CKW7,14,0,-1,0,177777,YES
3563  017254  006032                          .WORD   T$CODE
3564  017256  017465                          .WORD   CKW7
3565  017260  177777                          .WORD   -1
3566  017262  000000                          .WORD   T$LOLIM
3567  017264  177777                          .WORD   T$HILIM
3568  017266                                  GPRMD   CKW8,16,0,-1,0,177777,YES
3569  017266  007032                          .WORD   T$CODE
3570  017270  017503                          .WORD   CKW8
3571  017272  177777                          .WORD   -1
3572  017274  000000                          .WORD   T$LOLIM
3573  017276  177777                          .WORD   T$HILIM
3574
3575  017300                                  EXIT SFT
3576  017300  111004                          .WORD   T$CODE
3577
3578  017302  044103  041505  053513  CKW1:   .ASCIZ  /CHECKWORDS FOR DIAGNOSTIC ROM. CHECKWORD 1: /
3579  017310  051117  051504  043040
3580  017316  051117  042040  040511
3581  017324  047107  051517  044524
3582  017332  020103  047522  027115
3583  017340  041440  042510  045503
3584  017346  047527  042122  030440
3585  017354  020072     000
```

```
3586  017357     103  042510  045503  CKW2:   .ASCIZ  /CHECKWORD 2: /
3587  017364  047527  042122  031040
3588  017372  020072     000
3589  017375     103  042510  045503  CKW3:   .ASCIZ  /CHECKWORD 3: /
3590  017402  047527  042122  031440
3591  017410  020072     000
3592  017413     103  042510  045503  CKW4:   .ASCIZ  /CHECKWORD 4: /
3593  017420  047527  042122  032040
3594  017426  020072     000
3595  017431     103  042510  045503  CKW5:   .ASCIZ  /CHECKWORD 5: /
3596  017436  047527  042122  032440
3597  017444  020072     000
3598  017447     103  042510  045503  CKW6:   .ASCIZ  /CHECKWORD 6: /
3599  017454  047527  042122  033040
3600  017462  020072     000
3601  017465     103  042510  045503  CKW7:   .ASCIZ  /CHECKWORD 7: /
3602  017472  047527  042122  033440
3603  017500  020072     000
3604  017503     103  042510  045503  CKW8:   .ASCIZ  /CHECKWORD 8: /
3605  017510  047527  042122  034040
3606  017516  020072     000
3607          017522                  .EVEN
3608
3609
3610  017522                          ENDSFT
3611                                  .EVEN
3612  017522                  L10110:
3613
3614          017572                  .=.+50
3615  017572                          LASTAD
3616                                  .EVEN
3617  017572  000000                  .WORD   0
3618  017574  000000                  .WORD   0
3619  017576                  L$LAST::
3620
3621          000001                  .END
```

```
ACTSUM  002302          705#  1044*  1048*  1154  1171  2452  2486
ADDON   016114         1335*  2842*  2859   2864  3300#
ADDTL   015110         3068#  3079   3087   3095
ADR   = 000020 G        671#
ANSR    002274          702#  1336*  2926   2931  2933*  3024  3029  3031*  3120  3125  3127*  3215  3220
                       3222*
ASSEMB= 000010          398
BADWD   002330          716#  1184*  1186*  1191*  3335
BCF     002264          698#  1043   1046   1148*  1161*  2435*  2469*  2959  3057  3153  3248
BDDAT   003322          829#   936
BEVENT  007662 G       2035#
BEVREG= 177546         1874#  1891*  1916*  1949*  1974*  2005*
BIT0  = 000001 G        644#  2276   2302   2319
BIT00 = 000001 G        633#   644
BIT01 = 000002 G        632#   643
BIT02 = 000004 G        631#   642
BIT03 = 000010 G        630#   641
BIT04 = 000020 G        629#   640
BIT05 = 000040 G        628#   639
BIT06 = 000100 G        627#   638   1891   1916  1949  1974  2005
BIT07 = 000200 G        626#   637
BIT08 = 000400 G        625#   636
BIT09 = 001000 G        624#   635
BIT1  = 000002 G        643#
BIT10 = 002000 G        623#
BIT11 = 004000 G        622#  2280
BIT12 = 010000 G        621#
BIT13 = 020000 G        620#
BIT14 = 040000 G        619#
BIT15 = 100000 G        618#  1551   1578   1806  1833  2282
BIT2  = 000004 G        642#
BIT3  = 000010 G        641#
BIT4  = 000020 G        640#
BIT5  = 000040 G        639#
BIT6  = 000100 G        638#
BIT7  = 000200 G        637#
BIT8  = 000400 G        636#
BIT9  = 001000 G        635#
BOE   = 000400 G        675#
BVERR1  007672 G       1906   2044#
BVERR2  007740 G       1931   2063#
BVERR3  010006 G       2022   2082#
BVERR4  010054 G       1964   2101#
BVERR5  010122 G       1989   2120#
BYTINS  003365          836#   956
BYTLOC  002342          721#  2961*  2963*  3059*  3061*  3155*  3157*  3250*  3252*  3312
CHECKW  013667         2604   2781#
CHKSUM  004300         1042#  1152   1169   2450  2484
CHKWRD  012744         2514   2535   2567   2601  2688#
CKERR   002722          757#  2639   2665
CKSME   016132 G       2981   3076   3171   3266  3310#
CKWD    002326          715#  1181   1188   2952*  3050*  3146*  3241*  3336
CKW1    017302         3528   3578#
CKW2    017357         3534   3586#
CKW3    017375         3540   3589#
CKW4    017413         3546   3592#
```

```
CKW5     017431            3552    3595#
CKW6     017447            3558    3598#
CKW7     017465            3564    3601#
CKW8     017503            3570    3604#
CONT     016014            3246    3256#
COUNTR   002272             701#    2432*   2504*   2516*   2520*   2536*   2539*   2568*   2571*   2600*   2609*   2951*   2968*
                           3047*   3066*   3145*   3162*   3240*   3257*
CWDERR   002741             761#
CWKDE    016170 G          2989    3084    3179    3276    3325#
C$AU   = 000052             398#
C$AUTO= 000061              398#    1320
C$BRK  = 000022             398#    2198    2216    2221    2226
C$BSEG= 000004              398#
C$BSUB= 000002              398#    1368    1390    1413    1436    1459    1480    1503    1526    1549    1576    1622    1644
                           1668    1691    1714    1736    1758    1781    1804    1831    1883    1915    1948    1973    2004
                           2399    2468    2501    2513    2529    2832    2918    3006    3101    3196
C$CEFG= 000045              398#
C$CLCK= 000062              398#
C$CLEA= 000012              398#    1351
C$CLOS= 000035              398#
C$CLP1= 000006              398#    1127    1379    1384    1402    1407    1425    1430    1448    1453    1469    1474    1492
                           1497    1515    1520    1538    1543    1565    1570    1594    1599    1633    1638    1656    1661
                           1680    1685    1703    1708    1726    1731    1748    1753    1770    1775    1793    1798    1820
                           1825    1849    1854    1908    1933    1966    1991    2024    2266    2444    2449    2461    2478
                           2483    2495    2593    2983    2991    2999    3078    3086    3094    3173    3181    3189    3268
                           3278    3288
C$CVEC= 000036              398#    1341
C$DCLN= 000044              398#
C$DODU= 000051              398#
C$DRPT= 000024              398#
C$DU   = 000053             398#
C$EDIT= 000003              398#     464
C$ERDF= 000055              398#    1122    1374    1397    1420    1443    1464    1487    1510    1533    1560    1589    1628
                           1651    1675    1698    1721    1743    1765    1788    1815    1844    1903    1928    1961    1986
                           2019    2261    2439    2456    2473    2490    2588    2978    2986    2994    3073    3081    3089
                           3168    3176    3184    3263    3273    3283
C$ERHR= 000056              398#
C$ERRO= 000060              398#
C$ERSF= 000054              398#
C$ERSO= 000057              398#
C$ESCA= 000010              398#
C$ESEG= 000005              398#
C$ESUB= 000003              398#    1387    1410    1433    1456    1477    1500    1523    1546    1573    1602    1641    1664
                           1688    1711    1734    1756    1778    1801    1828    1857    1912    1937    1970    1995    2028
                           2464    2498    2508    2524    2613    2914    3003    3098    3193    3294
C$ETST= 000001              398#    1606    1860    2185    2236    2387    2804    3428
C$EXIT= 000032              398#    1344    1381    1404    1427    1450    1471    1494    1517    1540    1567    1596    1618
                           1635    1658    1682    1705    1728    1750    1772    1795    1822    1851    1879    1944    2000
                           2030    2209    2231    2268    2340    2446    2480    2618    2836    2910    2975    3165    3260
                           3270    3280    3290    3297
C$GETB= 000026              398#
C$GETW= 000027              398#
C$GMAN= 000043              398#    1069    2407    2419    2857    2867    2877    2888    2899    2924    2935    3009    3022
                           3033    3104    3118    3129    3199    3213    3224
C$GPHR= 000042              398#    1294
C$GPLO= 000030              398#
```

```
C$GPRI= 000040            398#
C$INIT= 000011            398#   1307
C$INLP= 000020            398#
C$MANI= 000050            398#   2203   2250   2401   2584   2839
C$MEM = 000031            398#
C$MSG = 000023            398#    911    931    951    971    983    995   1007   2060   2079   2098   2117   2136
                         2359   2634   2647   2660   2673   2686   3322   3344   3358
C$OPEN= 000034            398#
C$PNTB= 000014            398#    899    919    939    959    979    991   1003   2049   2056   2068   2075   2087
                         2094   2106   2113   2125   2132   2355   2630   2643   2656   2669   2681   3316   3330
                         3340   3352
C$PNTF= 000017            398#   1017   1066   2297   2309   2326   2336   2547   2556   2563   2577   2598   2607
C$PNTS= 000016            398#
C$PNTX= 000015            398#    907    927    947    967
C$QIO = 000377            398#
C$RDBU= 000007            398#
C$REFG= 000047            398#
C$RESE= 000033            398#   2007
C$REVI= 000003            398#    463
C$RFLA= 000021            398#
C$RPT = 000025            398#   1280
C$SEFG= 000046            398#
C$SPRI= 000041            398#   1302   1894   1899   1919   1924   1952   1957   1977   1982   2010   2015
C$SVEC= 000037            398#   1889
C$TPRI= 000013            398#
DADDR   013774           2411   2797#
DATOUT  014510           2962   2964#
DELCNT  002346            723#   1244*  1246
DERR1   012566 G         2442   2624#
DERR2   012614 G         2459   2637#
DERR3   012642 G         2476   2650#
DERR4   012670 G         2493   2663#
DERR5   012716 G         2591   2676#
DFLTST  014264           2841   2854   2865   2907   2909#
DFPTBL  002144 G          538#
DIAGER  003554            860#   1000
DIAGMC= 000000            398
DIAIN   014140           2866#
DLOOP   011716           2435#   2505
DRLP    012564           2416*  2429*  2430   2621#
DRTST   011676           2432#
DSPCOD  002122 G          514#
EF.CON= 000036 G          651#
EF.NEW= 000035 G          652#
EF.PWR= 000034 G          653#
EF.RES= 000037 G          650#
EF.STA= 000040 G          649#
EPADD   016633           3026   3409#
EPRIN   014162           2876#  2972
EPRM    016534           2881   3075   3083   3091   3393#
EPRMT   014630           2886   3007#
EPRCM   002370            725#  3019   3049
EPRTST  015006           3050#  3067
ERM5    016304           3327   3360#
ERM6    016334           3313   3365#
ERRFLG  002344            722#  1157*  1174*  1185*  1190*  2919*  2956   2964   3007*  3054   3062   3102*  3150
```

```
                    3158    3197*   3245    3253
EVL    = 000004 G    669#
EXADD    016605     2928    3404#
EXEC     016455     2861    3383#
EXPDIA   002350      724#   2921    2950
EXPND    016504     2871    2980    2988    2996    3388#
EXPROM   014274     2875    2919#
EXPSUM   002300      704#   1153*   1154*   1155    1170*   1171*   1172    2451*   2452*   2453    2485*   2486*   2487
EXPTST   014434     2952#   2969
E$END  = 002100      398#
E$LOAD = 000035      398#    487
E1       014560     2965    2977#
E10      015506     3160    3175#
E11      015522     3149    3183#
E12      016034     3254    3262#
E13      016052     3255    3272#
E14      016070     3244    3282#
E2       014574     2966    2985#
E3       014610     2955    2993#
E4       015126     3063    3072#
E5       015142     3064    3080#
E6       015156     3053    3088#
E7       015472     3159    3167#
F$AU   = 000015      398#
F$AUTO = 000020      398#    1317    1319
F$BGN  = 000040      398#     408     505     514     526     613     687     695     728     894     914     934     954
                      974     986     998    1277    1291    1310    1317    1329    1344    1366    1368    1381    1386
                     1390    1404    1409    1413    1427    1432    1436    1450    1455    1459    1471    1476    1480
                     1494    1499    1503    1517    1522    1526    1540    1545    1549    1567    1572    1576    1596
                     1601    1605    1614    1618    1622    1635    1640    1644    1658    1663    1668    1682    1687
                     1691    1705    1710    1714    1728    1733    1736    1750    1755    1758    1772    1777    1781
                     1795    1800    1804    1822    1827    1831    1851    1856    1859    1873    1879    1883    1911
                     1915    1936    1944    1948    1969    1973    1994    2000    2004    2027    2030    2035    2044
                     2063    2082    2101    2120    2184    2193    2209    2231    2235    2248    2268    2340    2348
                     2386    2397    2399    2446    2463    2468    2480    2497    2501    2507    2513    2523    2529
                     2612    2618    2624    2637    2650    2663    2676    2803    2830    2832    2836    2910    2913
                     2918    2975    3002    3006    3097    3101    3165    3192    3196    3260    3270    3280    3290
                     3293    3297    3310    3325    3347    3427    3455    3488    3524    3576
F$CLEA = 000007      398#    1329    1350
F$DU   = 000016      398#
F$END  = 000041      398#     408     505     514     526     613     687     695     728     912     932     952     972
                      984     996    1008    1281    1308    1321    1344    1352    1366    1368    1381    1386    1388
                     1390    1404    1409    1411    1413    1427    1432    1434    1436    1450    1455    1457    1459
                     1471    1476    1478    1480    1494    1499    1501    1503    1517    1522    1524    1526    1540
                     1545    1547    1549    1567    1572    1574    1576    1596    1601    1603    1605    1607    1614
                     1618    1622    1635    1640    1642    1644    1658    1663    1665    1668    1682    1687    1689
                     1691    1705    1710    1712    1714    1728    1733    1735    1736    1750    1755    1757    1758
                     1772    1777    1779    1781    1795    1800    1802    1804    1822    1827    1829    1831    1851
                     1856    1858    1859    1861    1873    1879    1883    1911    1913    1915    1936    1938    1944
                     1948    1969    1971    1973    1994    1996    2000    2004    2027    2029    2030    2040    2061
                     2080    2099    2118    2137    2184    2186    2193    2209    2231    2235    2237    2248    2268
                     2340    2360    2386    2388    2397    2399    2446    2463    2465    2468    2480    2497    2499
                     2501    2507    2509    2513    2523    2525    2529    2612    2614    2618    2635    2648    2661
                     2674    2687    2803    2805    2830    2832    2836    2910    2913    2915    2918    2975    3002
                     3004    3006    3097    3099    3101    3165    3192    3194    3196    3260    3270    3280    3290
                     3293    3295    3297    3323    3345    3359    3427    3429    3488    3512    3576    3613
```

```
F$HARD= 000004          398#  3455  3488  3510  3576
F$HW  = 000013          398#   536   548
F$INIT= 000006          398#  1291  1306
F$JMP = 000050          398#  1344  1381  1404  1427  1450  1471  1494  1517  1540  1567  1596  1618
                       1635  1658  1682  1705  1728  1750  1772  1795  1822  1851  1879  1944  2000
                       2030  2209  2231  2268  2340  2446  2480  2618  2836  2910  2975  3165  3260
                       3270  3280  3290  3297  3488  3576
F$MOD = 000000          398#   409   505   515   526   614   687   696   728
F$MSG = 000011          398#   894   910   914   930   934   950   954   970   974   982   986   994
                        998  1006  2044  2059  2063  2078  2082  2097  2101  2116  2120  2135  2348
                       2358  2624  2633  2637  2646  2650  2659  2663  2672  2676  2685  3310  3321
                       3325  3343  3347  3357
F$PROT= 000021          398#  1310  1315
F$PWR = 000017          398#
F$RPT = 000012          398#  1277  1279
F$SEG = 000003          398#
F$SOFT= 000005          398#  3524  3576  3611
F$SRV = 000010          398#  2035  2038
F$SUB = 000002          398#  1368  1386  1390  1409  1413  1432  1436  1455  1459  1476  1480  1499
                       1503  1522  1526  1545  1549  1572  1576  1601  1622  1640  1644  1663  1668
                       1687  1691  1710  1714  1733  1736  1755  1758  1777  1781  1800  1804  1827
                       1831  1856  1883  1911  1915  1936  1948  1969  1973  1994  2004  2027  2399
                       2463  2468  2497  2501  2507  2513  2523  2529  2612  2832  2913  2918  3002
                       3006  3097  3101  3192  3196  3293
F$SW  = 000014          398#   558   598
F$TEST= 000001          398#  1366  1605  1614  1859  1873  2184  2193  2235  2248  2386  2397  2803
                       2830  3427
GET     014116          2844  2856#
GETAD   011630          2415  2418#
GLBDAT  002260 G         695#
GLBEQA  002260 G         613#
G$CNTO= 000200          398#
G$DELM= 000372          398#
G$DISP= 000003          398#
G$EXCP= 000400          398#
G$HILI= 000002          398#
G$LOLI= 000001          398#
G$NO  = 000000          398#  1072  2422  2870  2880  2891  2902  2938  3012  3036  3107  3132  3202
                       3227  3483
G$OFFS= 000400          398#  1072  2410  2422  2860  2870  2880  2891  2902  2927  2938  3012  3025
                       3036  3107  3121  3132  3202  3216  3227  3459  3465  3471  3477  3483  3527
                       3533  3539  3545  3551  3557  3563  3569
G$OFSI= 000376          398#  1072  2410  2422  2860  2870  2880  2891  2902  2927  2938  3012  3025
                       3036  3107  3121  3132  3202  3216  3227  3459  3465  3471  3477  3483  3527
                       3533  3539  3545  3551  3557  3563  3569
G$PRMA= 000001          398#
G$PRMD= 000002          398#  1072  2422  2938  3012  3036  3107  3132  3202  3227  3459  3465  3471
                       3477  3527  3533  3539  3545  3551  3557  3563  3569
G$PRML= 000000          398#  2410  2860  2870  2880  2891  2902  2927  3025  3121  3216  3483
G$RADA= 000140          398#
G$RADB= 000000          398#
G$RADD= 000040          398#  2422  2938  3012  3036  3107  3132  3202  3227
G$RADL= 000120          398#  2410  2860  2870  2880  2891  2902  2927  3025  3121  3216  3483
G$RADO= 000020          398#  1072  3459  3465  3471  3477  3527  3533  3539  3545  3551  3557  3563
                       3569
G$XFER= 000004          398#  3488  3576
```

```
G$YES = 000010          398#  2410  2860  2927  3025  3121  3216  3459  3465  3471  3477  3527  3533
                       3539  3545  3551  3557  3563  3569
HBYTE   015774         3249  3252#
HELP  = 000000            6#    15    18    23    24   102   105   122   130   139   143   161   241
                        249   290   295   314   397   403#  417   506   526   540   562   603#  684
                        809   883  1022  1254  1256  1258  1260  1262  1264  1266  1268  1269  1270
                       1272# 1303  1342  1347  1355# 3429  3431  3432  3434  3436  3438  3440# 3458
                       3490  3577  3608
HIADD   015054         3058  3061#
HIBYT   003027          773#  2963  3061  3157  3252
HIBYTE  004746         1150  1161#
HIGH    014502         2960  2963#
HIGHB   015432         3154  3157#
HIRANG  002340          720#  1012  1131* 1132* 1135*
HIROM   013165         2666  2719#
HOE   = 100000 G        682#
HRAERR  013106         2653  2710#
IBE   = 010000 G        679#
ICOUNT  007670         1881* 1900  1909* 1925  1934* 1958  1967* 1983  1992* 2016  2025* 2036* 2041#
                       2052  2071  2090  2109  2128
IDU   = 000040 G        672#
IER   = 020000 G        680#
INLP    004364         1068# 1081
INPUT   004344         1062# 2922  3020  3116  3211
INSTR   004422         1063  1084#
INTCT   010244         2053  2072  2091  2110  2129  2146#
INTSR   007662         1886  2033#
INTVEC  017034         3466  3492#
INWORD  004510         1073  1094#
ISR   = 000100 G        673#
IXE   = 004000 G        678#
I$AU  = 000041          398#
I$AUTO= 000041          398#  1317# 1321#
I$CLN = 000041          398#  1329# 1344  1352#
I$DU  = 000041          398#
I$HRD = 000041         3455# 3512#
I$INIT= 000041          398#  1291# 1308#
I$MOD = 000041          398#   408#  505#  514#  526#  613#  687#  695#  728#
I$MSG = 000041          398#   894#  912#  914#  932#  934#  952#  954#  972#  974#  984#  986#  996#
                        998#  1008# 2044# 2061# 2063# 2080# 2082# 2099# 2101# 2118# 2120# 2137# 2348#
                       2360# 2624# 2635# 2637# 2648# 2650# 2661# 2663# 2674# 2676# 2687# 3310# 3323#
                       3325# 3345# 3347# 3359#
I$PROT= 000040          398#  1310#
I$PTAB= 000041          398#
I$PWR = 000041          398#
I$RPT = 000041          398#  1277# 1281#
I$SEG = 000041          398#  1366  1368  1390  1413  1436  1459  1480  1503  1526  1549  1576  1614
                       1622  1644  1668  1691  1714  1736  1758  1781  1804  1831  1873  1883  1915
                       1948  1973  2004  2193  2248  2397  2399  2468  2501  2513  2529  2830  2832
                       2918  3006  3101  3196
I$SETU= 000041          398#
I$SFT = 000041         3524# 3613#
I$SRV = 000041          398#  2035# 2040#
I$SUB = 000041          398#  1366  1368# 1386# 1388# 1390# 1409# 1411# 1413# 1432# 1434# 1436# 1455#
                       1457# 1459# 1476# 1478# 1480# 1499# 1501# 1503# 1522# 1524# 1526# 1545# 1547#
                       1549# 1572# 1574# 1576# 1601# 1603# 1614  1622# 1640# 1642# 1644# 1663# 1665#
```

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                    1668#  1687#  1689#  1691#  1710#  1712#  1714#  1733#  1735#  1736#  1755#  1757#  1758#
                    1777#  1779#  1781#  1800#  1802#  1804#  1827#  1829#  1831#  1856#  1858#  1873   1883#
                    1911#  1913#  1915#  1936#  1938#  1948#  1969#  1971#  1973#  1994#  1996#  2004#  2027#
                    2029#  2193   2248   2397   2399#  2463#  2465#  2468#  2497#  2499#  2501#  2507#  2509#
                    2513#  2523#  2525#  2529#  2612#  2614#  2830   2832#  2913#  2915#  2918#  2975   3002#
                    3004#  3006#  3097#  3099#  3101#  3192#  3194#  3196#  3293#  3295#
I$TST = 000041       398#  1366#  1368   1381   1390   1404   1413   1427   1436   1450   1459   1471   1480
                    1494   1503   1517   1526   1540   1549   1567   1576   1596   1605#  1607#  1614#  1618
                    1622   1635   1644   1658   1668   1682   1691   1705   1714   1728   1736   1750   1758
                    1772   1781   1795   1804   1822   1831   1851   1859#  1861#  1873#  1879   1883   1915
                    1944   1948   1973   2000   2004   2030   2184#  2186#  2193#  2209   2231   2235#  2237#
                    2248#  2268   2340   2386#  2388#  2397#  2399   2446   2468   2480   2501   2513   2529
                    2618   2803#  2805#  2830#  2832   2836   2910   2918   3006   3101   3165   3196   3260
                    3270   3280   3290   3297   3427#  3429#
J$JMP = 000167       398#
KDF11B  002260       696#  1299*  1615   1941   1997   2253   2273   2278   2316   2833
LD1     014406      2846   2946   2948#
LD2     014762      2849   3044   3046#
LD3     015336      2852   3140   3142#
LD4     015702      2855   3235   3237#
LEV     017065      3472   3497#
LOAD    005216      1213   1222#
LOADR   003072       780#  2423   2939   3037   3133   3228
LOBYT   002765       766#  2961   3059   3155   3250
LOBYTE  004670      1148#
LOD1    016120      2845   2945*  2947*  2948   3302#
LOD2    016122      2847   3043*  3045*  3046   3303#
LOD3    016124      2850   3139*  3141*  3142   3304#
LOD4    016126      2853   3234*  3236*  3237   3305#
LOE   = 040000 G     681#
LOOP    005200      1216#  1220
LOPAG   002270       700#  1222*  1224*  2429   2945   3043   3139   3234
LORANG  002336       719#  1013   1130*  1131
LOST    016363      3349   3370#
LOT   = 000010 G     670#
LOWROM  013046      2640   2703#
LP      011030      2274   2276#  2287
LPADD   004542      1111#  1117   1129
LRAERR  012770      2627   2694#
LSREG = 177524       685#  2194*  2199*  2212*  2217*  2222*  2227*  2256   2270   2350
L$ACP   002110 G     494#
L$APT   002036 G     452#
L$AUT   002070 G     478#
L$AUTO  005350 G     495   1317#
L$CCP   002106 G     492#
L$CLEA  005352 G     493   1329#
L$CO    002032 G     448#
L$DEPO  002011 G     430#
L$DESC  003124 G     485    793#
L$DESP  002076 G     484#
L$DEVP  002060 G     470#
L$DISP  002124 G     455    517#
L$DLY   002116 G     500#
L$DTP   002040 G     454#
L$DTYP  002034 G     450#
L$DUT   002072 G     480#
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L$DVTY  003176 G          471     803#
L$EF    002052 G          465#
L$ENVI  002044 G          458#
L$ETP   002102 G          488#
L$EXP1  002046 G          460#
L$EXP4  002064 G          474#
L$EXP5  002066 G          476#
L$HARD  016740 G          437    3455    3456#
L$HIME  002120 G          502#
L$HPCP  002016 G          436#
L$HPTP  002022 G          440#
L$HW    002144 G          441     536     537#
L$ICP   002104 G          490#
L$INIT  005272 G          491    1291#
L$LADP  002026 G          444#
L$LAST  017576 G          445    3619#
L$LOAD  002100 G          486#
L$LUN   002074 G          482#
L$MREV  002050 G          462#
L$NAME  002000 G          419#
L$PRIO  002042 G          456#
L$PROT  005342 G          497    1310#
L$PRT   002112 G          496#
L$REPP  002062 G          472#
L$REV   002010 G          428#
L$RPT   005270 G         1277#
L$SOFT  017160 G          439    3524    3525#
L$SPC   002056 G          468#
L$SPCP  002020 G          438#
L$SPTP  002024 G          442#
L$STA   002030 G          446#
L$SW    002160 G          443     558     559#
L$TEST  002114 G          498#
L$TIML  002014 G          434#
L$UNIT  002012 G          432#
L10000  002156            536     548#
L10001  002260            558     598#
L10002  003776            910#
L10003  004044            930#
L10004  004112            950#
L10005  004160            970#
L10006  004202            982#
L10007  004224            994#
L10010  004246           1006#
L10011  005270           1279#
L10012  005340           1306#
L10014  005350           1319#
L10015  005430           1345    1350#
L10016  006274           1382    1405    1428    1451    1472    1495    1518    1541    1568    1597    1605#
L10017  005470           1386#
L10020  005542           1409#
L10021  005614           1432#
L10022  005664           1455#
L10023  005724           1476#
L10024  005776           1499#
L10025  006046           1522#
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L10026  006116          1545#
L10027  006200          1572#
L10030  006272          1601#
L10031  007162          1619    1636    1659    1683    1706    1729    1751    1773    1796    1823    1852    1859#
L10032  006346          1640#
L10033  006420          1663#
L10034  006472          1687#
L10035  006542          1710#
L10036  006612          1733#
L10037  006664          1755#
L10040  006734          1777#
L10041  007004          1800#
L10042  007066          1827#
L10043  007160          1856#
L10044  010556          1880    1945    2001    2031    2184#
L10045  007310          1911#
L10046  007372          1936#
L10047  007476          1969#
L10050  007560          1994#
L10051  007654          2027#
L10052  007666          2038#
L10053  007736          2059#
L10054  010004          2078#
L10055  010052          2097#
L10056  010120          2116#
L10057  010166          2135#
L10060  010726          2210    2232    2235#
L10061  011560          2269    2341    2386#
L10062  011356          2358#
L10063  014016          2447    2481    2619    2803#
L10064  012012          2463#
L10065  012114          2497#
L10066  012142          2507#
L10067  012214          2523#
L10070  012556          2612#
L10071  012612          2633#
L10072  012640          2646#
L10073  012666          2659#
L10074  012714          2672#
L10075  012742          2685#
L10076  016734          2837    2911    3166    3261    3271    3281    3291    3298    3427#
L10077  014270          2913#
L10100  014624          2976    3002#
L10101  015172          3097#
L10102  015536          3192#
L10103  016106          3293#
L10104  016166          3321#
L10105  016250          3343#
L10106  016302          3357#
L10107  017156          3455    3488    3511#
L10110  017522          3524    3576    3612#
MDHEDR  002000 G         408#
MEMTST  004664          1147#   2953    3051    3147    3242
MESSG1  011413          2306    2366#
MESSG2  011426          2323    2368#
MISTAK  013676          2678    2784#
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MORE    014536          2970#   2984    2992    3000
MSGOUT  015440          3156    3158#
MSG1    010170          2046    2138#
MSG2    010313          2065    2153#
MSG3    010367          2084    2161#
MSG4    010434          2103    2168#
MSG5    010504          2122    2175#
NEWLIN  011441          2333    2370#
NEXT    015466          3164#   3174    3182    3190
NODR    013750          2626    2652    2792#
NOERR   014522          2957    2967#
NONE    015074          3055    3065#
NONXT   016252 G        2997    3092    3187    3286    3347#
ONERR   003260           822#    916
OPTBL   013226          2574    2726#
OUTPUT  004632          1112    1130#
O$APTS= 000000           398#    446
O$AU  = 000000           398#    478
O$BGNR= 000000           398#    472
O$BGNS= 000001           398#    416#    438
O$DU  = 000000           398#    480
O$ERRT= 000000           398#    488
O$GNSW= 000001           398#    416#    442
O$POIN= 000001           398#    416#    504
O$SETU= 000000           398#    432     3617
PACR    002654           749#   1630    1653    1677    1700    1723    1745    1767    1790    1817    1846
PAGE    002312           709#   1110*   1111
PAGERR  004226 G         998#   1125
PASCT   002306           707#   1338*   2206    2211*
PASS    002304           706#   1337*   1876    2404    2843    2970    3068
PASSED  015452          3151    3161#
PAX     017134          3484    3504#
PCR   = 177520           684#   1110    1331*   1623*   1626    1645*   1646    1649    1669*   1670    1673    1692*   1693
                        1696    1715*   1716    1719    1737*   1738    1741    1759*   1760    1763    1782*   1783    1786
                        1805*   1806*   1807    1808    1812*   1832*   1833*   1834    1835    1838*   2431*   2503*   2517*
                        2948*   2967*   3046*   3065*   3142*   3161*   3237*   3256*
PGCT    016116          3113*   3145    3208*   3240    3301#
PNT   = 001000 G         676#
PNTR    012766          2531*   2534    2580*   2691#
PRI   = 002000 G         677#
PRIN    016002          3251    3253#
PRIOR   002324           714#   1297*   1939
PRIOUT  015062          3060    3062#
PRI00 = 000000 G         665#   1893    1918    2009
PRI01 = 000040 G         664#
PRI02 = 000100 G         663#
PRI03 = 000140 G         662#
PRI04 = 000200 G         661#
PRI05 = 000240 G         660#   1951
PRI06 = 000300 G         659#   1976
PRI07 = 000340 G         658#   1301    1885    1898    1923    1956    1981    2014
PRTSW   010774          2252    2270#
P1      014072          2848    2850#   2973
P2      014104          2851    2853#   3071
READN   011360          2294    2361#
REAL    002266           699#   1147*   1151*   1164    1166*   1168*   1177    1179    2954    3052    3148    3243
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REGDT   003666            875#    904     924     944     964    3337
RERR1   003732 G          894#   1377    1631
RERR2   004000 G          914#   1400    1654
RERR3   004046 G          934#   1423    1490    1678    1746
RERR4   004114 G          954#   1446    1467    1513    1536    1701    1724    1768    1791
RERR5   004162 G          974#   1563    1818
RERR6   004204 G          986#   1592    1847
RESPND  002332            717#   1334*   2869    2874    2879    2884    2890    2895    2901    2906    3106    3113    3114
                         3201    3208    3209
RFLAG   002276            703#   1133    2434*   2949*   3048*   3143*   3238*
RKSW    017105           3478    3500#
ROTLP1  006140           1553#   1558
ROTLP2  006224           1580#   1586
ROTLP3  007026           1808#   1813
ROTLP4  007112           1835#   1841
ROT0    003502            852#    988
ROT1    003432            844#    976
RSET    002334            718#   1333*   2409    2414
RSTRT   011662           2405    2417    2430#
RWDCT   016413           3013    3108    3203    3376#
RWR     002610            742#   1376    1399    1422    1445    1466    1489    1512    1535    1552    1591
RWREG = 177522           1332*   1363#   1369*   1372    1391*   1392    1395    1414*   1415    1418    1437*   1438    1441
                         1460*   1461    1481*   1482    1485    1504*   1505    1508    1527*   1528    1531    1550*   1551*
                         1552    1553    1557*   1577*   1578*   1579    1580    1583*
SERR1   011444           2352    2371#
SETADR  005142           1205#   2428    2944    3042    3138    3233
SFPTBL  002160 G          560#   2433    2531    2566
SRR     016652           3122    3413#
STORE   002320            712#   1071    1078    1205    2421    2937    3035    3131    3226
STRT    011620           2403    2416#
SVCGBL= 000000            398#    399#    408     409     419     420     428     429     430     431     432     433     434
                          435     436     437     438     439     440     441     442     443     444     445     446     447
                          448     449     450     451     452     453     454     455     456     457     458     459     460
                          461     462     463     465     466     468     469     470     471     472     473     474     475
                          476     477     478     479     480     481     482     483     484     485     486     487     488
                          489     490     491     492     493     494     495     496     497     498     499     500     501
                          502     503     514     515     517     518     537     538     539     559     560     561     613
                          614     695     696     793     794     803     804     894     895     914     915     934     935
                          954     955     974     975     986     987     998     999    1277    1278    1291    1292    1310
                         1311    1317    1318    1329    1330    2035    2036    2044    2045    2063    2064    2082    2083
                         2101    2102    2120    2121    2348    2349    2624    2625    2637    2638    2650    2651    2663
                         2664    2676    2677    3310    3311    3325    3326    3347    3348    3456    3457    3525    3526
                         3619#   3620
SVCINS= 000000            398#    420     421     422     423     424     425     426     427     428     429     430     431
                          432     433     434     435     436     437     438     439     440     441     442     443     444
                          445     446     447     448     449     450     451     452     453     454     455     456     457
                          458     459     460     461     462     463     464     465     466     467     468     469     470
                          471     472     473     474     475     476     477     478     479     480     481     482     483
                          484     485     486     487     488     489     490     491     492     493     494     495     496
                          497     498     499     500     501     502     503     504     516     517     518     519     520
                          521     522     523     524     525     536     537     558     559     794     801     802     804
                          807     808     896     897     898     899     900     901     902     903     904     905     906
                          907     908     909     911     912     916     917     918     919     920     921     922     923
                          924     925     926     927     928     929     931     932     936     937     938     939     940
                          941     942     943     944     945     946     947     948     949     951     952     956     957
                          958     959     960     961     962     963     964     965     966     967     968     969     971
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992	993	995	996	1000	1001	1002	1003	1004	1005	1007	1008	1012
1013	1014	1015	1016	1017	1018	1019	1063	1064	1065	1066	1067	1068
1069	1070	1071	1072	1073	1074	1075	1076	1077	1122	1123	1124	1125
1126	1127	1128	1280	1281	1293	1294	1295	1296	1301	1302	1303	1307
1308	1320	1321	1340	1341	1342	1344	1345	1346	1351	1352	1368	1369
1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1387
1388	1390	1391	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406
1407	1408	1410	1411	1413	1414	1420	1421	1422	1423	1424	1425	1426
1427	1428	1429	1430	1431	1433	1434	1436	1437	1443	1444	1445	1446
1447	1448	1449	1450	1451	1452	1453	1454	1456	1457	1459	1460	1464
1465	1466	1467	1468	1469	1470	1471	1472	1473	1474	1475	1477	1478
1480	1481	1487	1488	1489	1490	1491	1492	1493	1494	1495	1496	1497
1498	1500	1501	1503	1504	1510	1511	1512	1513	1514	1515	1516	1517
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1562	1563	1564	1565	1566	1567	1568	1569	1570	1571	1573	1574	1576
1577	1589	1590	1591	1592	1593	1594	1595	1596	1597	1598	1599	1600
1602	1603	1606	1607	1618	1619	1620	1622	1623	1628	1629	1630	1631
1632	1633	1634	1635	1636	1637	1638	1639	1641	1642	1644	1645	1651
1652	1653	1654	1655	1656	1657	1658	1659	1660	1661	1662	1664	1665
1668	1669	1675	1676	1677	1678	1679	1680	1681	1682	1683	1684	1685
1686	1688	1689	1691	1692	1698	1699	1700	1701	1702	1703	1704	1705
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1745	1746	1747	1748	1749	1750	1751	1752	1753	1754	1756	1757	1758
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1778	1779	1781	1782	1788	1789	1790	1791	1792	1793	1794	1795	1796
1797	1798	1799	1801	1802	1804	1805	1815	1816	1817	1818	1819	1820
1821	1822	1823	1824	1825	1826	1828	1829	1831	1832	1844	1845	1846
1847	1848	1849	1850	1851	1852	1853	1854	1855	1857	1858	1860	1861
1879	1880	1881	1883	1884	1885	1886	1887	1888	1889	1890	1891	1893
1894	1895	1898	1899	1900	1903	1904	1905	1906	1907	1908	1909	1912
1913	1915	1916	1918	1919	1920	1923	1924	1925	1928	1929	1930	1931
1932	1933	1934	1937	1938	1944	1945	1946	1948	1949	1951	1952	1953
1956	1957	1958	1961	1962	1963	1964	1965	1966	1967	1970	1971	1973
1974	1976	1977	1978	1981	1982	1983	1986	1987	1988	1989	1990	1991
1992	1995	1996	2000	2001	2002	2004	2005	2007	2008	2009	2010	2011
2014	2015	2016	2019	2020	2021	2022	2023	2024	2025	2028	2029	2030
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2089	2090	2091	2092	2093	2094	2095	2096	2098	2099	2103	2104	2105
2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2117	2118	2122
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	3108	3109	3110	3111	3112	3118	3119	3120	3121	3122	3123	3124	3129
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	3612	3616	3617	3618	3619								
SVCSUB= 177777	398#	1368	1390	1413	1436	1459	1480	1503	1526	1549	1576	1622	1644
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	2399	2468	2501	2513	2529	2832	2918	3006	3101	3196			
SVCTAG= 000000	398#	400#	548	549	598	599	910	911	930	931	950	951	970
	971	982	983	994	995	1006	1007	1077	1078	1279	1280	1306	1307
	1319	1320	1350	1351	1386	1387	1409	1410	1432	1433	1455	1456	1476
	1477	1499	1500	1522	1523	1545	1546	1572	1573	1601	1602	1605	1606
	1640	1641	1663	1664	1687	1688	1710	1711	1733	1734	1755	1756	1777
	1778	1800	1801	1827	1828	1856	1857	1859	1860	1911	1912	1936	1937
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	2098	2116	2117	2135	2136	2184	2185	2235	2236	2358	2359	2386	2387
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	2931	2943	2944	3002	3003	3017	3018	3028	3029	3041	3042	3097	3098
	3112	3113	3124	3125	3137	3138	3192	3193	3207	3208	3219	3220	3232
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                        3612    3613
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SWCNT   011320          2272*   2275*   2286*   2343#
SWERR   011326 G        2264    2348#
SWSET   002316           711#   1298*   2255*   2256    2351
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SYETST  015726          3241#   3258
SYRTST  015364          3146#   3163
SYSE    016570          2903    3265    3275    3285    3400#
SYSEIN  014236          2896    2898#
SYSET   015542          2908    3197#
SYSR    016555          2892    3170    3178    3186    3397#
SYSRIN  014210          2885    2887#   3070
SYSROM  002410           726#   3115    3144    3210    3239
SYSRT   015176          2897    3102#
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                        1280#   1307#   1320#   1351#   1387#   1410#   1433#   1456#   1477#   1500#   1523#   1546#   1573#
                        1602#   1606#   1641#   1664#   1688#   1711#   1734#   1756#   1778#   1801#   1828#   1857#   1860#
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                        2883    2884#   2889    2894    2895#   2900    2905    2906#   2914#   2925    2930    2931#   2936
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TABLES  012764          2530    2690#
TABL1   013306          2544    2735#
TABL2   013405          2553    2747#
TABL3   013504          2560    2759#
TAG1    011156          2302#   2315
TAG2    011206          2303    2311#
TAG3    011232          2319#   2331
TAG4    011262          2320    2328#
TAG4A   011274          2317    2332#
TEMP    011322          2270*   2276    2285*   2344#
TSTCKW  005042          1163    1173    1177#
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                         928     936#    940     942#    948     956#    960     962#    968     976#    980     988#    992
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                        2076    2084#   2088    2090#   2095    2103#   2107    2109#   2114    2122#   2126    2128#   2133
                        2293#   2298    2305#   2310    2322#   2327    2333#   2337    2350#   2356    2544#   2548    2553#
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                        3353
T$CODE= 111004          1072#   2410#   2422#   2860#   2870#   2880#   2891#   2902#   2927#   2938#   3012#   3025#   3036#
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                        3533#   3539#   3545#   3551#   3557#   3563#   3569#   3576#
T$ERRN= 000062            398#   1123#   1375#   1398#   1421#   1444#   1465#   1488#   1511#   1534#   1561#   1590#   1629#
                        1652#   1676#   1699#   1722#   1744#   1766#   1789#   1816#   1845#   1904#   1929#   1962#   1987#
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T$EXCP= 000000          1072#   1077    2422#   2427    2938#   2943    3012#   3017    3036#   3041    3107#   3112    3132#
                        3137    3202#   3207    3227#   3232    3459#   3464    3465#   3470    3471#   3476    3477#   3482
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                        3568    3569#   3574
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                 2209# 2231# 2268# 2340# 2446# 2480# 2618# 2836# 2910# 2975# 3165# 3260# 3270#
                 3280# 3290# 3297# 3488# 3576#
T$GMAN= 000000    398# 1069# 1078# 2419# 2428# 2935# 2944# 3009# 3018# 3033# 3042# 3104# 3113#
                 3129# 3138# 3199# 3208# 3224# 3233#
T$HILI= 177777   1072# 1076  2422# 2426  2938# 2942  3012# 3016  3036# 3040  3107# 3111  3132#
                 3136  3202# 3206  3227# 3231  3459# 3463  3465# 3469  3471# 3475  3477# 3481
                 3527# 3531  3533# 3537  3539# 3543  3545# 3549  3551# 3555  3557# 3561  3563#
                 3567  3569# 3573
T$LAST= 000001    398# 3617#
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                 3566  3569# 3572
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                 1664  1688  1711  1734  1756  1778  1801  1828  1857  1860  1912  1937  1970
                 1995  2028  2039  2060  2079  2098  2117  2136  2185  2236  2359  2387  2464
                 2498  2508  2524  2613  2634  2647  2660  2673  2686  2804  2914  3003  3098
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                 1386# 1390# 1409# 1413# 1432# 1436# 1455# 1459# 1476# 1480# 1499# 1503# 1522#
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                 1831# 1856# 1859# 1873# 1883# 1911# 1915# 1936# 1948# 1969# 1973# 1994# 2004#
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                 2507# 2513# 2523# 2529# 2612# 2624# 2633# 2637# 2646# 2650# 2659# 2663# 2672#
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                 3611#
T$NS0 = 000005    409#  505   515#  526   536#  548   558#  598   614#  687   696#  728   894#
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T$NS1 = 000011   1368# 1386  1390# 1409  1413# 1432  1436# 1455  1459# 1476  1480# 1499  1503#
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                 2650# 2659  2663# 2672  2676# 2685  2832# 2913  2918# 3002  3006# 3097  3101#
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T$SEGL= 177777    398#
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                 1948# 1973# 2004# 2193# 2248# 2397# 2399# 2468# 2501# 2513# 2529# 2830# 2832#
                 2918# 3006# 3101# 3196#
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                1856# 1859# 1879# 1880  1911# 1936# 1944# 1945  1969# 1994# 2000# 2001  2027#
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                2976  3002# 3012# 3025# 3036# 3097# 3107# 3121# 3132# 3165# 3166  3192# 3202#
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                1397 1402 1404 1407 1410 1413 1420 1425 1427 1430 1433 1436 1443
                1448 1450 1453 1456 1459 1464 1469 1471 1474 1477 1480 1487 1492
                1494 1497 1500 1503 1510 1515 1517 1520 1523 1526 1533 1538 1540
                1543 1546 1549 1560 1565 1567 1570 1573 1576 1589 1594 1596 1599
                1602 1606 1618 1622 1628 1633 1635 1638 1641 1644 1651 1656 1658
                1661 1664 1668 1675 1680 1682 1685 1688 1691 1698 1703 1705 1708
                1711 1714 1721 1726 1728 1731 1734 1736 1743 1748 1750 1753 1756
                1758 1765 1770 1772 1775 1778 1781 1788 1793 1795 1798 1801 1804
                1815 1820 1822 1825 1828 1831 1844 1849 1851 1854 1857 1860 1879
                1883 1889 1894 1899 1903 1908 1912 1915 1919 1924 1928 1933 1937
                1944 1948 1952 1957 1961 1966 1970 1973 1977 1982 1986 1991 1995
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                3273 3278 3280 3283 3288 3290 3294 3297 3316 3322 3330 3340 3344
                3352 3358 3428
T$TSTS= 000001     398# 1366# 1614# 1873# 2193# 2248# 2397# 2830#
T$$AUT= 010014   1317# 1319
T$$CLE= 010015   1329# 1344  1350
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T$$HW = 010000           536#    548
T$$INI= 010012          1291#   1306
T$$MSG= 010106           894#    910     914#    930     934#    950     954#    970     974#    982     986#    99%     998#
                        1006    2044#   2059    2063#   2078    2082#   2097    2101#   2116    2120#   2135    2348#   2358
                        2624#   2633    2637#   2646    2650#   2659    2663#   2672    2676#   2685    3310#   3321    3325#
                        3343    3347#   3357
T$$PRO= 010013          1310#
T$$RPT= 010011          1277#   1279
T$$SOF= 010110          3524#   3576    3612
T$$SRV= 010052          2035#   2038
T$$SUB= 010103          1368#   1386    1390#   1409    1413#   1432    1436#   1455    1459#   1476    1480#   1499    1503#
                        1522    1526#   1545    1549#   1572    1576#   1601    1622#   1640    1644#   1663    1668#   1687
                        1691#   1710    1714#   1733    1736#   1755    1758#   1777    1781#   1800    1804#   1827    1831#
                        1856    1883#   1911    1915#   1936    1948#   1969    1973#   1994    2004#   2027    2399#   2463
                        2468#   2497    2501#   2507    2513#   2523    2529#   2612    2832#   2913    2918#   2975    3002
                        3006#   3097    3101#   3192    3196#   3293
T$$SW = 010001           558#    598
T$$TES= 010076          1366#   1381    1404    1427    1450    1471    1494    1517    1540    1567    1596    1605    1614#
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                        1879    1944    2000    2030    2184    2193#   2209    2231    2235    2248#   2268    2340    2386
                        2397#   2446    2480    2618    2803    2830#   2836    2910    3165    3260    3270    3280    3290
                        3297    3427
T1      005432 G         518    1366#
T1.1    005432          1368#
T1.10   006202          1576#
T1.2    005472          1390#
T1.3    005544          1413#
T1.4    005616          1436#
T1.5    005666          1459#
T1.6    005726          1480#
T1.7    006000          1503#
T1.8    006050          1526#
T1.9    006120          1549#
T2      006276 G         519    1614#
T2.1    006310          1622#
T2.10   007070          1831#
T2.2    006350          1644#
T2.3    006422          1668#
T2.4    006474          1691#
T2.5    006544          1714#
T2.6    006614          1736#
T2.7    006666          1758#
T2.8    006736          1781#
T2.9    007006          1804#
T3      007164 G         520    1873#
T3.1    007202          1883#
T3.2    007312          1915#
T3.3    007416          1948#
T3.4    007500          1973#
T3.5    007574          2004#
T4      010560 G         521    2193#
T5      010730 G         522    2248#
T6      011562 G         523    2397#
T6.1    011562          2399#
T6.2    012014          2468#
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T6.3    012116            2501#
T6.4    012144            2513#
T6.5    012216            2529#
T7      014020 G           524    2830#
T7.1    014020            2832#
T7.2    014272            2918#
T7.3    014626            3006#
T7.4    015174            3101#
T7.5    015540            3196#
UAM   = 000200 G           674#
ULIMIT  002310             708#  1109*  1111   1113   1115*  1118*  1119
UNIT    017020            3460   3490#
UNKNWN  013603            2595   2771#
VECT    002314             710#  1296*  1340   1887
VIPRI   004250            1011#  3319   3333   3355
VIRMSG  003625             868#  1014
VIRTAD  004524            1108#  2683   2958   3056   3152   3247   3318   3332   3354
VRTPCR  002262             697#  2430*  2431   2502*  2503   2515*  2517   2519*
WDELAY  005232            1241#  1895   1920   1953   1978   2011   2195   2200   2213   2218   2223   2228
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WORDCT  002322             713#  1079*  2920*  3018*  3114*  3209*
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X$FALS= 000040             398#
X$OFFS= 000400             398#  3488   3576
X$TRUE= 000020             398#
ZERR    003214             815#   896
.     = 017576               2#   566#   724#   725#   726#  1345   1382   1405   1428   1451   1472   1495   1518
                          1541   1568   1597   1619   1636   1659   1683   1706   1729   1751   1773   1796   1823
                          1852   1880   1945   2001   2031   2210   2232   2269   2341   2384#  2447   2481   2619
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                          3607#  3614#
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BGNCLN  1328
BGNHRD  3454
BGNHW    535
BGNINI  1290
BGNMOD   407   513   612   694
BGNMSG   893   913   933   953   973   985   997  2043  2062  2081  2100  2119  2347  2623  2636
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BGNPRO  1309
BGNRPT  1276
BGNSFT  3523
BGNSRV  2034
BGNSUB  1367  1389  1412  1435  1458  1479  1502  1525  1548  1575  1621  1643  1667  1690  1713
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        2831  2917  3005  3100  3195
BGNSW    557
BGNTST  1365  1613  1872  2192  2247  2396  2829
BNCOMP  2402  2840
BREAK   2197  2215  2220  2225
BRESET  2006
CKLOOP  1126  1378  1383  1401  1406  1424  1429  1447  1452  1468  1473  1491  1496  1514  1519
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        1730  1747  1752  1769  1774  1792  1797  1819  1824  1848  1853  1907  1932  1965  1990
        2023  2265  2443  2448  2460  2477  2482  2494  2592  2982  2990  2998  3077  3085  3093
        3172  3180  3188  3267  3277  3287
CLRVEC  1339
DESCRI   792
DEVTYP   802
DISPAT   515
ENDAUT  1318
ENDCLN  1349
ENDHRD  3509
ENDHW    547
ENDINI  1305
ENDMOD   504   525   686   727
ENDMSG   909   929   949   969   981   993  1005  2058  2077  2096  2115  2134  2357  2632  2645
        2658  2671  2684  3320  3342  3356
ENDPRO  1314
ENDRPT  1278
ENDSFT  3610
ENDSRV  2037
ENDSUB  1385  1408  1431  1454  1475  1498  1521  1544  1571  1600  1639  1662  1686  1709  1732
        1754  1776  1799  1826  1855  1910  1935  1968  1993  2026  2462  2496  2506  2522  2611
        2912  3001  3096  3191  3292
ENDSW    597
ENDTST  1604  1858  2183  2234  2385  2802  3426
EQUALS   614
ERRDF   1121  1373  1396  1419  1442  1463  1486  1509  1532  1559  1588  1627  1650  1674  1697
        1720  1742  1764  1787  1814  1843  1902  1927  1960  1985  2018  2260  2438  2455  2472
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GMANID  1068  2418  2934  3008  3032  3103  3128  3198  3223
GMANIL  2406  2856  2866  2876  2887  2898  2923  3021  3117  3212
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GPRML   2407#  2410   2857#  2860   2867#  2870   2877#  2880   2888#  2891   2899#  2902   2924#  2927   3022#
        3025   3118#  3121   3213#  3216   3482
HEADER   418
LASTAD  3615
MANUAL  2202   2249   2400   2583   2838
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MSDECR   505#   526#   548#   598#   687#   728#   910#   930#   950#   970#   982#   994#  1006#  1279#  1306#
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        2633#  2646#  2659#  2672#  2685#  2803#  2913#  3002#  3097#  3192#  3293#  3321#  3343#  3357#  3427#
        3510#  3611#
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MSENDE   505#   526#   548#   598#   687#   728#   910#   930#   950#   970#   982#   994#  1006#  1279#  1306#
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        1880   1944#  1945   2000#  2001   2030#  2031   2209#  2210   2231#  2232   2268#  2269   2340#  2341
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	2646#	2650#	2659#	2663#	2672#	2676#	2685#	2803#	2830#	2832#	2863#	2873#	2883#	2894#	2905#
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	3196#	3207#	3219#	3232#	3293#	3310#	3321#	3325#	3343#	33[illegible]7#	3357#	3427#	3456#	3511#	3525#
	3612#	3619#													
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MSGETS	505#	526#	548#	598#	687#	728#	910#	930#	950#	970#	982#	994#	1006#	1279#	1306#
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MSTSTL   899#   907#   911#   919#   927#   931#   939#   947#   951#   959#   967#   971#   979#   983#   991#
         995#  1003#  1007#  1017#  1066#  1069#  1122#  1127#  1280#  1294#  1302#  1307#  1320#  1341#  1344#
        1351#  1368#  1374#  1379#  1381#  1384#  1387#  1390#  1397#  1402#  1404#  1407#  1410#  1413#  1420#
        1425#  1427#  1430#  1433#  1436#  1443#  1448#  1450#  1453#  1456#  1459#  1464#  1469#  1471#  1474#
        1477#  1480#  1487#  1492#  1494#  1497#  1500#  1503#  1510#  1515#  1517#  1520#  1523#  1526#  1533#
        1538#  1540#  1543#  1546#  1549#  1560#  1565#  1567#  1570#  1573#  1576#  1589#  1594#  1596#  1599#
        1602#  1606#  1618#  1622#  1628#  1633#  1635#  1638#  1641#  1644#  1651#  1656#  1658#  1661#  1664#
        1668#  1675#  1680#  1682#  1685#  1688#  1691#  1698#  1703#  1705#  1708#  1711#  1714#  1721#  1726#
        1728#  1731#  1734#  1736#  1743#  1748#  1750#  1753#  1756#  1758#  1765#  1770#  1772#  1775#  1778#
        1781#  1788#  1793#  1795#  1798#  1801#  1804#  1815#  1820#  1822#  1825#  1828#  1831#  1844#  1849#
        1851#  1854#  1857#  1860#  1879#  1883#  1889#  1894#  1899#  1903#  1908#  1912#  1915#  1919#  1924#
        1928#  1933#  1937#  1944#  1948#  1952#  1957#  1961#  1966#  1970#  1973#  1977#  1982#  1986#  1991#
        1995#  2000#  2004#  2007#  2010#  2015#  2019#  2024#  2028#  2030#  2049#  2056#  2060#  2068#  2075#
        2079#  2087#  2094#  2098#  2106#  2113#  2117#  2125#  2132#  2136#  2185#  2198#  2203#  2209#  2216#
        2221#  2226#  2231#  2236#  2250#  2261#  2266#  2268#  2297#  2309#  2326#  2336#  2340#  2355#  2359#
        2387#  2399#  2401#  2407#  2419#  2439#  2444#  2446#  2449#  2456#  2461#  2464#  2468#  2473#  2478#
        2480#  2483#  2490#  2495#  2498#  2501#  2508#  2513#  2524#  2529#  2547#  2556#  2563#  2577#  2584#
        2588#  2593#  2598#  2607#  2613#  2618#  2630#  2634#  2643#  2647#  2656#  2660#  2669#  2673#  2681#
        2686#  2804#  2832#  2836#  2839#  2857#  2867#  2877#  2888#  2899#  2910#  2914#  2918#  2924#  2935#
        2975#  2978#  2983#  2986#  2991#  2994#  2999#  3003#  3006#  3009#  3022#  3033#  3073#  3078#  3081#
        3086#  3089#  3094#  3098#  3101#  3104#  3118#  3129#  3165#  3168#  3173#  3176#  3181#  3184#  3189#
        3193#  3196#  3199#  3213#  3224#  3260#  3263#  3268#  3270#  3273#  3278#  3280#  3283#  3288#  3290#
        3294#  3297#  3316#  3322#  3330#  3340#  3344#  3352#  3358#  3428#
MSWORD   458#   467    516#   518    519    520    521    522    523    524   1069#  1071   1072#  1122#  1123
        1124   1125   1344#  1374#  1375   1376   1377   1381#  1397#  1398   1399   1400   1404#  1420#  1421
        1422   1423   1427#  1443#  1444   1445   1446   1450#  1464#  1465   1466   1467   1471#  1487#  1488
        1489   1490   1494#  1510#  1511   1512   1513   1517#  1533#  1534   1535   1536   1540#  1560#  1561
        1562   1563   1567#  1589#  1590   1591   1592   1596#  1618#  1628#  1629   1630   1631   1635#  1651#
        1652   1653   1654   1658#  1675#  1676   1677   1678   1682#  1698#  1699   1700   1701   1705#  1721#
        1722   1723   1724   1728#  1743#  1744   1745   1746   1750#  1765#  1766   1767   1768   1772#  1788#
        1789   1790   1791   1795#  1815#  1816   1817   1818   1822#  1844#  1845   1846   1847   1851#  1879#
        1903#  1904   1905   1906   1928#  1929   1930   1931   1944#  1961#  1962   1963   1964   1986#  1987
        1988   1989   2000#  2019#  2020   2021   2022   2030#  2209#  2231#  2261#  2262   2263   2264   2268#
        2340#  2407#  2409   2410#  2419#  2421   2422#  2439#  2440   2441   2442   2446#  2456#  2457   2458
        2459   2473#  2474   2475   2476   2480#  2490#  2491   2492   2493   2588#  2589   2590   2591   2618#
        2836#  2857#  2859   2860#  2867#  2869   2870#  2877#  2879   2880#  2888#  2890   2891#  2899#  2901
        2902#  2910#  2924#  2926   2927#  2935#  2937   2938#  2975#  2978#  2979   2980   2981   2986#  2987
        2988   2989   2994#  2995   2996   2997   3009#  3011   3012#  3022#  3024   3025#  3033#  3035   3036#
        3073#  3074   3075   3076   3081#  3082   3083   3084   3089#  3090   3091   3092   3104#  3106   3107#
        3118#  3120   3121#  3129#  3131   3132#  3165#  3168#  3169   3170   3171   3176#  3177   3178   3179
        3184#  3185   3186   3187   3199#  3201   3202#  3213#  3215   3216#  3224#  3226   3227#  3260#  3263#
        3264   3265   3266   3270#  3273#  3274   3275   3276   3280#  3283#  3284   3285   3286   3290#  3297#
        3459#  3465#  3471#  3477#  3483#  3488#  3527#  3533#  3539#  3545#  3551#  3557#  3563#  3569#  3576#
        3617   3618
MSXFER  3488#  3576#
POINTE   415
```

```
PRINTB    895     915     935     955     975     987     999    2045    2051    2064    2070    2083    2089    2102    2108
         2121    2127    2349    2625    2638    2651    2664    2677    3311    3326    3334    3348
PRINTF   1011    1062    2292    2304    2321    2332    2543    2552    2559    2573    2594    2602
PRINTX    901     921     941     961
SETPRI   1300    1892    1897    1917    1922    1950    1955    1975    1980    2008    2013
SETVEC   1884
SVC       397#
XFER     1344#   1381#   1404#   1427#   1450#   1471#   1494#   1517#   1540#   1567#   1596#   1618#   1635#   1658#   1682#
         1705#   1728#   1750#   1772#   1795#   1822#   1851#   1879#   1944#   2000#   2030#   2209#   2231#   2268#   2340#
         2446#   2480#   2618#   2836#   2910#   2975#   3165#   3260#   3270#   3280#   3290#   3297#   3488#   3576#

. ABS.  017576     000


 ERRORS DETECTED:  0

 CVM8AE.BIN,CVM8AE.LST/CRF/SOL/NL:TOC=SVC.MLB/ML,CVM8AE.P11
 RUN-TIME: 30 31 4 SECONDS
 RUN-TIME RATIO: 139/66=2.1
 CORE USED:  19K  (38 PAGES)
```