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1. PURPOSE

THE 1800 RELOCATABLE DIAGNOSTIC LOADER IS USED TO LOAD THE DIAGNOSTIC MONITOR AND PROGRAMS WHICH RUN UNDER CONTROL OF THE DIAGNOSTIC MONITOR. THE LOADER ALSO LOADS NON-MONITOR PROGRAMS WHOSE OBJECT DECKS ARE IN THE SAME FORM AS THE OUTPUT OF THE 1800 ASSEMBLER (12-4 FORMAT). (THE 1800 RELOCATABLE DIAGNOSTIC LOADER WILL NOT LOAD PROGRAMS WHOSE OBJECT DECK IS COMPATIBLE WITH EITHER THE 1800 BASIC DIAGNOSTIC LOADER OR THE 1800 AUXILIARY STORAGE LOADER.)

2. PREREQUISITES

2.1 PROGRAM PREREQUISITES.

PROGRAMS MAY NOT HAVE ORG ADDRESSES OF /3000 TO /7500 SINCE THIS IS RESERVED FOR WAITS AND ERROR TRAPS.

2.2 EQUIPMENT PREREQUISITES

A. 1801 OR 1802 PROCESSOR CONTROLER
B. 1442 CARD READER/PUNCH

3. USE PROCEDURE

3.1 LOADING AND OPERATING

THE 1800 RELOCATABLE LOADER DECK CONSISTS OF SEVEN (8-8 FORMAT) CARDS. THE RELOCATABLE LOADER IS CAPABLE OF LOADING-

1. ABSOLUTE BINARY DECKS (12-4 FORMAT)
2. RELOCATABLE BINARY DECKS (WHOSE ORIGIN IS /07FF)
3. ABSOLUTE HEX CORRECTION CARDS
4. RELOCATABLE HEX CORRECTION CARDS
5. ABSOLUTE HEX TRANSFER CARDS
6. EDIT CARDS (OF THE TYPE REQUIRED FOR PROGRAMS WHICH RUN UNDER

CONTROL OF THE DIAGNOSTIC MONITORS)

TO LOAD A PROGRAM-

A. AT 1442 CARD READ/PUNCH-

1. DEPRESS NPRO PUSHBUTTON TO EJECT ANY CARDS LEFT IN MACHINE.
2. PLACE 1800 RELOCATABLE LOADER IN FRONT OF DECK(S) TO BE LOADED AND PLACE CARDS IN HOPPER. PLACE CARDS FACE DOWN WITH NINE EDGE FORWARD.
3. DEPRESS START PUSHBUTTON ON 1442. READY INDICATOR SHOULD LIGHT.

B. USE 1800 PC CONSOLE TO CLEAR STORAGE AS FOLLOWS-

1. SET DATA ENTRY SWITCHES TO /70FF.
2. SET CHECK STOP SWITCH TO 'OFF'.
3. SET WRITE STG PRO SWITCH TO 'YES'.
4. HOLD CLEAR STORAGE PUSHBUTTON DOWN AND DEPRESS START PUSHBUTTON TO CLEAR STORAGE.
5. DEPRESS STOP PUSHBUTTON TO STOP CLEARING OPERATION.

C. TO INITIATE PROGRAM LOADING-

1. SET OPERATIONS MONITOR SWITCH TO 'OFF'.
2. SET DISABLE INTERRUPT SWITCH TO 'OFF'.
3. SET CHECK STOP SWITCH TO 'ON'.
4. SET WRITE STOR PROT BITS SWITCH TO 'YES'.
5. SET 1800 PC SENSE/PROGRAM AND DATA ENTRY SWITCHES AS REQUIRED BY PROGRAM TO BE LOADED.
6. DEPRESS RESET PUSHBUTTON.
7. DEPRESS PROGRAM LOAD PUSHBUTTON. (PROGRAM SHOULD LOAD)

3.2 WAITS

SEE THE WAIT SECTION OF THE LISTING FOR REGISTER VALUES AND WAIT DESCRIPTION.

4. PRINTOUTS (NONE)

5. COMMENTS

5.1 THE FOLLOWING ARE THE MAJOR ELEMENTS OF THE 1800 RELOCATABLE

DIAGNOSTIC LOADER-

5.1.1 BOOTSTRAP ROUTINE-- IS A SET OF INSTRUCTIONS ENTERED INTO THE PROCESSOR CONTROLLED BY THE IPL (INITIAL PROGRAM LOADER) MODE WHOSE FUNCTION IS TO READ IN THE REMAINDER OF THE LOADER.

5.1.2 READ ROUTINE -- CHECKS 1442 FOR PROPER STATUS, READS A CARD INTO LOCATION /0000 THROUGH /004F, CHECKS FOR SATISFACTORY COMPLETION OF THE READ OPERATION, AND DETERMINES WHETHER THE CARD READ IS A BINARY CARD OR A HEXADECIMAL (CORRECTION OR EDIT CARD).

5.1.3 BINARY PACK ROUTINE -- TAKES DATA FOUND IN LOCATIONS /0000 THROUGH /004F (12 BITS PER CORE WORD) AND PACKS IT INTO LOCATION /0000 THROUGH /0035 (16 BITS PER CORE WORD).

5.1.4 CHECKSUM ROUTINE -- COMPUTES CHECKSUM OF A BINARY CARD, WAITS IF CHECKSUM IS IN ERROR.

5.1.5 MOVE ROUTINE -- MOVES DATA FROM /0000 THROUGH /0035 TO PROPER CORE LOCATION. CHECKS FOR EXCEEDING CORE SIZE. ADDS IN RELOCATION FACTOR WHEN REQUIRED.

5.1.6 RELOCATABLE HEADER ROUTINE -- ENTERED WHEN A RELOCATABLE HEADER CARD

IS FOUND. COMPUTES A RELOCATION FACTOR FOR PROGRAM THAT FOLLOWS.

5.1.7 ABSOLUTE HEADER ROUTINE -- ENTERED WHEN AN ABSOLUTE HEADER CARD IS FOUND. SETS RELOCATION FACTOR TO ZERO.

5.1.8 TRANSFER ROUTINE -- ENTERED WHEN A TRANSFER CARD IS FOUND. COMPUTES THE NEXT LOCATION AVAILABLE FOR LOADING IF ANOTHER PROGRAM FOLLOWS. TRANSFERS CONTROL TO THE LOCATION SPECIFIED ON THE TRANSFER CARD.

5.1.9 HEX TO BINARY CONVERSION ROUTINE -- CONVERTS A HEXADECIMAL CARD TO BINARY. ADDS IN RELOCATION FACTOR IF REQUIRED.

5.2 CARD RECOGNITION

THE FOLLOWING ARE CARDS WHICH CAN BE LOADED BY THE 1800 RELOCATABLE DIAGNOSTIC LOADER.

5.2.1 ABSOLUTE HEADER CARDS HAVE A 1 PUNCH IN COLUMN 4.

5.2.2 RELOCATABLE HEADER CARDS HAVE A 0 (ZERO) PUNCH IN COLUMN 4.

5.2.3 NORMAL DATA CARDS HAVE NO PUNCHES IN ROW 12 IN COLUMN 1. AN ADDRESS IN ROWS 11 THROUGH 9 IN COLUMN 1 AND ROWS 12 THROUGH 1 IN COLUMN 2. A CHECKSUM IN ROWS 2 THROUGH 9 OF COLUMN 2 AND ROWS 12 THROUGH 5 OF COLUMN 3. A 12, 0 PUNCH IN COLUMN 4, A WORD COUNT IN ROWS 4 THROUGH 9 OF COLUMN 4. A RELOCATION FIELD (WHICH MAY BE BLANK) IN COLUMN 5 THROUGH 12. DATA IN COLUMNS 13 THROUGH 72. A SEQUENCE NUMBER IN COLUMNS 73-80.

5.2.4 BINARY TRANSFER CARDS HAVE 12, 11, 0, 1 PUNCHES IN COLUMN 4 AND A WORD COUNT OF ZERO (NO PUNCHES IN ROWS 4 THROUGH 9 IN COLUMN 4).

5.2.5 HEXADECIMAL TRANSFER CARDS HAVE A 12 PUNCH IN COLUMN 1, A TRANSFER ADDRESS IN COLUMN 2 THROUGH 5 AND NO PUNCHES IN COLUMNS 6 AND 7.

5.2.6 HEXADECIMAL CORRECTION CARDS HAVE A 12 PUNCH IN COLUMN 1. AN ADDRESS IN COLUMN 2 THROUGH 5. DATA IN COLUMNS 6 THROUGH 80. DATA IS GROUPED 5 COLUMNS TO ONE CORE WORD. THE FIRST COLUMN OF EACH GROUP SPECIFIES WHETHER OR NOT THE GROUP REQUIRES A RELOCATION FACTOR. IF THE FIRST COLUMN OF A GROUP IS BLANK A RELOCATION FACTOR WILL NOT BE ADDED. IF THE FIRST COLUMN OF A GROUP CONTAINS AN R (11,9 PUNCH) A RELOCATION FACTOR WILL BE ADDED TO THE FIELD. LOADING OF THE CARD IS TERMINATED BY TWO SEQUENTIAL BLANK COLUMNS.

5.2.7 EDIT CARDS HAVE 12, 5 PUNCHES IN COLUMN 1. DATA IS GROUPED 4 COLUMNS PER CORE WORD WITH A BLANK COLUMN AFTER EACH GROUP. LOADING OF THE CARD IS TERMINATED BY TWO SEQUENTIAL BLANK COLUMNS.

```
                        ABS                                                 8B100020
30F8                    ORG     /30F8                                       8B100030
                    *                                                       8B100040
                    ********************************************************8B100050
                    *           WAITS       ERROR COMMENTS                  8B100060
                    ********************************************************8B100070
                    *                                                       8B100080
30F8 0 0123             DC      W30F8&1     THE LAST CARD OF THE EDIT       8B100090
                    *                       CARD ROUTINE IS NOT INTER-      8B100100
                    *                       FACED WITH THE PROGRAM BE-      8B100110
                    *                       ING LOADED. CHECK FOR PRO-      8B100120
                    *                       PER LOADING PROCEDURE AND       8B100130
                    *                       EDIT CARDS. RELOAD PROGRAM      8B100140
                    ********************************************************8B100150
                    *                                                       8B100160
30F9 0 00A2             DC      W30F9&1     CHECK SUM ERROR. NORMAL         8B100170
                    *                       PROCEDURE IS TO RELOAD.         8B100180
                    ********************************************************8B100330
                    *                                                       8B100340
30FA 0 000F             DC      W30FA&1     LOADER ERROR. THIS ERROR        8B100350
                    *                       OCCURRED WHILE THE LOADER       8B100360
                    *                       WAS BEING LOADER BECAUSE        8B100370
                    *                       AN ERROR BIT WAS ON IN THE      8B100380
                    *                       DSW. RELOAD LOADER.             8B100390
                    ********************************************************8B100400
                    *                                                       8B100410
30FB 0 0073             DC      W30FB&1     DSW ERROR BIT ON. CLEAR         8B100420
                    *                       THE READER AND SET IT UP        8B100430
                    *                       TO READ THE SAME INFORMAT-      8B100440
                    *                       ION AGAIN. TO CONTINUE          8B100450
                    *                       PRESS START.                    8B100460
                    ********************************************************8B100470
                    *                                                       8B100480
30FC 0 00BC             DC      W30FC&1     LOADING HAS REACHED THE         8B100490
                    *                       UPPER LIMIT OF MEMORY.          8B100500
                    *                       CHECK AND RELOAD.               8B100510
                    ********************************************************8B100520
0000                    ORG     0           CARD 0                          8B100530
                    *                                                       8B100540
                    *  THIS IS THE 1ST CARD OF THE LOADER, IT LOADS         8B100550
                    *    THE REST  OF THE LOADER. (36 WORDS PER CARD)       8B100560
                    *                                                       8B100570
0000 0 0811         LD22    XIO     READ1                                   8B100580
0001 0 0812         LD25    XIO     DSW1        CK DSW                      8B100590
0002 0 4C04 0001            BSC  L  LD25,E      BRANCH IF STILL NOT RDY     8B100600
0004 0 B00F                 CMP     DSW1                                    8B100610
0005 0 7008                 MDX     W30FA       LOADER ERROR                8B100620
0006 0 7006                 MDX     LD30        READY MAY NOT BE ON         8B100630
0007 0 7424 0012            MDX  L  READ1,36                                8B100640
0009 0 74FF 0011            MDX  L  CT,-1       SKIP IF LDR IS IN           8B100650
000B 0 70F4                 MDX     LD22                                    8B100660
000C 0 701F                 MDX     LD36                                    8B100670
000D 0 B008         LD30    CMP     MSK5        CK IF B5 OR B6 ON           8B100680
000E 0 30FA         W30FA   DC      /30FA       LOADING ERROR OF LOADER     8B100690
000F 0 70FE                 MDX     W30FA       * RELOAD PROGRAM            8B100700
0010 0 70F0                 MDX     LD25        READY NOT ON                8B100710
0011 0 0007         CT      DC      7                                       8B100720
0012   0000                 BSS  E  0                                       8B100730
0012 0 002C         READ1   DC      44                                      8B100740
0013 0 1601                 DC      /1601                                   8B100750
0014 0 0800         DSW1    DC      /0800                                   8B100760
0015 0 1700                 DC      /1700                                   8B100770
0016 0 0100         MSK5    DC      /0100                                   8B100780
                    ********************************************************8B100790
002C                    ORG     44          CARD 1                          8B100800
                    *                                                       8B100810
                    ********************************************************8B100820
                    *                                                     *8B100830
```



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                    *       4K TO 65K CORE SIZE DETERMINATION RTN       *   8B100840
                    *                                                   *   8B100850
                    ********************************************************8B100860
002C 0 6100         LD36    LDX     1 0         SET CONTROL INDEX           8B100870
002D 0 C007                 LD      STGCK&1     GET CONSTANT FFFF & SET     8B100880
002E 0 D1FF                 STO     1 -1        IN MAXIMUM ADDRESS          8B100890
                    *                                                       8B100900
002F 0 7500 1000    STGLP   MDX     L1 /1000    ADVANCE CONTROL INDEX       8B100910
0031 0 1000                 NOP     0           SAFETY NOP FOR 32K CORE     8B100920
0032 0 1010                 SLA     16          CLEAR ACCUMULATOR AND SET   8B100930
0033 0 D1FF                 STO     1 -1        IN 4K CORE BLOCK MAX ADDR   8B100940
                    *                                                       8B100950
0034 0 C400 FFFF    STGCK   LD      L  /FFFF    GET MAX CORE ADDRESS DATA   8B100960
0036 0 4C20 002F            BSC     L  STGLP,Z  CHECK IT FOR ZERO           8B100970
                    *                           BRANCH LOOP IF NOT MAX      8B100980
                    *                                                       8B100990
0038 0 71FF                 MDX     1 -1        DECREMENT X1 TO ACTUAL      8B101000
                    *                           MAXIMUM ADDRESS THIS CPU    8B101010
                    *                                                       8B101020
0039 0 1000                 NOP     0           SAFETY NOP FOR 32K CORE     8B101030
003A 0 6D00 0126            STX     L1 ULIM     STORE MAX CORE SIZE         8B101040
003C 0 7013                 MDX     RD05        BR TO CONTINUE              8B101050
                    ********************************************************8B101060
0050                    ORG     80          CARD 2                          8B101070
                    *                                                       8B101080
                    * THIS ROUTINE READS THE OBJECT CARDS                   8B101090
                    *                                                       8B101100
0050 0 0817         RD05    XIO     MSK         MASK                        8B101110
0051 0 0818                 XIO     MSK2        MASK 2ND SET                8B101120
0052 0 C01D         RD20    LD      DSW         CK LAST CARD SW             8B101130
0053 0 4CA0 0123            BSC  I  MLCD,Z      GO TO MONITOR IF ON         8B101140
0055 0 0816                 XIO     READ        READ A CARD                 8B101150
0056 0 0819         RD25    XIO     DSW         CK READY                    8B101160
0057 0 4C04 0056            BSC  L  RD25,E      XFER IF NOT READY           8B101170
0059 0 1003                 SLA     3           ERR TO CARRY, LAST CD- 80   8B101180
005A 0 4828                 BSC     &Z          IS LAST CARD ON             8B101190
005B 0 6814                 STX     DSW         SET LAST CARD SW            8B101200
005C 0 4C02 0072            BSC  L  W30FB,C     ERROR BIT ON                8B101210
005E 0 C0A1                 LD      LD22                                    8B101220
005F 0 4C28 00F0            BSC  L  HB05,&Z                                 8B101230
0061 0 1810                 SRA     16                                      8B101240
0062 0 D07A                 STO     HEXSW       INDICATE BINARY CARD        8B101250
0063 0 7010                 MDX     SB05                                    8B101260
                    *                                                       8B101270
0064 0 3000         K3000   DC      /3000       CONSTANT                    8B101280
0065 0 1084         SL      SLT     4                                       8B101290
0066 0 1088                 SLT     8                                       8B101300
0067 0 108C                 SLT     12                                      8B101310
0068   0000                 BSS  E  0                                       8B101320
0068 0 FFFF         MSK     DC      /FFFF                                   8B101330
0069 0 0480                 DC      /0480                                   8B101340
006A 0 FFFF         MSK2    DC      /FFFF                                   8B101350
006B 0 0481                 DC      /0481                                   8B101360
006C 0 0000         READ    DC      LD22                                    8B101370
006D 0 1600                 DC      /1600                                   8B101380
006E 0 0001         ONE     DC      1                                       8B101390
                    *                                                       8B101400
006F 0 07FF         RLBA    DC      2047        **KEEP AT /6F, BASE ADDRESS 8B101410
                    *                                                       8B101420
0070 0 0000         DSW     DC      0           SENSE DSW & LAST CD SW      8B101430
0071 0 1701                 DC      /1701                                   8B101440
                    *                                                       8B101450
0072 0 30FB         W30FB   DC      /30FB       ERROR LIST ON IN DSW        8B101460
0073 0 70DE                 MDX     RD20                                    8B101470
                    ********************************************************8B101480
0074                    ORG     116         CARD 3                          8B101490
                    *                                                       8B101500
                    *                                                       8B101510
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                        *  THIS RT PACKS BINARY DATA AND LEAVES IT IN          8B101520
                        *    LOCATIONS 0000-0040 .                             8B101530
                        *                                                      8B101540
0074 0 61B8             SB05  LDX   1 -72                                      8B101550
0075 0 6300                   LDX   3 0                                        8B101560
0076 0 62FD             SB06  LDX   2 -3                                       8B101570
0077 0 C268             SB07  LD    2 SL&3                                     8B101580
0078 0 D004                   STO     SB10                                     8B101590
0079 0 C149                   LD    1 73          CDIN&73                      8B101600
007A 0 18D0                   RTE     16                                       8B101610
007B 0 C148                   LD    1 72          CDIN&72                      8B101620
007C 0 1804                   SRA     4                                        8B101630
007D 0 1000             SB10  SLA     0                                        8B101640
007E 0 D300                   STO   3 0           CDIN                         8B101650
007F 0 7301                   MDX   3 1                                        8B101660
0080 0 7101                   MDX   1 1                                        8B101670
0081 0 7201                   MDX   2 1                                        8B101680
0082 0 70F4                   MDX     SB07        FINISHED                     8B101690
0083 0 7101                   MDX   1 1                                        8B101700
0084 0 70F1                   MDX     SB06                                     8B101710
                        *                                                      8B101720
                        *  THIS RT DETERMINES WHETHER THE DATA CARD IS         8B101730
                        *  1□ ABSOLUTE HDR CARD  2□ RELOCATABLE HDR CARD       8B101740
                        *                                                      8B101750
0085 0 C102                   LD    1 2           CK FOR HDR CARDS             8B101760
0086 0 4C18 0050              BSC   L RD05,&-     IGNORE BLANK CARD            8B101770
0088 0 E052                   AND     LB20                                     8B101780
0089 0 9052                   S       LB25                                     8B101790
008A 0 4C18 00E1              BSC   L ABHED,&-    BCH IF ABSOL HEAD CARD       8B101800
008C 0 904F                   S       LB25                                     8B101810
008D 0 4C18 00DF              BSC   L RLHED,&-    BCH IF RELOC HEAD CARD       8B101820
                        *                                                      8B101830
008F 0 7400 00D8              MDX   L SW,0                                     8B101840
0091 0 7005                   MDX     TAKE                                     8B101850
                        *                                                      8B101860
0092 0 C100                   LD    1 0           GET CARD ADRS                8B101870
0093 0 B0D0                   CMP     K3000       CMP 3000                     8B101880
0094 0 B068                   CMP     K74FF       GRTR 3000 CMP 74FF           8B101890
0095 0 7001                   MDX     TAKE        LESS 3000 SAME GRTR 74FF     8B101900
0096 0 704C                   MDX     PASS        EQUAL 3000 SAME LESS 74FF    8B101910
0097 0 6840             TAKE  STX     SW          LOAD PROGRAM                 8B101920
                        ************************************************       8B101930
0098                          ORG     152         CARD 4                       8B101940
                        *                                                      8B101950
0098 0 C040                   LD      CDCT                                     8B101960
0099 0 62CA                   LDX   2 -54                                      8B101970
009A 0 8236             HSCK  A     2 54                                       8B101980
009B 0 4802                   BSC     C                                        8B101990
009C 0 80D1                   A       ONE                                      8B102000
009D 0 7201                   MDX   2 1                                        8B102010
009E 0 70FB                   MDX     HSCK                                     8B102020
009F 0 80CE                   A       ONE                                      8B102030
00A0 0 4820                   BSC     Z                                        8B102040
00A1 0 30F9             W30F9 DC      /30F9       CHECK SUM ERROR              8B102050
00A2 0 C102                   LD    1 2           GET CDIN&2                   8B102060
00A3 0 E036                   AND     LB15                                     8B102070
00A4 0 D039                   STO     PCAM                                     8B102080
00A5 0 4818                   BSC     &-          SKIP IF NOT XFER CARD        8B102090
00A6 0 703F                   MDX     XFRCD       BRANCH TO XFER RT            8B102100
                        *                                                      8B102110
                        *  THIS RT PLACES DATA FIELDS INTO THE CORRECT         8B102120
                        *    CORE LOCATIONS ANY ADDS IN A RELOCATION           8B102130
                        *    FACTOR IF REQUIRED.                               8B102140
                        *                                                      8B102150
00A7 0 6209                   LDX   2 9           SET FOR 1ST DATA WD          8B102160
00A8 0 6100             LB06  LDX   1 0                                        8B102170
00A9 0 C033                   LD      HEXSW       CK FOR EDIT CARD             8B102180
00AA 0 1007                   SLA     7                                        8B102190
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00AB 0 4CA8 0124              BSC   I MECD,&Z     XFER IF EDIT CARD            8B102200
00AD 0 6A06                   STX   2 LB10&1                                   8B102210
00AE 0 C100                   LD    1 0                                        8B102220
00AF 0 8077                   A       UPPER                                    8B102230
00B0 0 D100                   STO   1 0           STO IN CDIN                  8B102240
00B1 0 6680 0000              LDX   I2 LD22                                    8B102250
00B3 0 C500 0000        LB10  LD    L1 0                                       8B102260
00B5 0 D200                   STO   2 0                                        8B102270
00B6 0 6A72                   STX   2 TEMP        CK FOR ECEEDING CORE         8B102280
00B7 0 C071                   LD      TEMP                                     8B102290
00B8 0 F06D                   EOR     ULIM                                     8B102300
00B9 0 4820                   BSC     Z                                        8B102310
00BA 0 7002                   MDX     OVER1                                    8B102320
00BB 0 30FC             W30FC DC      /30FC       ERROR EXCEEDED CORE SIZE     8B102330
                        ************************************************       8B102340
00BC                          ORG     188         CARD 5                       8B102350
                        *                                                      8B102360
00BC 0 70FE                   MDX     W30FC                                    8B102370
00BD 0 7201             OVER1 MDX   2 1                                        8B102380
00BE 0 7101                   MDX   1 1                                        8B102390
00BF 0 74FF 00DE              MDX   L PCAM,-1     SKIP IF WORD COUNT ZERO      8B102400
00C1 0 70F1                   MDX     LB10                                     8B102410
00C2 0 C01A                   LD      HEXSW                                    8B102420
00C3 0 4C28 0050              BSC   L RD05,&Z                                  8B102430
00C5 0 6780 0000        RLDAT LDX   I3 LD22       SET X3 TO START ADDR         8B102440
00C7 0 62FA                   LDX   2 -6          SET FOR 6 CONTROL WD         8B102450
00C8 0 6108                   LDX   1 8           8 LOCS PER WD                8B102460
00C9 0 C209             CKFLD LD    2 9           GET RELOC CONTROL            8B102470
00CA 0 1002                   SLA     2                                        8B102480
00CB 0 D209                   STO   2 9                                        8B102490
00CC 0 4C02 00D4              BSC   L RLCAT,C     BRANCH  IF RELOC FIELD       8B102500
00CE 0 7301             INCRE MDX   3 1                                        8B102510
00CF 0 71FF                   MDX   1 -1          TEST FOR CNTRL WD END        8B102520
00D0 0 70F8                   MDX     CKFLD       NO                           8B102530
00D1 0 7201                   MDX   2 1           TEST FOR FIN ALL WDS         8B102540
00D2 0 70F5                   MDX     CKFLD-1     NO                           8B102550
00D3 0 700F                   MDX     PASS                                     8B102560
00D4 0 C300             RLCAT LD    3 0           ADD IN RELOCATION FACTOR     8B102570
00D5 0 8051                   A       UPPER                                    8B102580
00D6 0 D300                   STO   3 0                                        8B102590
00D7 0 70F6                   MDX     INCRE                                    8B102600
00D8 0 0000             SW    DC      /0000       IF ZERO CK FOR WAITS-TRAPS   8B102610
00D9 0 0000             CDCT  DC      0                                        8B102620
00DA 0 003F             LB15  DC      /003F                                    8B102630
00DB 0 0F00             LB20  DC      /0F00                                    8B102640
00DC 0 0100             LB25  DC      /0100                                    8B102650
00DD 0 0000             HEXSW DC      0                                        8B102660
00DE 0 0000             PCAM  DC      0           WORD COUNT                   8B102670
                        *                                                      8B102680
                        *  THIS RT. HANDLES RELOCATABLE HDR CARDS.             8B102690
                        *                                                      8B102700
00DF 0 C045             RLHED LD      NLOC        COMPUTE RELOC FACTOR         8B102710
                        ************************************************       8B102720
00E0                          ORG     224         CARD 6                       8B102730
                        *                                                      8B102740
00E0 0 908E                   S       RLBA                                     8B102750
                        *                                                      8B102760
                        *  THIS RT. HANDLES ABSOLUTE HDR CARDS.                8B102770
                        *                                                      8B102780
00E1 0 D045             ABHED STO     UPPER                                    8B102790
00E2 0 69F6                   STX   1 CDCT                                     8B102800
00E3 0 7401 00D9        PASS  MDX   L CDCT,1      INCR CARD COUNT              8B102810
00E5 0 6050                   LDX     80                                       8B102820
                        *                                                      8B102830
                        *  THIS RT. HANDLES BINARY AND HEX XFER CARDS          8B102840
                        *                                                      8B102850
00E6 0 C100             XFRCD LD    1 0                                        8B102860
00E7 0 8086                   A       ONE                                      8B102870
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00E8 0 803E                A       UPPER                                    8B102880
00E9 0 D03B                STO     NLOC        SET NEXT AVAIL LOC           8B102890
00EA 0 C103                LD    1 3           SET UP TO XFER               8B102900
00EB 0 803B          XFR2  A       UPPER                                    8B102910
00EC 0 69EB                STX   1 SW          CLEAR SW                     8B102920
00ED 0 D001                STO     XFER&1                                   8B102930
00EE 0 4C00 0000     XFER  BSC   L 0                                        8B102940
                           *                                                8B102950
                           * THIS RT CONVERTS HEX TO BINARY AND LEAVES I    8B102960
                           *   IN LOCATIONS 0000-0010 , FIELDS ARE RELOCATED 8B102970
                           *   IF REQUIRED.                                 8B102980
                           *                                                8B102990
00F0 0 61AF          HB05  LDX   1 -81                                      8B103000
00F1 0 D0EB                STO     HEXSW       SET FOR HEX OR EDIT CD       8B103010
00F2 0 1810                SRA     16                                       8B103020
00F3 0 D0EA                STO     PCAM                                     8B103030
00F4 0 1810          HB06  SRA     16                                       8B103040
00F5 0 D032                STO     RLREQ                                    8B103050
00F6 0 C151                LD    1 81          CK FOR RELOC FIELD           8B103060
00F7 0 1001                SLA     1                                        8B103070
00F8 0 4828                BSC     &Z                                       8B103080
00F9 0 682E                STX     RLREQ                                    8B103090
00FA 0 7101                MDX   1 1                                        8B103100
00FB 0 7006                MDX     HB07                                     8B103110
                           *                                                8B103120
                           * THIS RT DETERMINES WHETHER A HEX CARD IS A     8B103130
                           *   1¤ DATA CD  2¤ EDIT CD  3¤ XFER CARD .       8B103140
                           *                                                8B103150
00FC 0 6201          LH05  LDX   2 1           SET X2 # CDIN&1              8B103160
00FD 0 74FF 00DE     K74FF MDX   L PCAM,-1                                  8B103170
00FF 0 70A8                MDX     LB06                                     8B103180
0100 0 C2FF                LD    2 -1          CDIN                         8B103190
0101 0 70E9                MDX     XFR2        BRANCH TO XFER RT            8B103200
0102 0 6204          HB07  LDX   2 4                                        8B103210
0103 0 1004          HB10  SLA     4                                        8B103220
                           ********************************************** 8B103230
0104                       ORG     260         CARD 7                       8B103240
                           *                                                8B103250
0104 0 D025                STO     TEMP1                                    8B103260
0105 0 C151                LD    1 81          CDIN&81                      8B103270
0106 0 4C18 00FC           BSC   L LH05,&-                                  8B103280
0108 0 6300                LDX   3 0           CONVERT 1 HEX COL TO BIN     8B103290
0109 0 4828                BSC     &Z          SKIP IF NOT A-F              8B103300
010A 0 7309                MDX   3 9           ADD 9 FOR ALPHA              8B103310
010B 0 1003                SLA     3           ELIMINATE ZONE BITS          8B103320
010C 0 4C18 0115           BSC   L HTBZ,&-     XFER IF HEX CHAR # 0         8B103330
010E 0 7301                MDX   3 1                                        8B103340
010F 0 4C28 0113     HTOB1 BSC   L HTBX,&Z     XFER IF BIT IS FOUND         8B103350
0111 0 1001                SLA     1           PREPARE TO LK AT NEXT BIT    8B103360
0112 0 70FB                MDX     HTOB1-1                                  8B103370
0113 0 6B15          HTBX  STX   3 TEMP                                     8B103380
0114 0 C014                LD      TEMP        LOAD BINARY BITS             8B103390
0115 0 E814          HTBZ  OR      TEMP1       ADD TO PREVIOUS CHARS        8B103400
0116 0 7101                MDX   1 1                                        8B103410
0117 0 72FF                MDX   2 -1                                       8B103420
0118 0 70EA                MDX     HB10                                     8B103430
0119 0 6780 00DE           LDX   I3 PCAM                                    8B103440
011B 0 7400 0128           MDX   L RLREQ,0                                  8B103450
011D 0 8009                A       UPPER                                    8B103460
011E 0 D300                STO   3 0                                        8B103470
011F 0 7401 00DE           MDX   L PCAM,1                                   8B103480
0121 0 70D2                MDX     HB06                                     8B103490
                           *                                                8B103500
0122 0 30F8          W30F8 DC      /30F8       EDIT CARD ERROR              8B103510
                           *                                                8B103520
0123 0 0122          MLCD  DC      W30F8   **KEEP AT /123, CHG BY USER      8B103530
0124 0 0122          MECD  DC      W30F8   **KEEP AT /124, CHG BY USER      8B103540
0125 0 07FF          NLOC  DC      /07FF   **KEEP AT /125, NEXT LOCATIO     8B103550
```



```
0126 0 1000          ULIM  DC      /1000   **KEEP AT /126, UPPER LIMIT    8B103560
0127 0 0000          UPPER DC      /0000   **KEEP AT /127, UPPER LIMIT    8B103570
0128 0 0000          RLREQ DC      /0000     I COUNTER STORAGE            8B103580
0129 0 0000          TEMP  DC      /0000     TEMP STORAGE                 8B103590
012A 0 0000          TEMP1 DC      /0000     TEMP STORAGE                 8B103600
                           ********************************************** 8B103610
012C 0000                  END     LD22        TRANSFER TO START            8B103620
  NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY
```

```
ABHED   00E1  008A
CDCT    00D9  0098 00E2 00E3
CKFLD   00C9  00D0 00D2
CT      0011  0009
DSW     0070  0052 0056 005B
DSW1    0014  0001 0004
HB05    00F0  005F
HB06    00F4  0121
HB07    0102  00FB
HB10    0103  0118
HEXSW   00DD  0062 00A9 00C2 00F1
HSCK    009A  009E
HTBX    0113  010F
HTBZ    0115  010C
HTOB1   010F  0112
INCRE   00CE  00D7
K3000   0064  0093
K74FF   00FD  0094
LB06    00A8  00FF
LB10    00B3  00AD 00C1
LB15    00DA  00A3
LB20    00DB  0088
LB25    00DC  0089 008C
LD22    0000  000B 005E 006C 00B1 00C5 012C
LD25    0001  0002 0010
LD30    000D  0006
LD36    002C  000C
LH05    00FC  0106
MECD    0124  00AB
MLCD    0123  0053
MSK     0068  0050
MSK2    006A  0051
MSK5    0016  000D
NLOC    0125  00DF 00E9
ONE     006E  009C 009F 00E7
OVER1   00BD  00BA
PASS    00E3  0096 00D3
PCAM    00DE  00A4 008F 00F3 00FD 0119 011F
RD05    0050  003C 0086 00C3
RD20    0052  0073
RD25    0056  0057
READ    006C  0055
READ1   0012  0000 0007
RLBA    006F  00E0
RLCAT   00D4  00CC
RLDAT   00C5
RLHED   00DF  008D
RLREQ   0128  00F5 00F9 011B
SB05    0074  0063
SB06    0076  0084
SB07    0077  0082
SB10    007D  0078
SL      0065  0077
STGCK   0034  002D
STGLP   002F  0036
SW      00D8  008F 0097 00EC
TAKE    0097  0091 0095
TEMP    0129  00B6 00B7 0113 0114
TEMP1   012A  0104 0115
ULIM    0126  003A 00B8
UPPER   0127  00AF 00D5 00E1 00E8 00EB 011D
W30FA   000E  0005 000F 30FA
W30FB   0072  005C 30FB
W30FC   00BB  00BC 30FC
W30F8   0122  0123 0124 30F8
W30F9   00A1  30F9
XFER    00EE  00ED
XFRCD   00E6  00A6
```



```
XFR2    00EB  0101
END OF ASSEMBLY
```

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TABLE OF CONTENTS

1. PURPOSE

THE TIMER FUNCTION TEST IS USED TO DETERMINE WHETHER THE INTERVAL TIMER CIRCUITS IN THE 1801 OR 1802 PROCESS/CONTROLLER ARE OPERATING PROPERLY. TIMER STEPPING, TIMER INTERRUPTS, DSW, AND ILSW ARE TESTED.

2. PREREQUISITES

2.1 PROGRAM PREREQUISITES

THE BASIC DIAGNOSTIC LOADER IS REQUIRED TO LOAD THIS PROGRAM.

2.2 EQUIPMENT PREREQUISITES

THE FOLLOWING EQUIPMENT IS REQUIRED,

A. 1800 PROCESSOR/CONTROLLER.

B. 1442 CARD READ/PUNCH OR 1054 PAPER TAPE READER.

C. EITHER A 1053/1816 OR 1443 PRINTER.

3. USE PROCEDURE

3.1 PROGRAM LOADING

REFER TO 1800 BASIC DIAGNOSTIC LOADER DOCUMENTATION PARAGRAPH 3.1. FOR LOADING INSTRUCTIONS.

3.2 PROGRAM OPERATION

AFTER LOADING THE P.C. STOPS AT WAIT 1 (B REG=3001).
WITH P.C. STOPPED AT WAIT 1, PROCEED AS FOLLOWS,

A. SET CHECK STOP SWITCH TO OFF.
B. SET DISABLE INTERRUPT SWITCH TO OFF.
C. SET WRITE STORAGE PROTECT SWITCH TO YES.
D. SELECT PROGRAM OPTIONS. REFER TO TABLE 1 SECTION 3.2 .
E. IF LOOP ROUTINE IS DESIRED, REFER TO LOOP ROUTINE OPTION TABLE 2 SECTION 3.2 .
F. DEPRESS START BUTTON. PROGRAM SHOULD START EXECUTION.

1. IF LOOP ROUTINE OR LOOP PROGRAM WERE NOT SPECIFIED, ROUTINES 1 THROUGH 6 WILL BE EXECUTED ONCE. THE PROGRAM WILL PRINT MESSAGE **A002 PROGRAM COMPLETE** AND THEN STOP AT WAIT 2. (B REG=3002).

2. IF A ROUTINE WAS SELECTED FOR LOOPING, THEN THAT ROUTINE WILL LOOP UNTIL THE PROGRAM IS TERMINATED, OR THE LOOP ROUTINE FUNCTION IS CHANGED OR CLEARED. IF THE LOOP ROUTINE FUNCTION IS CHANGED, THEN THE NEW ROUTINE SELECTION WILL BE LOOPED. IF THE LOOP ROUTINE FUNCTION IS CLEARED, THE PROGRAM WILL CONTINUE FROM THE PRESENT ROUTINE TO COMPLETION.

3. IF LOOP PROGRAM WAS SELECTED, ROUTINES 1 THROUGH 6 WILL BE RUN IN SEQUENCE IN A LOOP FASHION. AT THE END OF EACH PROGRAM PASS, MESSAGE **A003 PASS COMPLETE** WILL BE PRINTED.

4. IF THE SCOPING ROUTINE WAS SELECTED, MESSAGE **A001 SCOPE RTN SELECTED** WILL BE PRINTED, FOLLOWED BY MESSAGE **C002 ENTER STARTING COUNT**. THE PROGRAM WILL STOP AT WAIT 5 (B REG=3005). THE PRINTOUT EXPLANATIONS SHOULD BE CONSULTED FROM THIS POINT FOR THE OPERATION OF THE SCOPING ROUTINE. PRINTOUT SECTION 4.2 COMMAND MESSAGES.

TABLE 1
PROGRAM OPTIONS - DATA ENTRY SWITCHES

NOTE
THE OPTIONS FOR SELECTING OUTPUT DEVICE, THE SCOPING ROUTINE, OR THE CORE SPEED WILL BE HONORED ONLY IF THEY ARE ENTERED WHEN PROGRAM IS STOPPED AT WAIT 1 (B REG=3001).

DATA ENTRY SWITCHES 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	OPTION DESCRIPTION
. 1	HALT ON ERROR
. . . . . 1 .	BYPASS ERROR PRINT
. . . . . 1 . .	LOOP ON ERROR
. . . . 1 . . .	LOOP PROGRAM
. . . 1	USE 1443 AS OUTPUT DEVICE
. . 1	SELECT SCOPING ROUTINE
1	4 USEC MACHINE

TABLE 2
LOOP ROUTINE OPTION - SENSE/PROGRAM SWITCHES

PROGRAM/SENSE 0 1 2 3 4 5 6 7	DESCRIPTION
X X X	ROUTINE NUMBER TO LOOP. NUMBER MUST BE IN HEX. NUMBER MAY BE CHANGED AT ANY TIME.

3.3 TERMINATING PROCEDURE

IF THE LOOP-PROGRAM, OR LOOP-ROUTINE OPTIONS ARE NOT SELECTED THE PROGRAM WILL BE EXECUTED ONCE AND WILL STOP AT WAIT 2 FOLLOWING THE PROGRAM COMPLETE PRINTOUT. DEPRESSING THE START PUSHBUTTON WILL BRANCH THE PROGRAM TO WAIT 1, WHICH IS THE BEGINNING OF THE PROGRAM.

IF THE PROGRAM IS IN A LOOPING MODE, IT MAY BE TERMINATED BY,

1. DEPRESSING THE STOP BUTTON. DEPRESSING RESET AND START BUTTONS WILL RETURN PROGRAM TO WAIT 1.
2. CLEARING THE LOOP FUNCTION, TO ALLOW PROGRAM TO RUN TO ITS COMPLETION.

3.4 RESTART PROCEDURE

PRESS THE STOP, RESET AND START BUTTONS. THE PROGRAM SHOULD GO TO WAIT 1. IF THIS DOES NOT OCCUR, THE PROGRAM MUST BE RELOADED.

3.5 PROGRAM HALTS

PROGRAM WAITS ARE USED IN THIS PROGRAM, AND ARE IDENTIFIED BY REFERENCING THE B REG AND I REG.

A PROGRAM WAIT IS OF THE FORM,

30XX, (B REG).

A DESCRIPTION OF THE INDIVIDUAL PROGRAM WAITS CAN BE FOUND AT THE BEGINNING OF THE PROGRAM LISTING. A TYPICAL WAIT DESCRIPTION FOLLOWS. IT IS INCLUDED TO SHOW THE FORMAT OF THE LISTING, AND IT IS NOT NECESSARILY A DESCRIPTION OF AN ACTUAL WAIT.

```
3001 0  01ED          DC      WAIT1+1
                              WAIT 1
                              ONE OF THE METERED I/O UNITS
                              FAILED TO SEND A RESPONSE
                              INTERRUPT TO THE PROGRAM.  INDEX
                              REGISTER 1 WILL HAVE THE ADDRESS
                              OF THE IOCC.  THE AREA CODE WILL
                              INDICATE THE I/O UNIT NOT READY.
                              IF A 2401/02 DRIVE IS NOT READY,
                              PROGRAM WILL NOT STOP AT WAIT 1.
```

B REG, (FIRST 4 DIGIT GROUP) CORRESPONDS TO B REG READING.

I REG, (SECOND 4 DIGIT GROUP) CORRESPONDS TO I REG READING.

4. PRINTOUTS

THE VARIOUS PRINTOUTS THAT MAY OCCUR DURING EXECUTION OF THE TIMER FUNCTION TEST FOLLOW.

4.1 STATUS MESSAGES

A001 SCOPE RTN SELECTED

THIS PRINTOUT INDICATES THAT THE SCOPE RTN HAS BEEN SELECTED AS A RESULT OF SETTING ON DATA ENTRY SWITCH NO. 8 WHEN PROGRAM STOPPED AT WAIT 1.

A002 PROGRAM COMPLETE

FOLLOWING THIS PRINTOUT PROGRAM STOPS AT WAIT 2. DEPRESSING START PUSHBUTTON CAUSES PROGRAM TO BRANCH TO WAIT 1. AT THIS POINT PROGRAM MAY BE REPEATED AGAIN.

A003 PASS COMPLETE

PRINTED AT THE END OF EACH PROGRAM PASS WHEN THE LOOP PROGRAM OPTION IS SELECTED.

4.2 COMMAND MESSAGES

C001 RUN SCOPE RTN

THIS PRINTOUT INSTRUCTS THE OPERATOR TO RUN THE PROGRAM IN SCOPE RTN, AND IS CAUSED IF THE CONTROL ROUTINE IS UNABLE TO DETERMINE TIMER INTERRUPT LEVEL DUE TO ALL TIMERS FAILING TO INTERRUPT, OR STEP.

INTERVAL TIMER FUNCTION TEST

C002 ENTER STARTING COUNT

THIS PRINTOUT IS A SCOPE ROUTINE REQUEST FOR OPERATOR ACTION. ENTER THE DESIRED STARTING COUNT IN THE DATA ENTRY SWITCHES. PUSH START AFTER ENTRY.

DATA ENTRY SWITCHES	DESCRIPTION
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 •	
X X X X X X X X X X X X X X X X	...DESIRED STARTING COUNT IN HEX

C003 ENTER NUMBER OF STEPS

THIS PRINTOUT IS A SCOPE ROUTINE REQUEST FOR OPERATOR ACTION. ENTER THE DESIRED NUMBER OF STEPS IN THE DATA ENTRY SWITCHES. A COUNT OF ZERO IS INVALID AND WILL CAUSE MESSAGE C003 TO BE PRINTED AGAIN. PUSH START AFTER ENTRY.

DATA ENTRY SWITCHES	DESCRIPTION
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 •	
X X X X X X X X X X X X X X X X	...DESIRED NUMBER OF STEPS IN HEX

C004 ENTER TIMER NUMBER

THIS PRINTOUT IS A SCOPE ROUTINE REQUEST FOR OPERATOR ACTION. ENTER THE DESIRED TIMER SELECTION IN DATA ENTRY SWITCHES. ONLY 1 TIMER AT A TIME MAY BE SELECTED. TIMER C IS USED IF NO ENTRY IS MADE. CLEAR ALL UNUSED SWITCHES. PUSH START AFTER ENTRY.

DATA ENTRY SWITCHES	DESCRIPTION
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 •	
0 0 1	RUN TIMER C
0 1 0	RUN TIMER B
1 0 0	RUN TIMER A
1	CHANGE INPUT PARAMETERS. (SEE NOTE 1)

NOTE 1. AFTER ROUTINE IS LOOPING, AND IT IS DESIRED TO CHANGE STARTING COUNT, NUMBER OF STEPS, OR TIMER NUMBER, SET SWITCH 2 ON. ROUTINE RESTARTS AND PRINTS MESSAGE C002.

C005 REPAIR FAILURE BEFORE CONTINUING

PRINTED FOLLOWING ERRORS E00B AND E00C. PROGRAM GOES TO WAIT 1 AFTER THIS PRINTOUT TO ALLOW CE TO SELECT SCOPING ROUTINE. ERRORS E00B AND E00C CAN CAUSE PROGRAM TO LOOSE CONTROL OR INDICATE FALSE ERRORS.

INTERVAL TIMER FUNCTION TEST

4.3 DATA MESSAGES

D001 TIMERS ON INTRP LEVEL XX

THIS PRINTOUT INDICATES THE INTERRUPT LEVEL OF THE TIMERS. XX WILL BE THE ACTUAL INTERRUPT LEVEL NUMBER, IN DECIMAL.

4.4 ERROR MESSAGES

E001 SEQUENCE ERROR

THIS PRINTOUT OCCURS WHEN THE ROUTINE JUST RUN DOES NOT AGREE WITH THE ROUTINE SELECTED BY THE CONTROL ROUTINE.

E002 TIMERS FAIL TO STEP

THIS PRINTOUT OCCURS WHEN THE CONTROL SECTION IS UNABLE TO DETERMINE THE TIMER INTERRUPT LEVEL DUE TO TIMERS NOT STEPPING. THIS IS FOLLOWED BY A **RUN MANUAL MODE** PRINTOUT.

E003 TIMERS FAIL TO INTRP

THIS PRINTOUT OCCURS WHEN THE CONTROL SECTION IS UNABLE TO DETERMINE THE TIMER INTERRUPT LEVEL DUE TO TIMERS FAILING TO INTERRUPT. THIS PRINTOUT IS FOLLOWED BY A **RUN MANUAL MODE** PRINTOUT.

E004 RTN 2 TIMER X FAILED TO TURN ON

THIS PRINTOUT RESULTS IF A TIMER (A, B, OR C) FAILS TO STEP AFTER BEING TURNED ON. 10 CONSECUTIVE PRINTOUTS MAY RESULT, AS 10 TRIES ARE MADE ON EACH TIMER.

E005 RTN 2 TIMER X FAILED TO TURN OFF

THIS PRINTOUT RESULTS WHEN A TIMER (A, B, OR C) CONTINUES TO STEP AFTER A TURN OFF COMMAND. 10 CONSECUTIVE PRINTOUTS ARE POSSIBLE.

E006 RTN 3 TIMER X FAILED TO INTRP

THIS PRINTOUT OCCURS WHEN A TIMER (A, B, OR C) FAILS TO INTERRUPT.

E007 RTN 3 TIMER X DSW XXXX

THIS PRINTOUT OCCURS WHEN THE DSW BIT FOR THE INDICATED TIMER (A, B, OR C) IS IN ERROR.

E008 RTN 3 TIMER X ILSW XXXX

ONE PRINTOUT FOR EACH TIMER WILL OCCUR IF THE ILSW BIT IS NOT THE SAME FOR ALL TIMERS.

E009 RTN 4 TIMER X WAS XXXX SHOULD BE XXXX

THIS PRINTOUT OCCURS WHEN EXPECTED AND ACTUAL TIMER COUNTS DO NOT AGREE.

INTERVAL TIMER FUNCTION TEST

E00A RTN 5 TX WAS XXXX EXPCTD XXXX PASS X

THIS PRINTOUT OCCURS WHEN EXPECTED AND ACTUAL TIMER COUNTS DO NOT AGREE. PASS 1 IS RUN WITH INTERRUPT OFF, PASS 2 IS RUN WITH INTERUPT ON.

E00B RTN1 DOUBLE INCR OF I CTR DURING TMR X CS CYCLE

THE DESIGNATED TIMER CAUSED THE I COUNTER TO BE INCREMENTED DURING THE SECOND TIMER CYCLE STEAL CYCLE. THIS PRINTOUT WILL BE FOLLOWED BY MESSAGE C005.

E00C ILLEGAL RTN ENTRY

A ROUTINE NUMBER OF 7 WAS ENTERED INTO PROGRAM SWITCHES 5, 6, AND 7. SEVEN IS AN INVALID ROUTINE NUMBER. PROGRAM RETURNS TO WAIT 1 AFTER THIS PRINTOUT.

E00D RTN3 TIMER X ILSW WAS ZERO

WHILE CHECKING THE DESIGNATED TIMER, AN INTERRUPT WAS RECEIVED ON THE TIMER INTERRUPT LEVEL AND THE ILSW WAS BLANK.

E00E RTN1 A REG CHANGED ON TIMR X CS CYCLE

THE CONTENTS OF THE A REGISTER WERE DESTROYED DURING THE DESIGNATED TIMER CYCLE STEAL CYCLE. THE A REG IS LOADED TO FFFF PRIOR TO TURNING THE TIMER ON.

E00F RTN6 TIMER X FAILED TO INCREMENT

THE TIMER SPECIFIED FAILED TO INCREMENT WITHIN 70 MSEC. AFTER BEING TURNED ON. THE TIMERS ARE STORAGE PROTECTED DURING THIS CHECK.

E010 RTN6 SPV INTRPT ON TIMER X CS CYCLE

A STORAGE PROTECT VIOLATE INTERRUPT WAS RECEIVED DURING THE DESIGNATED TIMER CYCLE STEAL CYCLE. TIMERS ARE STORAGE PROTECTED DURING THIS CHECK.

E011 RTN6 NO INTRP ON VIOLATE TIMER X

A STORE INSTRUCTION WAS ISSUED TO THE DESIGNATED PROTECTED TIMER. A STORAGE PROTECT VIOLATE INTERRUPT DID NOT OCCUR.

5. COMMENTS

THE TIMER FUNCTION TEST CONSISTS OF A CONTROL ROUTINE, SIX TEST ROUTINES, AND A SCOPING ROUTINE.

THE CONTROL ROUTINE DETERMINES THE TIMER INTERRUPT LEVEL AND OUTPUTS THE INFORMATION FOR OPERATOR OBSERVATION. THE CONTROL ROUTINE ALSO SEQUENCES THE TESTING ROUTINES AND ACCOMPLISHES THE PROGRAM OPTIONS SPECIFIED BY THE OPERATOR.

INTERVAL TIMER FUNCTION TEST

ROUTINE 1 CHECKS FOR DOUBLE INCREMENTING OF THE I COUNTER, AND FOR A CHANGE IN A REG CONTENTS DURING A TIMER C.S. CYCLE. IF EITHER OF THESE FAILURES OCCURS, THE ERROR PRINTOUT IS FOLLOWED BY A MESSAGE INSTRUCTING THE CE TO REPAIR THE FAILURE BEFORE CONTINUING. THIS IS DONE SINCE EITHER OF THESE FAILURES CAN CAUSE THE PROGRAM TO LOOSE CONTROL OR INDICATE FALSE ERRORS. IF IT IS DETERMINED BY THE CONTROL ROUTINE, THAT ANY TIMER FAILS TO INTERRUPT, THEN THAT TIMER(S) WILL NOT BE CHECKED IN ROUTINE 1.

ROUTINE 2 CHECKS THE ON-OFF ACTION OF ALL THREE TIMERS. EACH TIMER IS CHECKED 10 TIMES.

ROUTINE 3 CHECKS THE TIMERS FOR INTERRUPT, DSW, AND ILSW.

ROUTINE 4 CHECKS THE TIMERS FOR PROPER STEPPING. EACH TIMER IS ALLOWED TO STEP 50 TIMES WITH 16 DIFFERENT STARTING COUNTS.

ROUTINE 5 IS A TWO PASS ROUTINE. THE FIRST PASS IS WITH TIMER INTERRUPT OFF, AND THE SECOND PASS IS TIMER INTERRUPT ON. ALL TIMERS ARE RUN TOGETHER, AND EACH ONE IS CHECKED FOR PROPER STEPPING FOR 1000 STEPS.

ROUTINE 6 CHECKS THE TIMERS WHILE STORAGE PROTECTED. EACH TIMER IS CHECKED TO INSURE IT INCREMENTS WHILE STORAGE PROTECTED WITHOUT CAUSING A STORAGE PROTECT VIOLATE ERROR. THE CHECK IS MADE 10 TIMES PER TIMER. A FURTHER CHECK IS MADE TO INSURE AN SPV INTERRUPT DOES OCCUR WHEN TRYING TO STORE INTO A PROTECTED TIMER.

THE SCOPING ROUTINE ALLOWS THE OPERATOR TO SELECT A TIMER (A,B, OR C) STARTING COUNT, AND THE NUMBER OF STEPS THE TIMER SHOULD BE STEPPED. AFTER ALL DATA IS ENTERED, AND THE START BUTTON HAS BEEN DEPRESSED, THE ROUTINE WILL LOOP UNTIL DATA ENTRY SWITCH 2 IS TURNED ON, AT WHICH POINT THE ROUTINE RETURNS TO WAIT 5. ONLY ONE TIMER MAY BE RUN AT A TIME. IF A TIMER NUMBER IS NOT ENTERED, TIMER C WILL BE USED.

```
                           ABS                                          8B200010
02BC                       ORG      /3001                               8B200020
                     *                                                  8B200030
                     *            ** PROGRAM WAITS **                   8B200040
                     *                                                  8B200050
3001 0  0147               DC       WT1+1       WAIT 1                  8B200060
                     *                                                  8B200070
                     *            WAIT OCCURS AFTER PROGRAM             8B200080
                     *            HAS LOADED. ENTER PROGRAM             8B200090
                     *            OPTIONS IN DATA ENTRY SWS.            8B200100
                     *            AND DEPRESS START.                    8B200110
                     *                                                  8B200120
3002 0  0187               DC       WT2+1       WAIT 2                  8B200130
                     *                                                  8B200140
                     *            PROGRAM RAN TO COMPLETION.            8B200150
                     *            DEPRESSING START RETURNS              8B200160
                     *            PROGRAM TO WAIT 1.                    8B200170
                     *                                                  8B200180
3003 0  0195               DC       WT3+1       WAIT 3                  8B200190
                     *                                                  8B200200
                     *            PROGRAM SEQUENCE ERROR.               8B200210
                     *            SUPERVISOR SECTION OF                 8B200220
                     *            PROGRAM DECTED AN ERROR               8B200230
                     *            IN ROUTINE SEQUENCING.                8B200240
                     *            DEPRESS START TO RETURN               8B200250
                     *            TO WAIT 1.                            8B200260
                     *                                                  8B200270
3004 0  03D0               DC       WT4+1       WAIT 4                  8B200280
                     *            TIMER C FAILED TO INTER-              8B200290
                     *            RUPT IN ROUTINE 4.                    8B200300
                     *                                                  8B200310
3005 0  0460               DC       WT5+1       WAIT 5                  8B200320
                     *                                                  8B200330
                     *            SCOPE ROUTINE WAIT. ENTER             8B200340
                     *            STARTING TIMER COUNT IN               8B200350
                     *            DATA ENTRY SWITCHES. PUSH             8B200360
                     *            START BUTTON.                         8B200370
                     *                                                  8B200380
3006 0  0469               DC       WT6+1       WAIT 6                  8B200390
                     *                                                  8B200400
                     *            SCOPE ROUTINE WAIT. ENTER             8B200410
                     *            NUMBER OF DESIRED TIMER               8B200420
                     *            STEPS IN DATA ENTRY SWITCH            8B200430
                     *            DEPRESS START BUTTON.                 8B200440
                     *                                                  8B200450
3007 0  0474               DC       WT7+1       WAIT 7                  8B200460
                     *                                                  8B200470
                     *            SCOPE ROUTINE WAIT. ENTER             8B200480
                     *            TIMER NUMBER IN DATA ENTRY            8B200490
                     *            SWITCHES.                             8B200500
                     *            *                                     8B200510
                     *            BIT 4 = TIMER A                       8B200520
                     *            BIT 5 = TIMER B                       8B200530
                     *            BIT 6 = TIMER C                       8B200540
                     *            *                                     8B200550
                     *            CLEAR ALL UNUSED BIT SWS.             8B200560
                     *            DEPRESS START TO CONTINUE.            8B200570
                     *                                                  8B200580
3008 0  01E7               DC       WT8+1       WAIT 8                  8B200590
                     *                                                  8B200600
                     *            WAIT FOR TIMER INTERRUPT              8B200610
                     *            IN ROUTINE 1.                         8B200620
                     *                                                  8B200630
3009 0  0538               DC       WT9+1       WAIT 9                  8B200640
                     *                                                  8B200650
                     *            HALT ON ERROR REQUESTED.              8B200660
                     *            PUSH START TO CONTINUE.               8B200670
                     *                                                  8B200680
```



```
300A 0  0551               DC       WTA+1       WAIT A                  8B200690
                     *                                                  8B200700
                     *            1443 NOT READY. MAKE READY            8B200710
                     *            AND PUSH START.                       8B200720
                     *                                                  8B200730
300B 0  0553               DC       WTB+1       WAIT B                  8B200740
                     *                                                  8B200750
                     *            1443 BUSY. THIS IS AN                 8B200760
                     *            ERROR CONDITION. DETERMINE            8B200770
                     *            CAUSE,THEN PUSH START TO              8B200780
                     *            CONTINUE.                             8B200790
                     *                                                  8B200800
300C 0  056C               DC       WTC+1       WAIT C                  8B200810
                     *                                                  8B200820
                     *            1053/1816 NUMBER 1 NOT                8B200830
                     *            READY. MAKE 1053/1816                 8B200840
                     *            READY AND DEPRESS START.              8B200850
                     *                                                  8B200860
300D 0  064E               DC       WTD+1       WAIT D                  8B200870
                     *                                                  8B200880
                     *            DSW FAILED TO RESET AFTER             8B200890
                     *            INTERRUPT IN ROUTINE 2.               8B200900
                     *                                                  8B200910
300E 0  06D1               DC       WTE+1       WAIT E                  8B200920
                     *                                                  8B200930
                     *            AN INTERNAL INTERRUPT WAS             8B200940
                     *            RECEIVED. THE I CTR. AT               8B200950
                     *            INTERRUPT IS IN THE Q REG.            8B200960
                     *            THE ILSW IS IN THE A REG.             8B200970
                     *            DEPRESS START BUTTON TO               8B200980
                     *            RESTART THE PROGRAM.                  8B200990
                     *                                                  8B201000
300F 0  06DC               DC       WTF+1       WAIT F                  8B201010
                     *                                                  8B201020
                     *            INTERNAL INTERRUPT,OTHER              8B201030
                     *            THAN SPV WAS RECEIVED                 8B201040
                     *            DURING ROUTINE 6. I COUNT             8B201050
                     *            IS IN Q REG. ILSW IN A REG            8B201060
                     *            PRESS START TO RESTART                8B201070
                     *            PROGRAM.                              8B201080
                     *                                                  8B201090
3010                       ORG      300                                 8B201100
                     *                                                  8B201110
012C 0  8200               DC       /8200       PID                     8B201120
                     *            *************************             8B201130
                     *            *                       *             8B201140
                     *            *  TIMER FUNCTION TEST  *             8B201150
                     *            *     ** TIMFT **                     8B201160
                     *            *                       *             8B201170
                     *            *************************             8B201180
                     *                                                  8B201190
                     *                                                  8B201200
012D 0  1010         TISRT SLA      16                                  8B201210
012E 00 D4000181           STO  L   RTNNO      CLR ROUTINE NUMBER       8B201220
0130 00 D40003E5           STO  L   INTSW      CLEAR INTERRUPT SW       8B201230
0132 00 D4000214           STO  L   TIMA       *AND INOP INDICATORS     8B201240
0134 00 D4000215           STO  L   TIMA+1                              8B201250
0136 00 D4000216           STO  L   TIMA+2                              8B201260
0138 00 D4000213           STO  L   ERRSW                               8B201270
                     *                                                  8B201280
013A 0  611F         CTL01 LDX   1  31                                  8B201290
013B 00 D5000003           STO  L1  /0003      CLEAR INTERVAL TIMER     8B201300
013D 0  71FF               MDX   1  -1         AND INTERRUPT LOCATN     8B201310
013E 0  70FC               MDX      CTL01+1                             8B201320
                     *                                                  8B201330
013F 0  C866               LDD      RESRT      SET RESTART INSTRUCN     8B201340
0140 00 DC000000           STD  L   /0000                               8B201350
                     *                                                  8B201360
```

```
0142 0  10A0            SLT     32          CLEAR A AND G                8B201370
                *                                                        8B201380
0143 0  C05F            LD      CONST+2     SET LEVEL ERROR              8B201390
0144 00 D4000008        STO  L  /0008       INTERRUPT ADDRESS            8B201400
                *                                                        8B201410
0146 0  3001    WT1     WAIT    1           OP ENTER CONTROL             8B201420
                *                           INFORMATION  PUSH            8B201430
                *                           START TO CONTINUE            8B201440
                *                                                        8B201450
0147 0  0864            XIO     BSW         READ BIT SWITCHES            8B201460
0148 0  C067            LD      BSWA                                     8B201470
0149 0  188B            SRT     11                                       8B201480
014A 0  1010            SLA     16                                       8B201490
014B 0  1081            SLT     1           SET CORE SPEED               8B201500
014C 0  D067            STO     SPEED       *INDICATOR                   8B201510
014D 0  1084            SLT     4                                        8B201520
014E 0  100F            SLA     15                                       8B201530
014F 0  D063            STO     OPIND       SET OPT DEVICE INDIC         8B201540
0150 00 2C400004        STS  L  4,/40       CLEAR STORAGE                8B201550
0152 00 2C400005        STS  L  5,/40       *PROTECT BITS                8B201560
0154 00 2C400006        STS  L  6,/40                                    8B201570
                *                                                        8B201580
0156 0  C059            LD      BSWA        SAVE SW INPUT                8B201590
0157 0  1008            SLA     8                                        8B201600
0158 00 4C280179        BSC  L  CTL03,+Z    BRNCH IF MANUAL MODE         8B201610
                *                                                        8B201620
                ********************************************           8B201630
015A 00 440004AD        BSI  L  TIINT       GO DETERMINE TIMER   SRC     8B201640
                *                           INTERRUPT LEVEL              8B201650
                ********************************************           8B201660
                *                                                        8B201670
                *                   SET UP INTERRUPT ADDRESSES           8B201680
                *                                                        8B201690
015C 00 0C00026A        XIO  L  MASK0       MASK INTERRUPT LVLS          8B201700
015E 00 0C00026C        XIO  L  MASK1                                    8B201710
0160 0  621A            LDX     2 26                                     8B201720
0161 0  C042            LD      CONST+3     ADDRESS SVINT                8B201730
0162 00 D6000008        STO  L2 8                                        8B201740
0164 0  72FF            MDX     2 -1                                     8B201750
0165 0  70FC            MDX     *-4                                      8B201760
0166 0  0841            XIO     UMSK0       UNMASK INTERRUPTS            8B201770
0167 0  0842            XIO     UMSK1                                    8B201780
                *                                                        8B201790
0168 0  0845    RTRN    XIO     SNSWS       CHECK IF A ROUTINE           8B201800
0169 0  E038            AND     CONST+1     *IS SPECIFIED TO             8B201810
016A 0  1808            SRA     8           *LOOP                        8B201820
016B 0  4808            BSC     +           SKIP IF LOOP ROUTINE         8B201830
016C 0  7002            MDX     CTL04                                    8B201840
016D 0  D043            STO     RTNNO       SET IN ROUTINE SW            8B201850
016E 0  7006            MDX     CTL02+2     GO EXECUTE ROUTINE           8B201860
                *                                                        8B201870
016F 0  C041    CTL04   LD      RTNNO       CK IF ALL ROUTINES           8B201880
0170 0  9030            S       CONST       HAVE RUN                     8B201890
0171 0  4818            BSC     +-                                       8B201900
0172 0  7008            MDX     CTL05       BRNCH IF ALL RTN RUN         8B201910
                *                                                        8B201920
0173 00 74010181CTL02   MDX  L  RTNNO,1     ADD 1 TO ROUTINE NO          8B201930
0175 00 65800181        LDX     I1 RTNNO                                 8B201940
0177 00 4D800195        BSC     I1 RTN-1    EXIT TO ROUTINE              8B201950
                *                                                        8B201960
                *                   MANUAL MODE SELECTED                 8B201970
                ********************************************           8B201980
0179 00 4400053C CTL03  BSI  L  LOG         PRINT MANUAL MODE    SRC     8B201990
017B 0  0710            DC      TMM01       SELECTED                     8B202000
                ********************************************           8B202010
                *                                                        8B202020
017C 00 4C000456        BSC  L  TIMAN       GO TO MANUAL ROUTINE         8B202030
                *                                                        8B202040
```



```
                *                   ALL ROUTINES HAVE RUN                8B202050
                *                                                        8B202060
017E 0  082D    CTL05   XIO     BSW         READ BIT SWITCHES            8B202070
017F 0  C030            LD      BSWA        CHECK IF LOOP PROGRM         8B202080
0180 0  1804            SRA     4           IS SPECIFIED                 8B202090
0181 0  4804            BSC     E                                        8B202100
0182 0  7005            MDX     LPPGM       BRANCH IF LOOP PGRM          8B202110
                *                                                        8B202120
                ********************************************           8B202130
0183 00 4400053C        BSI  L  LOG         PRINT PROGRAM        SRC     8B202140
0185 0  072C            DC      TMM03       COMPLETE                     8B202150
                ********************************************           8B202160
                *                                                        8B202170
0186 0  3002    WT2     WAIT    2           PROGRAM COMPLETE             8B202180
                *                                                        8B202190
0187 0  70A5            MDX     TISRT       PUSHING START RESULT         8B202200
                *                           IN BRANCH TO START           8B202210
                *                           OF PROGRAM                   8B202220
                *                                                        8B202230
0188 0  1010    LPPGM   SLA     16          CLEAR ROUTINE NUMBER         8B202240
0189 0  D027            STO     RTNNO                                    8B202250
                *                                                        8B202260
                ********************************************           8B202270
018A 00 4400053C        BSI  L  LOG         PRINT PASS COMPLETE  SRC     8B202280
018C 0  0886            DC      TMM23                                    8B202290
                ********************************************           8B202300
                *                                                        8B202310
018D 0  70E5            MDX     CTL02       LOOP PROGRAM                 8B202320
                *                                                        8B202330
                *                   ROUTINES RETURN HERE                 8B202340
                *                                                        8B202350
018E 0  C023    RTNRT   LD      SEQCK                                    8B202360
018F 0  4818            BSC     +-                                       8B202370
0190 0  70D7            MDX     RTRN        BRANCH ON GOOD CHECK         8B202380
                *                                                        8B202390
                ********************************************           8B202400
0191 00 4400053C        BSI  L  LOG         PRINT SEQUENCE ERROR SRC     8B202410
0193 0  073A            DC      TMM04                                    8B202420
                ********************************************           8B202430
                *                                                        8B202440
0194 0  3003    WT3     WAIT    3           SEQUENCE ERROR               8B202450
                *                                                        8B202460
0195 0  7097            MDX     TISRT       PUSH START FOR RESRT         8B202470
                *                                                        8B202480
                *                   ROUTINE ADDRESSES                    8B202490
                *                                                        8B202500
0196 0  018A    RTN     DC      TIM00       ROUTINE 1                    8B202510
0197 0  0217            DC      TIM01       ROUTINE 2                    8B202520
0198 0  0270            DC      TIM02       ROUTINE 3                    8B202530
0199 0  02E0            DC      TIM03       ROUTINE 4                    8B202540
019A 0  0355            DC      TIM04       ROUTINE 5                    8B202550
019B 0  03EB            DC      TIM05       ROUTINE 6                    8B202560
019C 0  019D            DC      TIMER       ILLEGAL ROUTINE              8B202570
                *                                                        8B202580
                ********************************************           8B202590
019D 00 4400053C TIMER  BSI  L  LOG         PRINT ILLEGAL ENTRY  SRC     8B202600
019F 0  087A            DC      TMM20       MESSAGE ID                   8B202610
                ********************************************           8B202620
                *                                                        8B202630
01A0 0  70A5            MDX     WT1                                      8B202640
                *                                                        8B202650
                *                   CONTROL CONSTANTS                    8B202660
                *                                                        8B202670
01A1 0  0006    CONST   DC      6                                        8B202680
01A2 0  0700            DC      /0700                                    8B202690
01A3 0  06C8            DC      ERINT       LVL ERR INTRUPT ADRS         8B202700
01A4 0  06DF            DC      SVINT                                    8B202710
                *                                                        8B202720
```

INTERVAL TIMER FUNCTION TEST

```
01A6    0000               BSS  E  0                                   88202730
                    *                                                  88202740
01A6 0  4C00        RESRT  DC      /4C00      RESTART INSTRUCTION      88202750
01A7 0  012D               DC      TISRT                               88202760
                    *                                                  88202770
01A8 0  0000        UMSKO  DC      /0000      UNMASK INTERRUPT         88202780
01A9 0  0480               DC      /0480      IOCC                     88202790
01AA 0  0000        UMSK1  DC      /0000                               88202800
01AB 0  0481               DC      /0481                               88202810
                    *                                                  88202820
01AC 0  0180        BSW    DC      BSWA       READ BIT SWITCH IOCC     88202830
01AD 0  0240               DC      /0240                               88202840
01AE 0  0000        SNSWS  DC      /0000      READ SENSE SW IOCC       88202850
01AF 0  0760               DC      /0760                               88202860
                    *                                                  88202870
01B0 0  0000        BSWA   DC      0          BIT SW READ IN AREA      88202880
01B1 0  0000        RTNNO  DC      0          ROUTINE NUMBER           88202890
01B2 0  0000        SEQCK  DC      0                                   88202900
01B3 0  0000        OPIND  DC      0          OUTPUT DEVICE INDCTR     88202910
01B4 0  0000        SPEED  DC      0          CORE SPEED INDICATOR     88202920
                    *                                                  88202930
01B5 0  04A4        TIBCN  DC      TIMA1                               88202940
01B6 0  2000               DC      /2000                               88202950
01B7 0  3100               DC      /3100      TIMER A                  88202960
01B8 0  3200               DC      /3200      TIMER B                  88202970
01B9 0  3300               DC      /3300      TIMER C                  88202980
                    *                                                  88202990
                    **********************************************     88203000
                    *                ROUTINE NUMBER ONE          *     88203010
                    *                CHECK FOR DOUBLE INCR       *     88203020
                    *                OF I CTR DURING TIMER       *     88203030
                    *                CYCLE STEAL CYCLE           *     88203040
                    **********************************************     88203050
                    *                                                  88203060
01BA 00 0C00026A    TIM00  XIO  L  MASKO      MASK INTERRUPTS          88203070
01BC 00 0C00026C           XIO  L  MASK1                               88203080
01BE 0  1010               SLA     16         CLEAR ERROR SWITCH       88203090
01BF 0  D053               STO     ERRSW                               88203100
01C0 0  C0F4               LD      TIBCN      SET INTERRUPT            88203110
01C1 00 678006CA           LDX  I3 INLVL      *TRANSFER VECTOR         88203120
01C3 00 D7000000           STO  L3 0                                   88203130
01C5 00 6700FFFF           LDX  L3 /FFFF                               88203140
01C7 00 6F000004           STX  L3 4          SET ALL TIMERS TO        88203150
01C9 00 6F000005           STX  L3 5          *FFFF                    88203160
01CB 00 6F000006           STX  L3 6                                   88203170
01CD 00 0C0001A8           XIO  L  UMSKO      UNMASK INTERRUPTS        88203180
01CF 0  08DA               XIO     UMSK1                               88203190
01D0 0  6103               LDX   1 3          SET TIMER INDEX          88203200
01D1 0  C0E4               LD      TIBCN+1    INITIALIZE IOCC          88203210
01D2 00 D4000500           STO  L  NIOCC                               88203220
01D4 0  7005               MDX     RTN00+5                             88203230
                    *                                                  88203240
01D5 00 C4000500    RTN00  LD   L  NIOCC      MODIFY IOCC FOR          88203250
01D7 0  1001               SLA     1          *NEXT TIMER              88203260
01D8 00 D4000500           STO  L  NIOCC                               88203270
01DA 00 C50001B6           LD   L1 TIBCN+1    THR NMBR TO MESSAGE      88203280
01DC 00 D400085E           STO  L  TMM18+24                            88203290
                    *                                                  88203300
01DE 00 C5000213    RTN01  LD   L1 TIMA-1     CHECK IF TIMER OPRTV     88203310
01E0 0  4820               BSC     Z          SKIP IF OK               88203320
01E1 0  7016               MDX     RTN05                               88203330
01E2 00 C400026A           LD   L  MASKO      SET A TO FFFF            88203340
01E4 00 0C000500           XIO  L  NIOCC      TURN TIMER ON            88203350
                    *                                                  88203360
01E6 0  3008        WT8    WAIT    8          WAIT FOR INTERRUPT       88203370
                    *                                                  88203380
01E7 0  7008               MDX     RTN02      NORMAL INTRP RETURN      88203390
01E8 00 0C000502           XIO  L  FIOCC      ERROR INTRP RETURN       88203400
```


INTERVAL TIMER FUNCTION TEST

```
01EA 00 74010213           MDX  L  ERRSW,1    SET ERROR INDICATOR            88203410
                    *                                                        88203420
                    **********************************************           88203430
01EC 00 44000511           BSI  L  ERROR      PRINT ERROR              SRC   88203440
01EE 0  0846               DC      TMM18      MESSAGE ID                     88203450
01EF 0  01DE               DC      RTN01      LOOP ERROR RETURN              88203460
                    **********************************************           88203470
                    *                                                        88203480
01F0 00 0C000502    RTN02  XIO  L  FIOCC      TIMERS OFF                     88203490
01F2 00 C40004AC           LD   L  ACS        CHECK IF ACCUMULATOR           88203500
01F4 00 F400026A           EOR  L  MASKO      *WAS DESTROYED ON              88203510
01F6 0  4820               BSC     Z          *TIMER C.S.CYCLE               88203520
01F7 0  700F               MDX     RTN04                                     88203530
01F8 0  71FF        RTN05  MDX   1 -1                                        88203540
01F9 0  70DB               MDX     RTN00      BRN TO CHECK NXT TMR           88203550
01FA 0  C018               LD      ERRSW                                     88203560
01FB 00 4C180202           BSC  L  RTN03,+-   BRANCH IF NO ERROR             88203570
                    *                                                        88203580
                    **********************************************           88203590
01FD 00 4400053C           BSI  L  LOG        PRINT FIX COMMAND        SRC   88203600
01FF 0  0864               DC      TMM19      MESSAGE ID                     88203610
                    **********************************************           88203620
                    *                                                        88203630
0200 00 4C000146           BSC  L  WT1                                       88203640
                    *                                                        88203650
0202 00 C40001B1    RTN03  LD   L  RTNNO      PREPARE SEQUENCE               88203660
0204 0  F00D               EOR     RT00       *CHECK                         88203670
0205 0  D0AC               STO     SEQCK                                     88203680
0206 0  7087               MDX     RTNRT      RETURN TO CONTROL        SX    88203690
                    *                                                        88203700
0207 00 C50001B6    RTN04  LD   L1 TIBCN+1    SET TMR NMBR IN MSG            88203710
0209 00 D4000880           STO  L  TMM22+19                                  88203720
                    *                                                        88203730
                    **********************************************           88203740
020B 00 44000511           BSI  L  ERROR      PRINT A DESTROYED        SRC   88203750
020D 0  089D               DC      TMM22                                     88203760
020E 0  01DE               DC      RTN01                                     88203770
                    **********************************************           88203780
                    *                                                        88203790
020F 00 74010213           MDX  L  ERRSW,1    SET ERROR SWITCH               88203800
0211 0  70E6               MDX     RTN05                                     88203810
                    *                                                        88203820
0212 0  0001        RT00   DC      1                                         88203830
0213 0  0000        ERRSW  DC      0          ANY FAILURE SWITCH             88203840
0214 0  0000        TIMA   DC      0          A INOP SW                      88203850
0215 0  0000               DC      0          B INOP SW                      88203860
0216 0  0000               DC      0          C INOP SW                      88203870
                    *                                                        88203880
                    **********************************************           88203890
                    *                ROUTINE NUMBER TWO          *           88203900
                    *                CHECK ON/OFF ACTION OF      *           88203910
                    *                TIMERS                      *           88203920
                    **********************************************           88203930
0217 0  0852        TIM01  XIO     MASKO      MASK ALL INTERRUPTS            88203940
0218 0  0853               XIO     MASK1                                     88203950
                    *                                                        88203960
0219 0  1010               SLA     16                                        88203970
021A 00 D4000004           STO  L  /0004      CLEAR ALL TIMERS               88203980
021C 00 D4000005           STO  L  /0005                                     88203990
021E 00 D4000006           STO  L  /0006                                     88204000
                    *                                                        88204010
0220 0  6103               LDX   1 3          TIMER INDEX                    88204020
                    *                                                        88204030
0221 0  C094               LD      TIBCN+1    SET TIMER IOCC                 88204040
0222 00 D4000500           STO  L  NIOCC                                     88204050
                    *                                                        88204060
0224 0  1010        RTN10  SLA     16         CLEAR TIMER COUNT              88204070
0225 0  D048               STO     TMCNT      WORK LOCATION                  88204080
```

INTERVAL TIMER FUNCTION TEST

```
                        *                                                      8B204090
0226 0  620A                 LDX   2 1C        PASS INDEX                      8B204100
                        *                                                      8B204110
0227 00 C5000186             LD    L1 TIBCN+1  SET TIMER NUMBER                8B204120
0229 00 D4000784             STO   L  TMM08+11 IN MESSAGE                      8B204130
022B 00 D400079A             STO   L  TMM09+11                                 8B204140
                        *                                                      8B204150
022D 00 0C000500        RTN11 XIO  L  NIOCC    TURN TIMER ON                   8B204160
                        *                                                      8B204170
                        ********************************************           8B204180
022F 00 44000504             BSI   L  DEL20    GO DELAY              SRC       8B204190
                        ********************************************           8B204200
                        *                                                      8B204210
0231 00 0C000502             XIO   L  FIOCC    TURN TIMER OFF                  8B204220
                        *                                                      8B204230
0233 00 C5000003             LD    L1 /0003    GET TIMER CONTENTS              8B204240
0235 0  F038                 EOR      TMCNT    CHECK IF COUNT CHNGD            8B204250
0236 00 4C180256             BSC   L  RTN12,+- BRANCH IF ZERO                  8B204260
                        *                                                      8B204270
0238 00 C5000003             LD    L1 /0003    SET PRESENT COUNT IN            8B204280
023A 0  D033                 STO      TMCNT    WORK AREA                       8B204290
                        *                                                      8B204300
                        *                                                      8B204310
                        ********************************************           8B204320
023B 00 44000504             BSI   L  DEL20    GO DELAY              SRC       8B204330
                        ********************************************           8B204340
                        *                                                      8B204350
023D 00 C5000003             LD    L1 /0003    GET TIMER CONTENTS              8B204360
023F 0  F02E                 EOR      TMCNT    CHECK IF COUNT CHNGD            8B204370
0240 00 4C20025D             BSC   L  RTN13,Z  BRANCH IF NOT ZERO              8B204380
                        *                                                      8B204390
0242 00 C5000003             LD    L1 /0003    SAVE PRESENT COUNT              8B204400
0244 0  D029                 STO      TMCNT                                    8B204410
                        *                                                      8B204420
0245 0  72FF            RTN15 MDX  2 -1                                        8B204430
0246 0  70E6                 MDX      RTN11    GO MAKE ANOTHER PASS            8B204440
                        *                                                      8B204450
0247 0  71FF                 MDX   1 -1                                        8B204460
0248 0  701B                 MDX      RTN14    SET UP FOR NEXT TIMR            8B204470
                        *                                                      8B204480
0249 00 0C0006C8             XIO   L  DSW      PREVENT INTERRUPT               8B204490
024B 00 0C0001A8             XIO   L  UMSK0    UNMASK INTERRUPTS               8B204500
024D 00 0C0001AA             XIO   L  UMSK1                                    8B204510
                        *                                                      8B204520
024F 00 C4000181             LD    L  RTNNO    PREPARE SEQUENCE                8B204530
0251 0  F01D                 EOR      RT100    CHECK                           8B204540
0252 00 D40001B2             STO   L  SEQCK                                    8B204550
                        *                                                      8B204560
0254 00 4C00018E             BSC   L  RTNRT    RETURN TO CONTROL               8B204570
                        *                                                      8B204580
                        ********************************************           8B204590
0256 00 44000511        RTN12 BSI  L  ERROR    PRINT TIMER FAILED    SRC       8B204600
0258 0  0779                 DC       TMM08    TO TURN ON                      8B204610
0259 0  022D                 DC       RTN11    LOOP ERROR RETURN               8B204620
                        ********************************************           8B204630
                        *                                                      8B204640
025A 0  080F                 XIO      MASK0    REMASK AFTER PRINT              8B204650
025B 0  0810                 XIO      MASK1                                    8B204660
025C 0  70E8                 MDX      RTN15                                    8B204670
                        *                                                      8B204680
                        ********************************************           8B204690
025D 00 44000511        RTN13 BSI  L  ERROR    PRINT TIMER FAILED    SRC       8B204700
025F 0  078F                 DC       TMM09    TO TURN /FF                     8B204710
0260 0  022D                 DC       RTN11    LOOP ERROR RETURN               8B204720
                        ********************************************           8B204730
                        *                                                      8B204740
0261 0  0808                 XIO      MASK0    REMASK AFTER PRINT              8B204750
0262 0  0809                 XIO      MASK1                                    8B204760
```


INTERVAL TIMER FUNCTION TEST

```
0263 0  70E1                 MDX      RTN15                                    8B204770
                        *                                                      8B204780
0264 00 C4000500        RTN14 LD   L  NIOCC    SET IOCC FOR NEXT               8B204790
0266 0  1001                 SLA      1        TIMER                           8B204800
0267 00 D4000500             STO   L  NIOCC                                    8B204810
                        *                                                      8B204820
0269 0  708A                 MDX      RTN10    GO CHECK NEXT TIMER             8B204830
                        *                                                      8B204840
                        *                      CONSTANTS                       8B204850
                        *                                                      8B204860
026A    0000                 BSS   E  0                                        8B204870
                                                                               8B204880
026A 0  FFFF            MASK0 DC      /FFFF    MASK INTERRUPT IOCC             8B204890
026B 0  0480                 DC       /0480                                    8B204900
026C 0  FFFF            MASK1 DC      /FFFF                                    8B204910
026D 0  0481                 DC       /0481                                    8B204920
026E 0  0000            TMCNT DC      0                                        8B204930
026F 0  0002            RT100 DC      2                                        8B204940
                        *                                                      8B204950
                        ********************************************           8B204960
                        *                  ROUTINE NUMBER THREE    *           8B204970
                        *                  CHECK TIMER INTERRUPTS  *           8B204980
                        *                  AND DSW                 *           8B204990
                        ********************************************           8B205000
                        *                                                      8B205010
0270 0  C06A            TIM02 LD      RT201    SET TRAP ROUTINE                8B205020
0271 00 678006CA             LDX   I3 INLVL    ADDRESS IN INTERRUPT            8B205030
0273 00 D7000000             STO   L3 0        LOCATION                        8B205040
                        *                                                      8B205050
0275 0  6103                 LDX   1 3         TIMER INDEX                     8B205060
                        *                                                      8B205070
0276 00 C4000186             LD    L  TIBCN+1  SET TIMER IOCC TO C             8B205080
0278 00 D4000500             STO   L  NIOCC                                    8B205090
027A 0  7005                 MDX      RTN20+5                                  8B205100
                        *                                                      8B205110
027B 00 C4000500        RTN20 LD   L  NIOCC    SET IOCC FOR NEXT               8B205120
027D 0  1001                 SLA      1        TIMER                           8B205130
027E 00 D4000500             STO   L  NIOCC                                    8B205140
                        *                                                      8B205150
0280 00 C5000186             LD    L1 TIBCN+1  SET TIMER NUMBER                8B205160
0282 00 D40007B1             STO   L  TMM10+11 IN MESSAGE                      8B205170
0284 00 D40007C7             STO   L  TMM11+11                                 8B205180
                        *                                                      8B205190
0286 0  C053            RTN21 LD      RT200    SET TIMER TO FFFF               8B205200
0287 00 D5000003             STO   L1 /0003                                    8B205210
                        *                                                      8B205220
0289 00 0C000500             XIO   L  NIOCC    TURN TIMER ON                   8B205230
                        *                                                      8B205240
                        ********************************************           8B205250
028B 00 44000504             BSI   L  DEL20    GO WAIT FOR INTERUPT SRC        8B205260
                        ********************************************           8B205270
                        *                                                      8B205280
                        *                  IF TIMER FAILS TO INTEPUPT          8B205290
                        *                  CONTINUE FROM THIS POINT            8B205300
                        *                                                      8B205310
028D 00 0C000502             XIO   L  FIOCC    TURN TIMER OFF                  8B205320
                        *                                                      8B205330
                        ********************************************           8B205340
028F 00 44000511             BSI   L  ERROR    PRINT TIMER FAILED              8B205350
0291 0  07A6                 DC       TMM10    TO INTERRUPT                    8B205360
0292 0  0286                 DC       RTN21    LOOP ERROR RETURN               8B205370
                        ********************************************           8B205380
                        *                                                      8B205390
0293 0  7018                 MDX      RTN27    GO CHECK IF DONE                8B205400
                        *                                                      8B205410
                        *                  INTERRUPT TRAP ROUTINE              8B205420
                        *                  RETURNS HERE                        8B205430
                        *                                                      8B205440
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0294 00 C4C00653 RTN22 LD   L  TRP02      CHECK IF PROPER DSW          8B205450
0296 00 F50002DC       EOR  L1 RT202                                   8B205460
0298 0  4818           BSC     +-         SKIP IF NOT ZERO             8B205470
0299 0  700E           MDX     RTN23      DSW OK  CONTINUE             8B205480
                       *                                               8B205490
                       *                  WRONG DSW AFTER INTERRUPT    8B205500
                       *                                               8B205510
029A 00 C4000653       LD   L  TRP02      SET DSW FOR CONVRSN          8B205520
029C 00 D4000629       STO  L  HEXWD                                   8B205530
                       *                                               8B205540
                       ************************************************8B205550
029E 00 44G00609       BSI  L  HEXCV      CONVERT HEX TO 43 CD SRC     8B205560
                       ************************************************8B205570
                       *                                               8B205580
02A0 00 CC00062E       LDD  L  HEXCD      ERROR DSW TO MESSAGE         8B205590
02A2 00 DC0007CA       STD  L  TMM11+14                                8B205600
                       *                                               8B205610
                       ************************************************8B205620
02A4 00 44000511       BSI  L  ERROR      PRINT DSW ERROR      SRC     8B205630
02A6 0  078C           DC      TMM11                                   8B205640
02A7 0  0286           DC      RTN21      LOOP ERROR RETURN            8B205650
                       ************************************************8B205660
                       *                                               8B205670
02A8 00 C500064F RTN23 LD   L1 TRP01-1    CHECK IF TIMER ILSW          8B205680
02AA 0  4818           BSC     +-         *IS ZERO                     8B205690
02AB 0  7025           MDX     RTN26                                   8B205700
02AC 0  71FF     RTN27 MDX   1 -1         MAKE ANOTHER PASS IF         8B205710
02AD 0  70CD           MDX     RTN20      ALL TIMERS NOT CKD           8B205720
                       *                                               8B205730
                       *                  ALL TIMERS CKD  CK ILSW      8B205740
                       *                                               8B205750
02AE 00 C4000650       LD   L  TRP01      CHECK THAT ALL TIMER         8B205760
02B0 00 F4000651       EOR  L  TRP01+1    *ILSW BITS ARE THE           8B205770
02B2 00 E4000652       AND  L  TRP01+2    *SAME                        8B205780
02B4 0  4818           BSC     +-                                      8B205790
02B5 0  7014           MDX     RTN25      ILSW OK  EXIT                8B205800
                       *                                               8B205810
                       *                  ILSW ERROR                   8B205820
                       *                                               8B205830
0286 0  6303           LDX   3 3                                       8B205840
02B7 00 C700064F RTN24 LD   L3 TRP01-1    SET ILSW FOR CONVRSN         8B205850
02B9 00 D400C629       STO  L  HEXWD                                   8B205860
                       *                                               8B205870
                       ************************************************8B205880
02BB 00 440006U9       BSI  L  HEXCV      CONVERT HEX TO 43 CD SRC     8B205890
                       ************************************************8B205900
                       *                                               8B205910
02BD 00 CC00062E       LDD  L  HEXCD      SET ILSW IN MESSAGE          8B205920
02BF 00 DC0007DE       STD  L  TMM12+16                                8B205930
02C1 00 C70001B6       LD   L3 TIBCN+1    TIMER NMBR TO MESSAG         8B205940
02C3 00 D40007D9       STO  L  TMM12+11                                8B205950
                       *                                               8B205960
                       ************************************************8B205970
02C5 00 4400053C       BSI  L  LOG        PRINT ILSW           SRC     8B205980
02C7 0  07CE           DC      TMM12                                   8B205990
                       ************************************************8B206000
                       *                                               8B206010
02C8 0  73FF           MDX   3 -1                                      8B206020
02C9 0  70ED           MDX     RTN24                                   8B206030
                       *                  ALL TIMERS CHECKED  EXIT     8B206040
                       *                                               8B206050
02CA 00 C40001B1 RTN25 LD   L  RTNNO                                   8B206060
02CC 0  F00F           EOR     RT202                                   8B206070
02CD 00 D40001B2       STO  L  SEQCK                                   8B206080
                       *                                               8B206090
02CF 00 4C00018E       BSC  L  RTNRT      RETURN TO CONTROL            8B206100
                       *                                               8B206110
02D1 00 C5000186 RTN26 LD   L1 TIBCN+1                                 8B206120
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02D3 00 D4000894       STO  L  TMM21+11                                8B206130
                       *                                               8B206140
                       ************************************************8B206150
02D5 00 44000511       BSI  L  ERROR      PRINT ILSW ZERO      SRC     8B206160
02D7 0  0889           DC      TMM21      MESSAGE ID                   8B206170
02D8 0  0286           DC      RTN21      LOOP ERROR RETURN            8B206180
                       ************************************************8B206190
                       *                                               8B206200
02D9 0  70D2           MDX     RTN23+4                                 8B206210
                       *                                               8B206220
                       *                  CONSTANTS                    8B206230
                       *                                               8B206240
02DA 0  FFFF     RT200 DC      /FFFF                                    8B206250
02DB 0  0640     RT201 DC      TRAP2      INTERRUPT ADDRESS            8B206260
02DC 0  0003     RT202 DC      3                                       8B206270
02DD 0  8000           DC      /8000      A  DSW                       8B206280
02DE 0  4000           DC      /4000      B  DSW                       8B206290
02DF 0  2000           DC      /2000      C  DSW                       8B206300
                       *                                               8B206310
                       ************************************************8B206320
                       *                  ROUTINE FOUR            *   8B206330
                       *                  CHECK TIMERS FOR        *   8B206340
                       *                  PROPER STEPPING         *   8B206350
                       ************************************************8B206360
                       *                                               8B206370
02E0 00 0C00026A TIM03 XIO  L  MASK0      MASK INTERRUPTS              8B206380
02E2 00 0C00026C       XIO  L  MASK1                                   8B206390
02E4 0  6103           LDX   1 3          TIMER INDEX                  8B206400
02E5 00 C40001B6       LD   L  TIBCN+1    IOCC TO TIMER C              8B206410
02E7 00 D4000500       STO  L  NIOCC                                   8B206420
02E9 0  7005           MDX     RTN30+5                                 8B206430
                       *                                               8B206440
02EA 00 C4000500 RTN30 LD   L  NIOCC      SET IOCC FOR NEXT            8B206450
02EC 0  1001           SLA     1          TIMER                        8B206460
02ED 00 D4000500       STO  L  NIOCC                                   8B206470
02EF 0  6210           LDX   2 16         SET PASS INDEX               8B206480
02F0 00 C5000186       LD   L1 TIBCN+1    SET TIMER NUMBER             8B206490
02F2 00 D40007ED       STO  L  TMM13+11   IN ERROR MESSAGE             8B206500
                       *                                               8B206510
02F4 0  6332     RTN31 LDX   3 50         SET STEP INDEX               8B206520
02F5 00 C6000344       LD   L2 CTTBL-1    SET STARTING COUNT           8B206530
02F7 00 D5000003       STO  L1 /0003      *IN TIMER AND IN             8B206540
02F9 0  D048           STO     RT300      *CHECK REGISTER              8B206550
                       *                                               8B206560
02FA 00 0C000500       XIO  L  NIOCC      TURN TIMER ON                8B206570
                       *                                               8B206580
                       *                  ** CHECK STEPPING **         8B206590
                       *                                               8B206600
02FC 00 C5000003 RTN32 LD   L1 /0003      GET TIMER CONTENTS           8B206610
02FE 0  9043           S       RT300      *LOOP UNTIL TIMER            8B206620
02FF 0  4818           BSC     +-         *AND CHECK REG ARE           8B206630
0300 0  70FB           MDX     RTN32      *UNLIKE                      8B206640
                       *                                               8B206650
0301 0  F042           EOR     RT302      CHECK IF DIFF IS 1           8B206660
0302 0  4818           BSC     +-                                      8B206670
0303 0  7026           MDX     RTN33      COUNT OK CONTINUE            8B206680
                       *                                               8B206690
                       *                  ** COUNT IN ERROR **         8B206700
                       *                                               8B206710
0304 00 0C000502       XIO  L  FIOCC      TURN TIMER OFF               8B206720
0306 00 0C0006C8       XIO  L  DSW        RESET DSW AVOID INTP         8B206730
                       *                                               8B206740
0308 0  C039           LD      RT300      CONVERT EXPECTED             8B206750
0309 0  803A           A       RT302      *COUNT                       8B206760
030A 00 D4000629       STO  L  HEXWD                                   8B206770
                       *                                               8B206780
                       ************************************************8B206790
030C 00 4400060*       BSI  L  HEXCV      GO CONVERT WORD      SRC     8B206800
```

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                *********************************************
                *
030E 00 CC00062E        LDD  L  HEXCD       SET EXPECTED COUNT
0310 00 DC0007F8        STD  L  TMM13+22    IN MESSAGE
                *
0312 00 C5000003        LD   L1 /0003       CONVERT ACTUAL
0314 00 D4000629        STO  L  HEXWD       COUNT TO 1443 HEX
                *
                *********************************************
0316 00 44000609        BSI  L  HEXCV       GO CONVERT WORD      SRC
                *********************************************
                *
0318 00 CC00062E        LDD  L  HEXCD       SET ACTUAL COUNT
031A 00 DC0007F0        STD  L  TMM13+14    IN MESSAGE
                *
                *********************************************
031C 00 44000511        BSI  L  ERROR       GO PRINT COUNT ERROR SRC
031E 0  07E2            DC      TMM13
031F 0  02F4            DC      RTN31       LOOP ERROR ADDPESS
                *********************************************
                *
0320 00 0C00026A        XIO  L  MASKO       REMASK AFTER PRINT
0322 00 0C00026C        XIO  L  MASK1
                *
0324 00 C5000003        LD   L1 /0003       SET PRESENT TIMER
0326 0  D018            STO     RT300       *COUNT IN CHECK REG
                *
0327 00 0C000500        XIO  L  NIOCC       TURN TIMER ON
0329 0  7002            MDX     RTN33+2
                *
                *                   ** CHECK STEP,PASS AND **
                *                   ** TIMER INDEX FOR RTN **
                *                   ** COMPLETE            **
                *
032A 00 74010342 RTN35  MDX  L  RT300,1     CHECK REG TO NEXT CT
032C 0  1000            NOP
032D 0  73FF            MDX     3 -1
032E 0  70CD            MDX     RTN32       BRNCH  NOT 50 STEPS
032F 0  72FF            MDX     2 -1
0330 0  70C3            MDX     RTN31       BRNCH  NOT 16 PASSES
                *
0331 00 0C000502        XIO  L  FIOCC       TURN TIMER OFF
                *
0333 0  71FF            MDX     1 -1
0334 0  7085            MDX     RTN30       BRNCH  NOT ALL TIMRS
                *
                *
                *                   ROUTINE COMPLETE
                *
0335 00 C40001B1        LD   L  RTNNO       PREPARE SEQUENCE
0337 0  F008            EOR     RT301       CHECK
0338 00 D4000182        STO  L  SEQCK
                *
033A 00 0C0006C8        XIO  L  DSW         PREVENT INTERRUPT
033C 00 0C0001A8        XIO  L  UMSKO       UNMASK INTERRUPTS
033E 00 0C0001AA        XIO  L  UMSK1
                *
0340 00 4C00018E        BSC  L  RTNRT       RETURN TO CONTROL
                *
                *                   CONSTANTS
                *
0342 0  0000    RT300   DC      0
0343 0  0004    RT301   DC      4
0344 0  0001    RT302   DC      1
                *
                *                   TIMER STARTING COUNT TABL
                *
0345 0  FFFF    CTTBL   DC      /FFFF
0346 0  FFF0            DC      /FFF0
```

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8B206810
8B206820
8B206830
8B206840
8B206850
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8B206870
8B206880
8B206890
8B206900
8B206910
8B206920
8B206930
8B206940
8B206950
8B206960
8B206970
8B206980
8B206990
8B207000
8B207010
8B207020
8B207030
8B207040
8B207050
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8B207080
8B207090
8B207100
8B207110
8B207120
8B207130
8B207140
8B207150
8B207160
8B207170
8B207180
8B207190
8B207200
8B207210
8B207220
8B207230
8B207240
8B207250
8B207260
8B207270
8B207280
8B207290
8B207300
8B207310
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8B207370
8B207380
8B207390
8B207400
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8B207420
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8B207440
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8B207460
8B207470
8B207480
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0347 0  FF0F            DC      /FF0F
0348 0  FF00            DC      /FF00
0349 0  F0FF            DC      /F0FF
034A 0  F0F0            DC      /F0F0
034B 0  F00F            DC      /F00F
034C 0  F000            DC      /F000
034D 0  0FFF            DC      /0FFF
034E 0  0FF0            DC      /0FF0
034F 0  0F0F            DC      /0F0F
0350 0  0F00            DC      /0F00
0351 0  00FF            DC      /00FF
0352 0  00F0            DC      /00F0
0353 0  000F            DC      /000F
0354 0  0000            DC      /0000
                *
                *
                *********************************************
                *                   ROUTINE NUMBER FIVE       *
                *                   CHECK TIMERS WHILE STEP-  *
                *                   ING TOGETHER,AND WHILE    *
                *                   IN INTERRUPT MODE         *
                *********************************************
                *
0355 00 678006CA TIM04  LDX  I3 INLVL       SET TIMER INTERRUPT
0357 00 C40003DE        LD   L  RT400       LEVEL
0359 00 D7000000        STO  L3 0
035B 0  1010            SLA     16          CLEAR INTERRUPT PASS
035C 00 D40003E5        STO  L  INTSW       *INDICATOR
035E 00 C40003DF        LD   L  RT401       SET PASS 1 IN ERROR
0360 00 D4000813        STO  L  TMM14+23    *MESSAGE
                *
0362 00 0C00026A        XIO  L  MASKO       MASK INTERRUPTS FOR
0364 00 0C00026C        XIO  L  MASK1       *1ST PASS
                *
0366 0  6103    RTN40   LDX  1 3            SET TIMER INDEX
0367 00 C40004FD        LD   L  TII03       SET IOCC TO ALL TMRS
0369 00 D4000500        STO  L  NIOCC
                *
0368 00 C5000186        LD      L1 TIBCN+1  TIMER NUMBER TO
036D 00 D4000805        STO  L  TMM14+9     *ERROR MESSAGE
                *
036F 00 660003E8 RTN41  LDX  L2 /03E8       SET STEP INDEX 1000
0371 0  C070            LD      RT404       SET ALL TIMERS AND
0372 0  D06E            STO     RT403       *THE CHECK REGISTER
0373 0  6303            LDX  3 3            *TO HEX FE0B
0374 00 D7000003        STO  L3 3
0376 0  73FF            MDX  3 -1
0377 0  70FC            MDX     *-4
                *
                *
0378 00 0C000500        XIO  L  NIOCC       TURN ALL TIMERS ON
                *
037A 00 C5000003 RTN42  LD   L1 3           GET TIMER CONTENTS
037C 0  9064            S       RT403       *LOOP UNTIL TIMER
037D 0  4818            BSC     +-          *AND CHECK REG ARE
037E 0  70F8            MDX     RTN42       *UNLIKE
                *
037F 0  F064            EOR     RT406       CHECK IF DIFF IS 1
0380 0  4818            BSC     +-
0381 0  702C            MDX     RTN43       COUNT OK CONTINUE
                *
                *                   ** COUNT IN ERROR **
                *
0382 00 0C000502        XIO  L  FIOCC       TURN TIMERS OFF
0384 0  C060            LD      INTSW
0385 00 4C200389        BSC  L  *+2,Z
0387 00 0C0006C8        XIO  L  DSW         RESET DSW IF 1ST PAS
                *
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8B207490
8B207500
8B207510
8B207520
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8B207690
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8B208060
8B208070
8B208080
8B208090
8B208100
8B208110
8B208120
8B208130
8B208140
8B208150
8B208160
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0389 0  C057              LD       RT403       CONVERT EXPECTEC             8B208170
038A 0  8059              A        RT406       *COUNT                       8B208180
038B 00 D4000629          STO   L  HEXWD                                    8B208190
                    *                                                       8B208200
                    ***********************************************         8B208210
038D 00 44000609          BSI   L  HEXCV       GO CONVERT              SRC  8B208220
                    ***********************************************         8B208230
                    *                                                       8B208240
038F 00 CC00062E          LDD   L  HEXCD       EXPECTED WCRD TO ERR         8B208250
0391 00 DC00080E          STD   L  TMM14+18    MESSAGE                      8B208260
                    *                                                       8B208270
0393 00 C5000003          LD    L1 /0003       ACTUAL COUNT TO              8B208280
0395 00 D4000629          STO   L  HEXWD       CONVERT                      8B208290
                    *                                                       8B208300
                    ***********************************************         8B208310
0397 00 44000609          BSI   L  HEXCV       GO CONVERT              SRC  8B208320
                    ***********************************************         8B208330
                    *                                                       8B208340
0399 00 CC00062E          LDD   L  HEXCD       ACTUAL COUNT TC ERR          8B208350
039B 00 DC000808          STD   L  TMM14+12    MESSAGE                      8B208360
                    *                                                       8B208370
                    ***********************************************         8B208380
039D 00 44000511          BSI   L  ERROR       PRINT ERROR             SRC  8B208390
039F 0  07FC              DC       TMM14                                    8B208400
03A0 0  036F              DC       RTN41       LOOP ERROR ADDRESS           8B208410
                    ***********************************************         8B208420
                    *                                                       8B208430
03A1 00 C5000003          LD    L1 3           SET PRESENT TIMER            8B208440
03A3 0  D03D              STO      RT403       *CNT IN CHECK REG            8B208450
                    *                                                       8B208460
03A4 0  C040              LD       INTSW                                    8B208470
03A5 00 4C2003AB          BSC   L  *+4,Z                                    8B208480
03A7 00 0C00026A          XIO   L  MASK0       REMASK AFTER PRINT           8B208490
03A9 00 0C00026C          XIO   L  MASK1       *ON 1ST PASS                 8B208500
                    *                                                       8B208510
03AB 00 0C000500          XIO   L  NIOCC       TURN TIMERS ON               8B208520
03AD 0  7002              MDX      RTN43+2                                  8B208530
                    *                                                       8B208540
03AE 00 740103E1    RTN43 MDX   L  RT403,1     SET CHECK REG FOR            8B208550
03B0 0  1000              NOP                  *NEXT COUNT                  8B208560
03B1 0  72FF              MDX    2 -1                                       8B208570
03B2 0  70C7              MDX      RTN42       BRNCH NOT 1000 STEPS         8B208580
                    *                                                       8B208590
03B3 00 0C000502          XIO   L  FIOCC       TURN TIMERS OFF              8B208600
                    *                                                       8B208610
03B5 0  71FF              MDX    1 -1                                       8B208620
03B6 0  70B4              MDX      RTN41-4     BRANCH NOT ALL TIMRS         8B208630
                    *                                                       8B208640
03B7 0  C02D              LD       INTSW                                    8B208650
03B8 0  4820              BSC      Z           SKIP IF 1ST PASS             8B208660
03B9 0  7019              MDX      RTN44       BRNCH IF INT PASS            8B208670
                    *                                                       8B208680
03BA 00 0C0006C8          XIO   L  DSW                                      8B208690
03BC 00 0C0001A8          XIO   L  UMSK0       UNMASK INTERRUPT             8B208700
03BE 00 0C0001AA          XIO   L  UMSK1       LEVELS                       8B208710
03C0 00 740103E5          MDX   L  INTSW,1     INDICATE INT PASS            8B208720
03C2 0  C01D              LD       RT402       SET PASS 2 IN ERROR          8B208730
03C3 00 D4000813          STO   L  TMM14+23    *MESSAGE                     8B208740
03C5 00 C40001B6          LD    L  TIBCN+1     SET TIMER C IOCC             8B208750
03C7 00 D4000500          STO   L  NIOCC                                    8B208760
03C9 00 6700FFFF          LDX   L3 /FFFF       GET TIMER INTERRUPT          8B208770
03CB 00 6F000006          STX   L3 6           LEVEL SET                    8B208780
                    *                                                       8B208790
03CD 00 0C000500          XIO   L  NIOCC       TIMER ON FOR INTRPT          8B208800
                    *                                                       8B208810
03CF 0  3004        WT4   WAIT     4           WAIT FOR INTEPRUPT           8B208820
                    *                                                       8B208830
03D0 00 0C000502          XIO   L  FIUCC       TURN TIMER OFF               8B208840
```



```
                    *                                                       8B208850
03D2 0  7093              MDX      RTN40       RERUN ROUTINE                8B208860
                    *                                                       8B208870
                    *                ** ROUTINE COMPLETE **                 8B208880
                    *                                                       8B208890
03D3 00 0C0006C8    RTN44 XIO   L  DSW         RESET DSW                    8B208900
03D5 00 4C4003D7          BOSC  L  *           TURN INTERRUPT OFF           8B208910
                    *                                                       8B208920
03D7 00 C40001B1          LD    L  RTNNO       PREPARE SEQUENCE             8B208930
03D9 0  F009              EOR      RT405       *CHECK                       8B208940
03DA 00 D40001B2          STO   L  SEQCK                                    8B208950
                    *                                                       8B208960
03DC 00 4C00018E          BSC   L  RTNRT       RETURN TO CONTROL            8B208970
                    *                                                       8B208980
                    *              CONSTANTS                                8B208990
                    *                                                       8B209000
03DE 0  03E6        RT400 DC       TRA4A       TIMER LEVEL                  8B209010
03DF 0  0100        RT401 DC       /0100       43 CODED 1                   8B209020
03E0 0  0200        RT402 DC       /0200       43 CODED 2                   8B209030
03E1 0  0000        RT403 DC       0                                        8B209040
03E2 0  FE0B        RT404 DC       /FE0B       TIMER STARTING COUNT         8B209050
03E3 0  0005        RT405 DC       5                                        8B209060
03E4 0  0001        RT406 DC       1                                        8B209070
03E5 0  0000        INTSW DC       0           INTERRUPT SWITCH             8B209080
                    *                                                       8B209090
03E6 0  0000        TRA4A DC       0           TIMER TRAP ROUTINE           8B209100
03E7 00 0C0006C6          XIO   L  ILSW                                     8B209110
03E9 00 4C8003E6          BSC   I  TRA4A                                    8B209120
                    *                                                       8B209130
                    ***********************************************         8B209140
                    *                  ROUTINE SIX                          8B209150
                    *                  CHECK STORAGE PRO-                   8B209160
                    *                  TECTED TIMERS                        8B209170
                    ***********************************************         8B209180
                    *                                                       8B209190
03EB 00 670006D3    TIM05 LDX   L3 SPVTP       LOAD TRAP ADDRESS            8B209200
03ED 00 6F000008          STX   L3 8                                        8B209210
03EF 00 670004A4          LDX   L3 TIMAI                                    8B209220
03F1 00 6F8006CA          STX   I3 INLVL                                    8B209230
03F3 0  6103              LDX    1 3           SET TIMER INDEX              8B209240
03F4 0  1010              SLA      16          CLEAR ALL TIMERS             8B209250
03F5 0  D05E              STO      SPVCK       *AND VIOLATE SWITCH          8B209260
03F6 00 D4000004          STO   L  4                                        8B209270
03F8 00 D4000005          STO   L  5                                        8B209280
03FA 00 D4000006          STO   L  6                                        8B209290
03FC 00 2C410004          STS   L  4,/41       STORAGE PROTECT ALL          8B209300
03FE 00 2C410005          STS   L  5,/41       *TIMERS                      8B209310
0400 00 2C410006          STS   L  6,/41                                    8B209320
0402 00 C40001B6          LD    L  TIBCN+1     INITIALIZE TIMER             8B209330
0404 00 D4000500          STO   L  NIOCC       *IOCC                        8B209340
0406 0  7005              MDX      RTN50+5                                  8B209350
                    *                                                       8B209360
0407 00 C4000500    RTN50 LD    L  NIOCC       MODIFY IOCC FOR              8B209370
0409 0  1001              SLA      1           *NEXT TIMER                  8B209380
040A 00 D4000500          STO   L  NIOCC                                    8B209390
040C 0  1010              SLA      16          CLEAR INCREMENT              8B209400
040D 0  D047              STO      INCCT       *SWITCH                      8B209410
040E 0  620A              LDX    2 10          SET PASS INDEX               8B209420
040F 00 C50001B6          LD    L1 TIBCN+1     SET TIMER NUMBER IN          8B209430
0411 00 D40008CE          STO   L  TMM24+11    *MESSAGES                    8B209440
0413 00 D40008EC          STO   L  TMM25+18                                 8B209450
                    *                                                       8B209460
0415 00 0C000500    RTN51 XIO   L  NIOCC       TURN TIMER ON                8B209470
0417 00 44000504          BSI   L  DEL20       ALLOW FOR INCREMENT     SRC  8B209480
0419 00 0C000502          XIO   L  FIOCC       TURN TIMER OFF               8B209490
                    *                                                       8B209500
041B 00 C5000003          LD    L1 3           CHECK IF TIMER               8B209510
041D 0  F037              EOR      INCCT       *INCREMENTED                 8B209520
```

INTERVAL TIMER FUNCTION TEST

```
041E 0  4820              BSC      Z                                   8B209530
041F 0  7004              MDX      RTN52       OK  CONTINUE            8B209540
                    *                                                  8B209550
                    *********************************************      8B209560
0420 00 44000511          BSI  L   ERROR       PRINT ERROR        SRC  8B209570
0422 0  08C3              DC       TMM24                               8B209580
0423 0  0415              DC       RTN51       LOOP ERROR RETURN       8B209590
                    *********************************************      8B209600
                    *                                                  8B209610
0424 00 C5000003    RTN52 LD   L1  3           MODIFY INCREMENT        8B209620
0426 0  D02E              STO      INCCT       *SWITCH                 8B209630
0427 0  72FF              MDX    2 -1          SKIP IF 10 PASSES       8B209640
0428 0  70EC              MDX      RTN51                               8B209650
0429 0  71FF              MDX    1 -1          SKIP IF LAST TIMER      8B209660
042A 0  70DC              MDX      RTN50       GO CK NEXT TIMER        8B209670
                    *                                                  8B209680
                    *                 VIOLATE PROTECTED TIMERS         8B209690
                    *                                                  8B209700
042B 00 74010454          MDX  L   SPVCK,1     SET CHECK SWITCH        8B209710
042D 0  6103              LDX    1 3           SET TIMER INDEX         8B209720
042E 00 C5000186    RTN53 LD   L1  TIBCN+1     SET TIMER NUMBER        8B209730
0430 00 D4000907          STO  L   TMM26+21    *IN MESSAGE             8B209740
                    *                                                  8B209750
0432 00 D5000003          STO  L1  3           VIOLATE TIMER           8B209760
                    *                                                  8B209770
                    *********************************************      8B209780
0434 00 44000511          BSI  L   ERROR       PRINT INTRP FAILED SRC  8B209790
0436 0  08F2              DC       TMM26                               8B209800
0437 0  042E              DC       RTN53       LOOP ERROR RETURN       8B209810
                    *********************************************      8B209820
                    *                                                  8B209830
0438 0  71FF        RTN54 MDX    1 -1          SKIP IF ALL TIMERS      8B209840
0439 0  70F4              MDX      RTN53       *CHECKED                8B209850
                    *                                                  8B209860
043A 00 670006CB          LDX  L3  ERINT       RESTORE INTERRUPT       8B209870
043C 00 6F000008          STX  L3  8           *VECTOR                 8B209880
043E 00 C40001B1          LD   L   RTNNO       PREPARE SEQUENCE        8B209890
0440 0  F012              EOR      RT500       *CHECK                  8B209900
0441 00 D40001B2          STO  L   SEQCK                               8B209910
0443 00 2C400004          STS  L   4,/40       CLEAR PROTECTED         8B209920
0445 00 2C400005          STS  L   5,/40       *TIMERS                 8B209930
0447 00 2C400006          STS  L   6,/40                               8B209940
0449 00 4C00018E          BSC  L   RTNRT       RETURN TO CONTROL       8B209950
                    *                                                  8B209960
                    *                 INTERRUPT RETURN                 8B209970
                    *                                                  8B209980
044B 0  C008        RTN55 LD       SPVCK       CHECK IF SPV PASS       8B209990
044C 0  4820              BSC      Z           SKIP IF ERROR           8B210000
044D 0  70EA              MDX      RTN54                               8B210010
                    *                                                  8B210020
                    *********************************************      8B210030
044E 00 44000511          BSI  L   ERROR       PRINT ERROR        SRC  8B210040
0450 0  08DA              DC       TMM25                               8B210050
0451 0  042E              DC       RTN53       LOOP ERROR RETURN       8B210060
                    *********************************************      8B210070
                    *                                                  8B210080
0452 0  70D1              MDX      RTN52                               8B210090
                    *                                                  8B210100
                    *                 CONSTANTS                        8B210110
                    *                                                  8B210120
0453 0  0006        RT500 DC       6           CONSTANT 6              8B210130
0454 0  0000        SPVCK DC       0           SPV CK SWITCH           8B210140
0455 0  0000        INCCT DC       0           INCREMENT SWITCH        8B210150
                    *                                                  8B210160
                    *********************************************      8B210170
                    *                 SCOPING ROUTINE                  8B210180
                    *********************************************      8B210190
                    *                                                  8B210200
```


INTERVAL TIMER FUNCTION TEST

```
0456 0  6318        TIMAN LDX    3 27                             SE   8B210210
0457 0  C042              LD       TIX01                               8B210220
0458 00 D7000007    TIMAA STO  L3  7           SET ALL INTRS FOR       8B210230
045A 0  73FF              MDX    3 -1          *RETURN TO MANUAL       8B210240
045B 0  70FC              MDX      TIMAA       *ROUTINE                8B210250
                    *                                                  8B210260
                    *                 REQUEST SW ENTRY FOR START       8B210270
                    *                 TIME CT                          8B210280
                    *                                                  8B210290
045C 00 4400053C          BSI  L   LOG         GO PRINT REQUEST   SRC  8B210300
045E 0  0815              DC       TMM15       ADRS OF MSG             8B210310
045F 0  3005        WT5   WAIT     5                                   8B210320
0460 00 0C0001AC          XIO  L   BSW         READ BIT SWITCHS        8B210330
0462 00 C4000180          LD   L   BSWA        GET BIT SWITCHS         8B210340
0464 0  D036              STO      TIX02                               8B210350
                    *                                                  8B210360
                    *                 REQUEST SW ENTRY FOR             8B210370
                    *                 NUMBER OF STEPS                  8B210380
                    *                                                  8B210390
0465 00 4400053C    TIMAB BSI  L   LOG         GO PRINT REQUEST   SRC  8B210400
0467 0  0825              DC       TMM16       ADRS OF MSG             8B210410
0468 0  3006        WT6   WAIT     6                                   8B210420
0469 00 0C0001AC          XIO  L   BSW         READ BIT SWS            8B210430
046B 00 C4000180          LD   L   BSWA        GET BIT SWS             8B210440
046D 0  D02E              STO      TIX03                               8B210450
046E 0  4818              BSC      +-          WAS ENTRY ZERO          8B210460
046F 0  70F5              MDX      TIMAB       YES-REQ AGAIN           8B210470
                    *                                                  8B210480
                    *                 REQUEST SW ENTRY FOR TIMER       8B210490
                    *                                                  8B210500
0470 00 4400053C          BSI  L   LOG         GO PRINT REQUEST   SRC  8B210510
0472 0  0836              DC       TMM17       ADRS OF MSG             8B210520
0473 0  3007        WT7   WAIT     7                                   8B210530
0474 00 0C0001AC          XIO  L   BSW         READ BIT SWS            8B210540
0476 00 C4000180          LD   L   BSWA        GET BIT SWS             8B210550
0478 0  E029              AND      TIX07       SAVE BITS 4 5 AND 6     8B210560
0479 0  180A              SRA      10          SET UP TIMER INDEX      8B210570
047A 0  F028              EOR      TIX08                               8B210580
047B 0  D021              STO      TIX04                               8B210590
                    *                                                  8B210600
                    *                 SET UP TIMER TO DESIRED          8B210610
                    *                 VALUE                            8B210620
047C 0  C020        TIMAL LD       TIX04       GET TIMER ENTRY         8B210630
047D 0  D001              STO      TIMAC+1                             8B210640
047E 00 67000000    TIMAC LDX  L3  0           IX 3 = TIMER            8B210650
0480 0  C01A              LD       TIX02       GET STARTING COUNT      8B210660
0481 00 D7000003          STO  L3  3           SET IN TIMER            8B210670
0483 0  8018              A        TIX03       ADD DESIRED COUNTS      8B210680
0484 0  D019              STO      TIX05       SAVE                    8B210690
                    *                                                  8B210700
                    *                 TURN ON TIMER FOR DESIRED        8B210710
                    *                 NUMBER OF COUNTS                 8B210720
                    *                                                  8B210730
0485 00 C700049E          LD   L3  TIX06-1     GET TURN ON CONSTANT    8B210740
0487 00 D4000500          STO  L   NIOCC       SET IN IOCC             8B210750
0489 00 0C000500          XIO  L   NIOCC       TURN ON TIMER           8B210760
                    *                                                  8B210770
                    *                 CK TIMER FOR COUNT               8B210780
                    *                                                  8B210790
048B 00 C7000003    TIMAD LD   L3  3           GET COUNTER CONTENTS    8B210800
048D 0  9010              S        TIX05       SUB START + NO CNTS     8B210810
048E 0  4820              BSC      Z           SKIP = DESIRED COUNT    8B210820
048F 0  70FB              MDX      TIMAD       LOOP                    8B210830
                    *                                                  8B210840
                    *                 GOT DESIRED CT                   8B210850
                    *                                                  8B210860
0490 00 0C000502          XIO  L   FIOCC       TURN OFF CTR            8B210870
                    *                                                  8B210880
```

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0492 00 0C0001AC        XIO  L  BSW      CHECK IF OPERATOR          88210890
0494 00 C40001B0        LD   L  BSWA     *DESIRES TO CHANGE         88210900
0496 0  1002            SLA     2        *ENTRIES                   88210910
0497 0  4810            BSC     -                                   88210920
0498 0  70E3            MDX     TIMAL    LOOP PRESENT SETUP         88210930
0499 0  708C            MDX     TIMAN    GO CHANGE ENTRIES          88210940
                *                                                   88210950
                *              CONSTANTS                            88210960
                *                                                   88210970
049A 0  04A4    TIX01 DC        TIMAI    INTERRUPT ADRS             88210980
049B 0  C000    TIX02 DC        0        STARTIG CT STORAGE         88210990
049C 0  0000    TIX03 DC        0        NUMBER STEPS STORAGE       88211000
049D 0  0000    TIX04 DC        0        TIMER STORAGE              88211010
049E 0  0000    TIX05 DC        0        START CT + NO. STEPS       88211020
049F 0  8000    TIX06 DC        /8000    TURN ON TIMER A            88211030
04A0 0  4000          DC        /4000    TURN ON TIMER B            88211040
04A1 0  2000          DC        /2000    TURN ON TIMER C            88211050
04A2 0  0E00    TIX07 DC        /0E00                               88211060
04A3 0  0003    TIX08 DC        /0003                               88211070
                *                                                   88211080
                *              INTERRUPT ROUTINE                    88211090
                *                                                   88211100
04A4 0  0000    TIMAI DC        0                          IE       88211110
04A5 0  D006          STO       ACS      SAVE ACCUMULATOR           88211120
04A6 00 0C0006C6      XIO  L    ILSW     SENSE ILSW                 88211130
04A8 00 0C0006C8      XIO  L    DSW      SENSE DSW-RESET            88211140
04AA 00 4CC004A4      BOSC I    TIMAI    EXIT                       88211150
04AC 0  0000    ACS   DC        0        ACCUMULATOR SAVE           88211160
                *                                                   88211170
                *              ROUTINE TO DETERMINE TIMER           88211180
                *              INTERRUPT LEVEL                      88211190
                *                                                   88211200
04AD 0  0000    TIINT DC        0                          SE       88211210
04AE 0  6100          LDX   1 0          LOAD INTERRUPT TRAP        88211220
04AF 0  6218          LDX   2 24         ADDRESSES                  88211230
04B0 0  C049          LD      TII00      ADDRESS INTRP              88211240
04B1 00 D500000B      STO   L1 /000B                                88211250
04B3 0  8047          A       TII01      BUMP ADDRESS BY 4          88211260
04B4 0  7101          MDX   1 1                                     88211270
04B5 0  72FF          MDX   2 -1                                    88211280
04B6 0  70FA          MDX     TIINT+4                               88211290
                *                                                   88211300
04B7 0  6303          LDX   3 3                                     88211310
04B8 0  C045          LD      TII04      SET ALL TIMERS TO          88211320
04B9 00 D7000003      STO   L3 /0003     FFFF                       88211330
04BB 0  73FF          MDX   3 -1                                    88211340
04BC 0  70FC          MDX     *-4                                   88211350
04BD 0  6103          LDX   1 3          SET TIMER INDEX            88211360
                *                                                   88211370
04BE 0  C03D          LD      TII02      SET TIMER IOCC             88211380
04BF 0  D040          STO     NIOCC                                 88211390
04C0 00 0C0001A8      XIO  L  UMSK0      UNMASK INTERRUPTS          88211400
04C2 00 0C0001AA      XIO  L  UMSK1                                 88211410
                *                                                   88211420
04C4 0  083B    TIIN1 XIO       NIOCC    START TIMER                88211430
                *                                                   88211440
                ***************************************************88211450
04C5 0  403E          BSI       DEL20    GO DELAY 20 MILLISEC SRC   88211460
                ***************************************************88211470
                *                                                   88211480
                *              IF TIMER FAILS TO INTERRUP           88211490
                *              CONTINUE FROM THIS POINT             88211500
                *                                                   88211510
04C6 0  083B          XIO       FIOCC    TURN TIMER OFF             88211520
04C7 00 C4000212      LD    L   RT00                                88211530
04C9 00 D5000213      STO   L1  TIMA-1   SET TMR INOP SW            88211540
                *                                                   88211550
04CB 0  C034    TIIN5 LD        NIOCC                               88211560
```



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04CC 0  1001          SLA     1          SET IOCC FOR NEXT          88211570
04CD 0  D032          STO     NIOCC      TIMER                      88211580
04CE 0  71FF          MDX   1 -1                                    88211590
04CF 0  70F4          MDX     TIIN1      TRY NEXT TIMER             88211600
                *                                                   88211610
                *                ALL TIMERS FAILED TO               88211620
                *                INTERRUPT CHECK IF TIMERS          88211630
                *                WILL STEP                          88211640
                *                                                   88211650
04D0 00 C40003E5 TIIN2 LD   L   INTSW      BYPASS STEP CK IF          88211660
04D2 00 4C2004F5       BSC  L   TIIN6,Z    *ANY TMR INTERRUPTED       88211670
04D4 0  C026           LD       TII03      SET IOCC TO TURN ON        88211680
04D5 0  D02A           STO      NIOCC      ALL TIMERS                 88211690
                *                                                   88211700
04D6 0  1010           SLA      16         CLEAR TIMERS               88211710
04D7 00 D4000004       STO  L   /0004                                88211720
04D9 00 D4000005       STO  L   /0005                                88211730
04DB 00 D4000006       STO  L   /0006                                88211740
                *                                                   88211750
04DD 0  0822           XIO      NIOCC      TURN ALL TIMERS ON         88211760
                *                                                   88211770
                ***************************************************88211780
04DE 0  4025           BSI      DEL20      GO DELAY             SRC   88211790
                ***************************************************88211800
                *                                                   88211810
04DF 0  0822           XIO      FIOCC      TURN ALL TIMERS OFF        88211820
                *                                                   88211830
                *                                                   88211840
                *                CHECK TO SEE IF ANY TIMER          88211850
                *                STEPPED                            88211860
                *                                                   88211870
04E0 0  6303           LDX    3 3                                   88211880
04E1 00 C7000003       LD     L3 /0003                              88211890
04E3 00 4C2004F0       BSC    L  TIIN3,Z  BRNCH IF TIMER STEPD      88211900
04E5 0  73FF           MDX    3 -1                                  88211910
04E6 0  70FA           MDX      *-6                                 88211920
                *                                                   88211930
                *                ALL TIMERS FAILED TO STEP          88211940
                *                                                   88211950
                *                                                   88211960
                ***************************************************88211970
04E7 00 44000511       BSI  L   ERROR      PRINT TIMERS FAIL    SRC  88211980
04E9 0  0747           DC       TMM05      TO STEP                   88211990
04EA 0  04B7           DC       TIINT+10   LOOP ERROR RETURN         88212000
                ***************************************************88212010
                *                                                   88212020
                ***************************************************88212030
04EB 00 4400053C TIIN4 BSI  L   LOG        PRINT RUN MANUAL     SRC  88212040
04ED 0  071F           DC       TMM02                                88212050
                ***************************************************88212060
                *                                                   88212070
04EE 00 4C000146       BSC  L   CTL01+12   GO TO WAIT 1               88212080
                *                                                   88212090
                ***************************************************88212100
04F0 00 44000511 TIIN3 BSI  L   ERROR      PRINT TIMERS FAIL    SRC  88212110
04F2 0  0757           DC       TMM06      TO INTERRUPT              88212120
04F3 0  04B7           DC       TIINT+10   LOOP ERROR RETURN         88212130
                ***************************************************88212140
04F4 0  70F6           MDX      TIIN4                                88212150
                *                                                   88212160
                ***************************************************88212170
04F5 00 4400053C TIIN6 BSI  L   LOG        PRINT TIMER INTERRPT SRC  88212180
04F7 0  0767           DC       TMM07      LEVEL                     88212190
                ***************************************************88212200
                *                                                   88212210
04F8 00 4C8004AD       BSC  I   TIINT      RETURN TO USER       SX   88212220
                *                                                   88212230
                *                TIINT SUBROUTINE CONSTANTS         88212240
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INTERVAL TIMER FUNCTION TEST

```
                         *                                                      8B212250
04FA 0  0654             TII00 DC       INTRP       TRAP RTNS START ADRS        8B212260
04FB 0  0004             TII01 DC       /0004                                   8B212270
04FC 0  2000             TII02 DC       /2000                                   8B212280
04FD 0  E000             TII03 DC       /E000                                   8B212290
04FE 0  FFFF             TII04 DC       /FFFF                                   8B212300
                         *                                                      8B212310
0500    0000                   BSS   E  0                                       8B212320
                         *                                                      8B212330
0500 0  0000             NIOCC DC       /0000       TURN TIMER ON IOCC          8B212340
0501 0  0420                   DC       /0420                                   8B212350
                         *                                                      8B212360
0502 0  0000             FIOCC DC       /0000       TURN TIMER OFF IOCC         8B212370
0503 0  0420                   DC       /0420                                   8B212380
                         *                                                      8B212390
                         *                    70 MILLISEC DELAY ROUTINE         8B212400
                         *                                                      8B212410
0504 0  0000             DEL20 DC       0                                       8B212420
0505 00 74000184               MDX   L  SPEED,0     SKIP IF 2 USEC CORE         8B212430
0507 0  7003                   MDX      *+3                                     8B212440
0508 00 670036B0               LDX   L3 /36B0       2 USEC INDEX                8B212450
050A 0  7002                   MDX      *+2                                     8B212460
050B 00 670032C8               LDX   L3 /32C8       4 USEC INDEX                8B212470
050D 0  73FF                   MDX    3 -1                                      8B212480
050E 0  70FE                   MDX      *-2                                     8B212490
050F 00 4C800504               BSC   I  DEL20                                   8B212500
                         *                                                      8B212510
                         *                                                      8B212520
                         *********************************************          8B212530
                         *                    ERROR   ROUTINE                   8B212540
                         *********************************************          8B212550
                         *                                                      8B212560
0511 0  0000             ERROR DC       0                              SE       8B212570
0512 00 C4800511               LD    I  ERROR       SET MESSAGE ADDRESS         8B212580
0514 0  D00F                   STO      ERR01+1     IN LOG CALL                 8B212590
0515 00 74010511               MDX   L  ERROR,1                                 8B212600
0517 00 C4800511               LD    I  ERROR       LOAD LOOP ON ERROR          8B212610
0519 0  D020                   STO      LPERR+1     ADDRESS                     8B212620
                         *                                                      8B212630
051A 00 7401053B               MDX   L  ERRID,1     SET ERR CALL INDCTOR        8B212640
                         *                                                      8B212650
051C 00 0C0001AC               XIO   L  BSW         READ BIT SWITCHES           8B212660
051E 00 C40001B0               LD    L  BSWA        CHECK IF BYPASS             8B212670
0520 0  1802                   SRA      2           *ERROR PRINT                8B212680
0521 0  4804                   BSC      E                                       8B212690
0522 0  7002                   MDX      ERR02                                   8B212700
                         *                                                      8B212710
                         *********************************************          8B212720
0523 0  4018             ERR01 BSI      LOG         GO PRINT ERROR     SRC      8B212730
0524 0  0000                   DC       0                                       8B212740
                         *********************************************          8B212750
                         *                                                      8B212760
0525 0  1010             ERR02 SLA      16          CLEAR ERROR CALL            8B212770
0526 0  D014                   STO      ERRID       INDICATOR                   8B212780
                         *                                                      8B212790
0527 00 C40001B0               LD    L  BSWA        CHECK IF HALT ON ERR        8B212800
0529 0  1801                   SRA      1                                       8B212810
052A 0  4804                   BSC      E                                       8B212820
052B 0  700B                   MDX      WT9         HALT BIT ON                 8B212830
                         *                                                      8B212840
052C 00 0C0001AC         ERR03 XIO   L  BSW         READ BIT SWITCHES           8B212850
052E 00 C40001B0               LD    L  BSWA        CHECK IF LOOP ON            8B212860
0530 0  1803                   SRA      3           *ERROR REQUESTED            8B212870
0531 0  4804                   BSC      E                                       8B212880
0532 0  7006                   MDX      LPERR       LOOP ERROR                  8B212890
                         *                                                      8B212900
0533 00 74010511               MDX   L  ERROR,1     ADD 1 TO RETURN             8B212910
0535 00 4C800511               BSC   I  ERROR       RETURN TO USER     SX       8B212920
```


INTERVAL TIMER FUNCTION TEST

```
                         *                                                      8B212930
                         *                    ERROR HALT REQUESTED              8B212940
                         *                                                      8B212950
0537 0  3009             WT9   WAIT     9           ERROR HALT REQUESTED        8B212960
0538 0  70F3                   MDX      ERR03                                   8B212970
                         *                                                      8B212980
                         *                    LOOP ERROR REQUESTED              8B212990
                         *                                                      8B213000
0539 00 4C000000         LPERR BSC   L  0                                       8B213010
                         *                                                      8B213020
053B 0  0000             ERRID DC       0           ERROR CALL INDICATOR        8B213030
                         *********************************************          8B213040
                         *                    LOG ROUTINE              *        8B213050
                         *********************************************          8B213060
                         *                                                      8B213070
053C 0  0000             LOG   DC       0                              SE       8B213080
                         *                                                      8B213090
053D 0  681D             LOG01 STX    3 LOG06+1     SAVE IX 3                   8B213100
053E 00 0C00026A               XIO   L  MASK0       MASK INTERRUPTS             8B213110
0540 00 0C00026C               XIO   L  MASK1                                   8B213120
                         *                                                      8B213130
0542 00 C40001B3               LD    L  OPIND       CK WHICH OUTPUT DVC         8B213140
0544 00 4C180564               BSC   L  TWRTR,+-    *BRANCH IF 1053/1816        8B213150
                         *                                                      8B213160
0546 00 C480053C               LD    I  LOG         GET MESSAGE ADDRESS         8B213170
0548 0  D055                   STO      PRWRT       SET IN IOCC                 8B213180
                         *                                                      8B213190
0549 0  0850             LOG02 XIO      PRSNS       CHECK PRINTER READY         8B213200
054A 00 4C040550               BSC   L  WTA,E       BRANCH IF NOT READY         8B213210
054C 0  1801                   SRA      1                                       8B213220
054D 00 4C040552               BSC   L  WTB,E       BRANCH IF BUSY              8B213230
054F 0  7004                   MDX      LOG05       READY AND NOT BUSY          8B213240
                         *                                                      8B213250
0550 0  300A             WTA   WAIT     10          NOT READY                   8B213260
0551 0  70F7                   MDX      LOG02       CHECK AGAIN                 8B213270
                         *                                                      8B213280
0552 0  300B             WTB   WAIT     11          BUSY                        8B213290
0553 0  70F5                   MDX      LOG02       CHECK AGAIN                 8B213300
                         *                                                      8B213310
0554 0  0849             LOG05 XIO      PRWRT       OUTPUT MESSAGE              8B213320
                         *                                                      8B213330
0555 0  0846                   XIO      PRSN        CHECK FOR OP COMPLT         8B213340
0556 0  1002                   SLA      2                                       8B213350
0557 0  4810                   BSC      -                                       8B213360
0558 0  70FC                   MDX      *-4                                     8B213370
0559 0  0840                   XIO      PRSNS       RESET DSW                   8B213380
                         *                                                      8B213390
                         *                    PRINTING COMPLETE                 8B213400
                         *                                                      8B213410
055A 00 67000000         LOG06 LDX   L3 0           RESTORE IX 3                8B213420
055C 00 0C0001A8               XIO   L  UMSK0       UNMASK INTERRUPTS           8B213430
055E 00 0C0001AA               XIO   L  UMSK1                                   8B213440
0560 00 7401053C               MDX   L  LOG,1       BUMP RETURN                 8B213450
                         *                                                      8B213460
0562 00 4C80053C               BSC   I  LOG         RETURN TO USER     SX       8B213470
                         *                                                      8B213480
0564 0  1010             TWRTR SLA      16                                      8B213490
0565 0  D032                   STO      WRDSW                                   8B213500
0566 0  0839                   XIO      TWSNS       CHECK IF TYPEWRITER         8B213510
0567 0  1005                   SLA      5           READY                       8B213520
0568 0  180F                   SRA      15                                      8B213530
0569 00 4C18056D               BSC   L  TWR01,+-                                8B213540
                         *                                                      8B213550
056B 0  300C             WTC   WAIT     12          NOT READY                   8B213560
056C 0  70F9                   MDX      TWRTR+2                                 8B213570
                         *                                                      8B213580
056D 0  C028             TWR01 LD       TWRTO       CARRAIGE RETURN AND         8B213590
056E 0  D02A                   STO      IOARA       LINE SPACE TO IO ARA        8B213600
```

```
                        *
056F 0  0832            *     XIO     TWWRT       CARG RETURN/LINE SP          88213610
                        *                                                      88213620
0570 0  082F                  XIO     TWSNS       HANG TILL NOT BUSY           88213630
0571 0  180B                  SRA     11                                       88213640
0572 0  4804                  BSC     E                                        88213650
0573 0  70FC                  MDX     *-4                                      88213660
                        *                                                      88213670
0574 0  6301                  LDX     3 1         BYPASS 1443 WORD COUNT       88213680
0575 00 C480053C              LD      I LOG       GET MESSAGE ADDRESS          88213690
0577 0  0001                  STO     TWR02+1                                  88213700
                        *                                                      88213710
0578 00 C7000000      TWR02 LD      L3 0        GET WORD TO PRINT            88213720
057A 00 D40005D4              STO   L CODWD     SET IN CONVERSION RT         88213730
057C 0  F01A                  EOR     TWRT1     CHECK IF TERMINATOR          88213740
057D 00 4C18055A              BSC   L LOG06,+-  BRANCH IF TERMINATOR         88213750
                        *                                                      88213760
                        ****************************************************** 88213770
057F 00 440005A4              BSI   L CODCV     GO CONVERT 43 TO TW  SRC     88213780
                        ****************************************************** 88213790
                        *                                                      88213800
0581 00 C40005D4              LD    L CODWD                                    88213810
0583 0  0015                  STO     IOARA                                    88213820
                        *                                                      88213830
                        *                       OUTPUT A CHARACTER             88213840
                        *                                                      88213850
0584 0  081D          XIOWR XIO     TWWRT       WRITE CHARACTER              88213860
                        *                                                      88213870
0585 0  081A          XIOSN XIO     TWSNS       HANG ON BUSY                 88213880
0586 0  180B                  SRA     11                                       88213890
0587 0  4804                  BSC     E                                        88213900
0588 0  70FC                  MDX     XIOSN       BUSY                         88213910
                        *                                                      88213920
                        *                       CHECK IF 1ST 1/2 WORD          88213930
                        *                                                      88213940
0589 0  C00E                  LD      WRDSW       GET 1/2 WORD SWITCH          88213950
058A 0  4804                  BSC     E                                        88213960
058B 0  7006                  MDX     TWR03       GO SET UP NEXT WORD          88213970
                        *                                                      88213980
                        *                       SET UP FOR 2ND 1/2 WORD        88213990
                        *                                                      88214000
058C 0  C00C                  LD      IOARA                                    88214010
058D 0  1008                  SLA     8           POSITION 2ND 1/2 WD          88214020
058E 0  D00A                  STO     IOARA                                    88214030
058F 00 74010598              MDX   L WRDSW,1     BUMP WORD SWITCH             88214040
0591 0  70F2                  MDX     XIOWR       GO WRITE 2ND 1/2 WD          88214050
                        *                                                      88214060
                        *                       SET UP FOR NEXT WORD           88214070
                        *                                                      88214080
0592 0  7301          TWR03 MDX   3 1           NEXT WORD INDEX              88214090
0593 00 74010598              MDX   L WRDSW,1     BUMP WORD SWITCH             88214100
0595 0  70E2                  MDX     TWR02       GO GET NEXT WORD             88214110
                        *                                                      88214120
                        *                       LOG   CONSTANTS                88214130
                        *                                                      88214140
0596 0  8103          TWRTO DC      /8103       LINE SP/CARRAIGE RTN         88214150
0597 0  FFFF          TWRT1 DC      /FFFF       TERMINATOR                   88214160
0598 0  0000          WRDSW DC      0           1/2 WORD SWITCH              88214170
0599 0  0000          IOARA DC      0           OUTPUT AREA                  88214180
                        *                                                      88214190
059A    0000                  BSS   E 0                                      88214200
                        *                                                      88214210
059A 0  0000          PRSNS DC      /0000       PRINTER  SENSE IOCC          88214220
059B 0  3701                  DC      /3701                                    88214230
059C 0  0000          PRSN  DC      0           NON RESET SENSE              88214240
059D 0  3700                  DC      /3700                                    88214250
059E 0  0000          PRWRT DC      /0000       PRINTER  WRITE IOCC          88214260
059F 0  3500                  DC      /3500                                    88214270
                                                                             88214280
```



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05A0 0  0000          TWSNS DC      /0000       TYPEWTR  SENSE IOCC          88214290
05A1 0  0F03                DC      /0F03                                    88214300
05A2 0  0599          TWWRT DC      IOARA       TYPEWTR  WRITE IOCC          88214310
05A3 0  0902                DC      /0902                                    88214320
                        *                                                      88214330
                        ****************************************************** 88214340
                        *                 1443 CODE TO 1816/1053   *           88214350
                        *                 CODE CONVERSION ROUTINE  *           88214360
                        ****************************************************** 88214370
                        *                                                      88214380
05A4 0  0000          CODCV DC      0                                    SE    88214390
05A5 0  6927                  STX   1 CODC4+1   SAVE INDEX REGS              88214400
05A6 0  6A28                  STX   2 CODC4+3                                88214410
05A7 0  6B29                  STX   3 CODC4+5                                88214420
                        *                                                      88214430
05A8 0  1010                  SLA     16        CLEAR LEFT HALF WORD         88214440
05A9 0  D028                  STO     LHIND     *INDICATOR                   88214450
05AA 0  6300                  LDX   3 0                                      88214460
                        *                                                      88214470
05AB 0  C028          CODC1 LD      CODWD       GET WORD TO CONVERT          88214480
05AC 0  1890                  SRT     16        SET IN Q                     88214490
05AD 0  C027                  LD      LHIND                                  88214500
05AE 0  4820                  BSC     Z         SKIP IF LEFT HALF            88214510
05AF 0  1088                  SLT     8         POSITIUN RIGHT HALF          88214520
                        *                                                      88214530
0580 0  1010                  SLA     16                                     88214540
0581 0  1084                  SLT     4         ZONE TO ACCUM                88214550
0582 0  D023                  STO     CODDO                                  88214560
0583 00 65900SD6              LDX   I1 CODDO    IX 1 = ZONE                  88214570
                        *                                                      88214580
0585 0  1010                  SLA     16                                     88214590
0586 0  1084                  SLT     4         DIGIT TO ACCUM               88214600
0587 0  D01E                  STO     CODDO                                  88214610
0588 00 66800SD6              LDX   I2 CODDO    IX 2 = DIGIT                 88214620
                        *                                                      88214630
058A 00 C5000SD9              LD    L1 ZONE     GET ZONE TABLE ADDRS         88214640
058C 0  D001                  STO     CODC2+1   SET IN CONVERSION WD         88214650
                        *                                                      88214660
058D 00 C6000000      CODC2 LD      L2 0        GET CONVERTED CODE           88214670
058F 00 D70005D7              STO   L3 CODD1                                 88214680
                        *                                                      88214690
05C1 0  C013                  LD      LHIND                                  88214700
05C2 00 4C2005C8              BSC   L CODC3,Z   BRNCH IF RIGHT HALF          88214710
05C4 00 740105D5              MDX   L LHIND,1                                88214720
05C6 0  7301                  MDX     3 1                                    88214730
05C7 0  70E3                  MDX     CODC1     GO CONVERT RIGHT HLF         88214740
                        *                                                      88214750
05C8 0  C00E          CODC3 LD      CODD1       PACK CONVERTED CODES         88214760
05C9 0  1008                  SLA     8                                      88214770
05CA 0  E80D                  OR      CODD2                                  88214780
05CB 0  D008                  STO     CODWD                                  88214790
                        *                                                      88214800
05CC 00 65000000      CODC4 LDX   L1 0          RESTORE INDEX REGS           88214810
05CE 00 66000000              LDX   L2 0                                     88214820
05D0 00 67000000              LDX   L3 0                                     88214830
                        *                                                      88214840
05D2 00 4C8005A4              BSC   I CODCV     RETURN TO USER           SX  88214850
                        *                                                      88214860
                        *                                                      88214870
                        *                       CONSTANTS                      88214880
                        *                                                      88214890
05D4 0  0000          CODWD DC      0           WORD LOCATION                88214900
05D5 0  0000          LHIND DC      0           LEFT HALF INDICATOR          88214910
05D6 0  0000          CODDO DC      0           WORK AREA                    88214920
05D7 0  0000          CODD1 DC      0           CONVERTED LH CHARACT         88214930
05D8 0  0000          CODD2 DC      0           CONVERTED RH CHARACT         88214940
                        *                                                      88214950
                        *                                                      88214960
```

```
                    *
                    *                1443 TO 1816/1053  CODE
                    *                CONVERSION TABLES
                    *
05D9 0  05DD  ZONE  DC    ZONEN      NO ZONE                    8B214970
05DA 0  05E8        DC    ZONE1      0 ZONE                     8B214980
05DB 0  05F3        DC    ZONE2      11 ZONE                    8B214990
05DC 0  05FD        DC    ZONE3      12 ZONE                    8B215000
                    *                                           8B215010
05DD 0  0021  ZONEN DC    /0021      SPACE                      8B215020
05DE 0  00FC        DC    /00FC      1                          8B215030
05DF 0  00D8        DC    /00D8      2                          8B215040
05E0 0  00DC        DC    /00DC      3                          8B215050
05E1 0  00F0        DC    /00F0      4                          8B215060
05E2 0  00F4        DC    /00F4      5                          8B215070
05E3 0  00D0        DC    /00D0      6                          8B215080
05E4 0  00D4        DC    /00D4      7                          8B215090
05E5 0  00E4        DC    /00E4      8                          8B215100
05E6 0  00E0        DC    /00E0      9                          8B215110
05E7 0  00C4        DC    /00C4      0                          8B215120
05E8 0  0000  ZONE1 DC    0                                     8B215130
05E9 0  0000        DC    0                                     8B215140
05EA 0  009A        DC    /009A      S                          8B215150
05EB 0  009E        DC    /009E      T                          8B215160
05EC 0  00B2        DC    /00B2      U                          8B215170
05ED 0  0086        DC    /0086      V                          8B215180
05EE 0  0092        DC    /0092      W                          8B215190
05EF 0  0096        DC    /0096      X                          8B215200
05F0 0  00A6        DC    /00A6      Y                          8B215210
05F1 0  00A2        DC    /00A2      Z                          8B215220
05F2 0  0021        DC    /0021      SPACE                      8B215230
05F3 0  0000  ZONE2 DC    0                                     8B215240
05F4 0  007E        DC    /007E      J                          8B215250
05F5 0  005A        DC    /005A      K                          8B215260
05F6 0  005E        DC    /005E      L                          8B215270
05F7 0  0072        DC    /0072      M                          8B215280
05F8 0  0076        DC    /0076      N                          8B215290
05F9 0  0052        DC    /0052      O                          8B215300
05FA 0  0056        DC    /0056      P                          8B215310
05FB 0  0066        DC    /0066      Q                          8B215320
05FC 0  0062        DC    /0062      R                          8B215330
05FD 0  0000  ZONE3 DC    0                                     8B215340
05FE 0  003E        DC    /003E      A                          8B215350
05FF 0  001A        DC    /001A      B                          8B215360
0600 0  001E        DC    /001E      C                          8B215370
0601 0  0032        DC    /0032      D                          8B215380
0602 0  0036        DC    /0036      E                          8B215390
0603 0  0012        DC    /0012      F                          8B215400
0604 0  0016        DC    /0016      G                          8B215410
0605 0  0026        DC    /0026      H                          8B215420
0606 0  0022        DC    /0022      I                          8B215430
0607 0  0086        DC    /0086      0 ERROR                    8B215440
0608 0  0000        DC    /0000      PERIOD                     8B215450
                    *                                           8B215460
                    ********************************************8B215470
                    *                                          *8B215480
                    *                HEXADECIMAL TO 1443 CODED *8B215490
                    *                HEXADECIMAL CONVERSION    *8B215500
                    *                ROUTINE                   *8B215510
                    ********************************************8B215520
                    *                                           8B215530
0609 0  0000  HEXCV DC    0                                  SE 8B215540
060A 0  6A19        STX   2 HEXC2+1    SAVE INDEX 2 AND 3      8B215550
060B 0  681A        STX   3 HEXC2+3                            8B215560
060C 0  6204        LDX   2 4          CONVERSION INDEX        8B215570
                    *                                          8B215580
060D 0  C01B        LD    HEXWD        GET WORD TO CONVERT     8B215590
060E 0  1890        SRT   16           SET A IN Q              8B215600
060F 0  1010        SLA   16                                   8B215610
0610 0  1084  HEXC1 SLT   4            GET CHARACTER           8B215620
                                                               8B215630
                                                               8B215640
```



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0611 0  D001        STO   HEXC1+3                              8B215650
0612 00 67000000    LDX   L3 0         SET CODE TABLE INDEX    8B215660
                    *                                          8B215670
0614 00 C7000630    LD    L3 CODEH     GET CODED CHARACTER     8B215680
0616 00 D6000629    STO   L2 HEX00-1   AND SAVE                8B215690
0618 0  1010        SLA   16                                   8B215700
                    *                                          8B215710
0619 0  72FF        MDX   2 -1         CHECK IF DONE           8B215720
061A 0  70F5        MDX   HEXC1                                8B215730
                    *                                          8B215740
0618 0  C011        LD    HEX00+3      PACK CODED WORDS        8B215750
061C 0  1008        SLA   8                                    8B215760
061D 0  E80E        OR    HEX00+2                              8B215770
061E 0  D00F        STO   HEXCD                                8B215780
061F 0  C008        LD    HEX00+1                              8B215790
0620 0  1008        SLA   8                                    8B215800
0621 0  E808        OR    HEX00                                8B215810
0622 0  D00C        STO   HEXCD+1                              8B215820
                    *                                          8B215830
0623 00 66000000  HEXC2 LDX   L2 0        RESTORE INDEX         8B215840
0625 00 67000000    LDX   L3 0                                 8B215850
                    *                                          8B215860
0627 00 4C800609    BSC   I  HEXCV       RETURN TO USER      SX 8B215870
                    *                                          8B215880
                    *                    CONSTANTS             8B215890
                    *                                          8B215900
0629 0  0000  HEXWD DC    0              WORD TO CONVERT       8B215910
062A 0  0000  HEX00 DC    0              *                     8B215920
0628 0  0000        DC    0              * UNPACKED CODED      8B215930
062C 0  0000        DC    0              * WORD                8B215940
062D 0  0000        DC    0              *                     8B215950
                    *                                          8B215960
062E    0000        BSS   E  0                                 8B215970
                    *                                          8B215980
062E 0  00C0  HEXCD DC    0              * PACKED CODED WORD    8B215990
062F 0  0000        DC    0              *                     8B216000
                    *                                          8B216010
                    *                    CONVERSION TABLE      8B216020
                    *                                          8B216030
0630 0  000A  CODEH DC    /000A      0                         8B216040
0631 0  0001        DC    /0001      1                         8B216050
0632 0  0002        DC    /0002      2                         8B216060
0633 0  0003        DC    /0003      3                         8B216070
0634 0  0004        DC    /0004      4                         8B216080
0635 0  0005        DC    /0005      5                         8B216090
0636 0  0006        DC    /0006      6                         8B216100
0637 0  0007        DC    /0007      7                         8B216110
0638 0  0008        DC    /0008      8                         8B216120
0639 0  0009        DC    /0009      9                         8B216130
063A 0  0031        DC    /0031      A                         8B216140
063B 0  0032        DC    /0032      B                         8B216150
063C 0  0033        DC    /0033      C                         8B216160
063D 0  0034        DC    /0034      D                         8B216170
063E 0  0035        DC    /0035      E                         8B216180
063F 0  0036        DC    /0036      F                         8B216190
                    *                                          8B216200
                    ********************************************8B216210
                    *                                          *8B216220
                    *                ROUTINE TWO INTERRUPT     *8B216230
                    *                TRAP ROUTINE              *8B216240
                    ********************************************8B216250
                    *                                          8B216260
0640 0  0000  TRAP2 DC    0                                    8B216270
0641 00 0C000502    XIO   L  FIOCC       TURN TIMER OFF        8B216280
                    *                                          8B216290
0643 00 0C0006C6    XIO   L  ILSW        SENSE ILSW AND SAVE   8B216300
0645 00 D500064F    STO   L1 TRP01-1                           8B216310
                    *                                          8B216320
0647 00 0C0006C8    XIO   L  DSW         SENSE DSW  AND SAVE
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0649 0  0009                STO     TRP02
                    *
064A 00 0C00006C8           XIO  L  DSW         CHECK IF DSW RESET
064C 0  4820                BSC     Z           ON FIRST SENSE
                    *
064D 0  300D        WTD     WAIT    13          DSW DID NOT RESET
                    *                           DSW IN ACCUMULATOR
                    *
064E 00 4C400294            BOSC L  RTN22       RETURN TO CALLER
                    *
0650 0  0000        TRP01   DC      0           ILSW
0651 0  0000                DC      0
0652 0  0000                DC      0
0653 0  0000        TRP02   DC      0           DSW
                    *
                    *                   TRAP ROUTINES TO DETERMINE
                    *                   TIMER INTERRUPT LEVEL
                    *
                    *                     ** LEVEL 0 **
0654 0  0000        INTRP   DC      0
0655 0  405E                BSI     CMTRP       COMN RTN
0656 0  0A0A                DC      /0A0A       00 1443
0657 0  000B                DC      /000B       INTRP ADRS
                    *
                    *                     ** LEVEL 1  **
0658 0  0000                DC      0
0659 0  405A                BSI     CMTRP       COMN RTN
065A 0  0A01                DC      /0A01       01 1443
065B 0  000C                DC      /000C       INTRP ADRS
                    *
                    *                     ** LEVEL 2  **
065C 0  0000                DC      0
065D 0  4056                BSI     CMTRP       COMN RTN
065E 0  0A02                DC      /0A02       02 1443
065F 0  000D                DC      /000D       INTRP ADDRS
                    *
                    *                     ** LEVEL 3  **
0660 0  0000                DC      0
0661 0  4052                BSI     CMTRP       COMN RTN
0662 0  0A03                DC      /0A03       03 1443
0663 0  000E                DC      /000E       INTRP ADRS
                    *
                    *                     ** LEVEL 4  **
0664 0  0000                DC      0
0665 0  404E                BSI     CMTRP       COMN RTN
0666 0  0A04                DC      /0A04       04 1443
0667 0  000F                DC      /000F       INTRP ADRS
                    *
                    *                     ** LEVEL 5  **
0668 0  0000                DC      0
0669 0  404A                BSI     CMTRP       COMN RTN
066A 0  0A05                DC      /0A05       05 1443
066B 0  0010                DC      /0010       INTRP ADRS
                    *
                    *                     ** LEVEL 6  **
066C 0  0000                DC      0
066D 0  4046                BSI     CMTRP       COMN RTN
066E 0  0A06                DC      /0A06       06 1443
066F 0  0011                DC      /0011       INTRP ADRS
                    *
                    *                     ** LEVEL 7  **
```

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8B216330
8B216340
8B216350
8B216360
8B216370
8B216380
8B216390
8B216400
8B216410
8B216420
8B216430
8B216440
8B216450
8B216460
8B216470
8B216480
8B216490
8B216500
8B216510
8B216520
8B216530
8B216540
8B216550
8B216560
8B216570
8B216580
8B216590
8B216600
8B216610
8B216620
8B216630
8B216640
8B216650
8B216660
8B216670
8B216680
8B216690
8B216700
8B216710
8B216720
8B216730
8B216740
8B216750
8B216760
8B216770
8B216780
8B216790
8B216800
8B216810
8B216820
8B216830
8B216840
8B216850
8B216860
8B216870
8B216880
8B216890
8B216900
8B216910
8B216920
8B216930
8B216940
8B216950
8B216960
8B216970
8B216980
8B216990
8B217000
```



```
                    *
0670 0  0000                DC      0
0671 0  4042                BSI     CMTRP       COMN RTN
06.2 0  0A07                DC      /0A07       07 1443
0673 0  0012                DC      /0012       INTRP ADRS
                    *
                    *                     ** LEVEL 8  **
                    *
0674 0  0000                DC      0
0675 0  403E                BSI     CMTRP       COMN RTN
0676 0  0A08                DC      /0A08       08 1443
0677 0  0013                DC      /0013       INTRP ADRS
                    *
                    *                     ** LEVEL 9  **
                    *
0678 0  0000                DC      0
0679 0  403A                BSI     CMTRP       COMN RTN
067A 0  0A09                DC      /0A09       09 1443
067B 0  0014                DC      /0014       INTRP ADRS
                    *
                    *                     ** LEVEL 10 **
                    *
067C 0  0000                DC      0
067D 0  4036                BSI     CMTRP       COMN RTN
067E 0  010A                DC      /010A       10 1443
067F 0  0015                DC      /0015       INTRP ADRS
                    *
                    *                     ** LEVEL 11 **
                    *
0680 0  0000                DC      0
0681 0  4032                BSI     CMTRP       COMN RTN
0682 0  0101                DC      /0101       11 1443
0683 0  0016                DC      /0016       INTRP ADRS
                    *
                    *                     ** LEVEL 12 **
                    *
0684 0  0000                DC      0
0685 0  402E                BSI     CMTRP       COMN RTN
0686 0  0102                DC      /0102       12 1443
0687 0  0017                DC      /0017       INTRP ADRS
                    *
                    *                     ** LEVEL 13 **
                    *
0688 0  0000                DC      0
0689 0  402A                BSI     CMTRP       COMN RTN
068A 0  0103                DC      /0103       13 1443
068B 0  0018                DC      /0018       INTRP ADRS
                    *
                    *                     ** LEVEL 14 **
                    *
068C 0  0000                DC      0
068D 0  4026                BSI     CMTRP       COMN RTN
068E 0  0104                DC      /0104       14 1443
068F 0  0019                DC      /0019       INTRP ADRS
                    *
                    *                     ** LEVEL 15 **
                    *
0690 0  0000                DC      0
0691 0  4022                BSI     CMTRP       COMN RTN
0692 0  0105                DC      /0105       15 1443
0693 0  001A                DC      /001A       INTRP ADRS
                    *
                    *                     ** LEVEL 16 **
                    *
0694 0  0000                DC      0
0695 0  401E                BSI     CMTRP       COMN RTN
0696 0  0106                DC      /0106       16 1443
0697 0  001B                DC      /001B       INTRP ADRS
```

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8B217010
8B217020
8B217030
8B217040
8B217050
8B217060
8B217070
8B217080
8B217090
8B217100
8B217110
8B217120
8B217130
8B217140
8B217150
8B217160
8B217170
8B217180
8B217190
8B217200
8B217219
8B217220
8B217230
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8B217360
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8B217380
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8B217400
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8B217420
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8B217440
8B217450
8B217460
8B217470
8B217480
8B217490
8B217500
8B217510
8B217520
8B217530
8B217540
8B217550
8B217560
8B217570
8B217580
8B217590
8B217600
8B217610
8B217620
8B217630
8B217640
8B217650
8B217660
8B217670
8B217680
```

INTERVAL TIMER FUNCTION TEST

```
                       *                                                88217690
                       *                    ** LEVEL 17 **              88217700
                       *                                                88217710
0698 0  0000                 DC     0                                   88217720
0699 0  401A                 BSI    CMTRP      COMN RTN                 88217730
069A 0  0107                 DC     /0107      17 1443                  88217740
069B 0  001C                 DC     /001C      INTRP ADRS               88217750
                       *                                                88217760
                       *                    ** LEVEL 18 **              88217770
                       *                                                88217780
069C 0  0000                 DC     0                                   88217790
069D 0  4016                 BSI    CMTRP      COMN RTN                 88217800
069E 0  0108                 DC     /0108      18 1443                  88217810
069F 0  001D                 DC     /001D      INTRP ADRS               88217820
                       *                                                88217830
                       *                    ** LEVEL 19 **              88217840
                       *                                                88217850
06A0 0  0000                 DC     0                                   88217860
06A1 0  4012                 BSI    CMTRP      COMN RTN                 88217870
06A2 0  FCE0                 DC     /FCE0      19 1443                  88217880
06A3 0  001E                 DC     /001E      INTRP ADRS               88217890
                       *                                                88217900
                       *                    ** LEVEL 20 **              88217910
                       *                                                88217920
06A4 0  0000                 DC     0                                   88217930
06A5 0  400E                 BSI    CMTRP      COMN RTN                 88217940
06A6 0  020A                 DC     /020A      20 1443                  88217950
06A7 0  001F                 DC     /001F      INTRP ADRS               88217960
                       *                                                88217970
                       *                    ** LEVEL 21 **              88217980
                       *                                                88217990
06A8 0  0000                 DC     0                                   88218000
06A9 0  400A                 BSI    CMTRP      COMN RTN                 88218010
06AA 0  0201                 DC     /0201      21 1443                  88218020
06AB 0  0020                 DC     /0020      INTRP ADRS               88218030
                       *                                                88218040
                       *                    ** LEVEL 22 **              88218050
                       *                                                88218060
06AC 0  0000                 DC     0                                   88218070
06AD 0  4006                 BSI    CMTRP      COMN RTN                 88218080
06AE 0  0202                 DC     /0202      22 1443                  88218090
06AF 0  0021                 DC     /0021      INTRP ADRS               88218100
                       *                                                88218110
                       *                    ** LEVEL 23 **              88218120
                       *                                                88218130
06B0 0  0000                 DC     0                                   88218140
06B1 0  4002                 BSI    CMTRP      COMN RTN                 88218150
06B2 0  0203                 DC     /0203      23 1443                  88218160
06B3 0  0022                 DC     /0022      INTRP ADRS               88218170
                       *                                                88218180
                       *              COMMON TRAP ROUTINE USED          88218190
                       *              BY TIINT                          88218200
                       *                                                88218210
06B4 0  0000           CMTRP DC     0                              SE   88218220
06B5 00 0C000502             XIO  L FIOCC      TURN TIMERS OFF          88218230
                       *                                                88218240
06B7 0  080E                 XIO    ILSW       RESET ILSW               88218250
                       *                                                88218260
06B8 0  080F                 XIO    DSW        RESET DSW                88218270
                       *                                                88218280
06B9 00 C48006B4             LD   I CMTRP      GET INTRP LEVEL NUMB     88218290
06BB 00 D4000777             STO  L TMM07+16   SET IN PRINT MESSAGE     88218300
                       *                                                88218310
06BD 00 740106B4             MDX  L CMTRP,1                             88218320
06BF 00 C48006B4             LD   I CMTRP      GET INTRP ADDRESS        88218330
06C1 0  D008                 STO    INLVL      SAVE                     88218340
06C2 00 740103E5             MDX  L INTSW,1    SET INTERRUPT SWITCH     88218350
06C4 00 4C4004CB             BOSC L TIIN5      RETURN TO MAIN FLOW  SX  88218360
```


INTERVAL TIMER FUNCTION TEST

```
                       *                                                88218370
                       *                    CONSTANTS                   88218380
                       *                                                88218390
06C6    0000                 BSS  E 0                                   88218400
                       *                                                88218410
06C6 0  0000           ILSW  DC     /0000      SENSE ILSW  IOCC         88218420
06C7 0  0300                 DC     /0300                               88218430
                       *                                                88218440
06C8 0  0000           DSW   DC     /0000      SENSE/RESET DSW IOCC     88218450
06C9 0  0721                 DC     /0721                               88218460
                       *                                                88218470
06CA 0  0000           INLVL DC     0          TIMER INTERRUPT ADRS     88218480
                       *                                                88218490
06CB 0  0000           ERINT DC     0                                   88218500
06CC 0  C0FE                 LD     ERINT      SET I CTR IN Q REG       88218510
06CD 0  1890                 SRT    16                                  88218520
06CE 00 0C0006C6             XIO  L ILSW                                88218530
                       *                                                88218540
06D0 0  300E           WTE   WAIT   14         ILSW IN A REG            88218550
                       *                                                88218560
06D1 00 4C40012D             BOSC L TISRT                               88218570
                       *                                                88218580
                       *              RTN 6 TRAP ROUTINE                88218590
                       *                                                88218600
06D3 0  0000           SPVTP DC     0          INTERRUPT ENTRY      IE  88218610
06D4 0  C0FE                 LD     SPVTP      I COUNT TO Q REG         88218620
06D5 0  1890                 SRT    16                                  88218630
06D6 0  08EF                 XIO    ILSW       SENSE ILSW               88218640
06D7 0  F006                 EOR    SPVCN      CHECK FOR SPV            88218650
06D8 00 4C58044B             BOSC L RTN55,+-   BRANCH IF SPV            88218660
06DA 0  F003                 EOR    SPVCN      RESTORE ILSW             88218670
                       *                                                88218680
06DB 0  300F           WTF   WAIT   15         NOT SPV ERROR            88218690
                       *                                                88218700
06DC 00 4C40012D             BOSC L TISRT      RESTART PROGRAM      IX  88218710
                       *                                                88218720
06DE 0  2000           SPVCN DC     /2000      SPV ILSW                 88218730
                       *                                                88218740
                       *              **********************            88218750
                       *              ROUTINE TO SERVICE ALL            88218760
                       *              NON TIMER INTERRUPTS              88218770
                       *              ***********************           88218780
                       *                                                88218790
06DF 0  0000           SVINT DC     0                               IE  88218800
06E0 0  D02D                 STO    SVIO       SAVE ACCUMULATOR         88218810
06E1 00 0C0006C6             XIO  L ILSW       RESET ILSW               88218820
06E3 00 7402070D             MDX  L SV7,2      SET PASS SWITCH          88218830
06E5 0  1010                 SLA    16                                  88218840
06E6 0  D023                 STO    SV4        CLEAR AFEA CODE CNTR     88218850
06E7 0  C020                 LD     SV2                                 88218860
06E8 0  D023                 STO    SV6        SET IOCC IN USE SW       88218870
06E9 0  C01D           SVIN0 LD     SV1                                 88218880
06EA 0  D020                 STO    SV5        SET MODIFIER COUNTER     88218890
06EB 0  C01E           SVIN1 LD     SV4        *                        88218900
06EC 0  1008                 SLA    11         *                        88218910
06ED 0  E81D                 OR     SV5        *BUILD IOCC              88218920
06EE 0  E81D                 OR     SV6        *                        88218930
06EF 0  D01F                 STO    SVIO+1     *                        88218940
06F0 0  081D                 XIO    SVIO       SENSE DSW AND RESET      88218950
06F1 00 74FF070B             MDX  L SV5,-1                              88218960
06F3 0  70F7                 MDX    SVIN1      BRANCH IF NOT ALL MD     88218970
06F4 00 7401070A             MDX  L SV4,1      INCREMENT AREA CODE      88218980
06F6 0  C013                 LD     SV4                                 88218990
06F7 0  900E                 S      SV0        CHECK IF ALL AC USED     88219000
06F8 0  4808                 BSC    +          SKIP IF ALL AC USED      88219010
06F9 0  70EF                 MDX    SVIN0      GO SENSE WITH NXT AC     88219020
06FA 00 74FF070D             MDX  L SV7,-1     SKIP IF SECOND PASS      88219030
06FC 0  7001                 MDX    *+1                                 88219040
```

```
06FD 0  7005            MDX     SVEXT-1
06FE 0  C00A            LD      SV3
06FF 0  D00C            STO     SV6         SET IOCC FOR PI
0700 0  1010            SLA     16
0701 0  D008            STO     SV4         SET AC FOR NEXT
0702 0  70E6            MDX     SVINO       *PASS
0703 0  C00A            LD      SVIO        RESTORE ACCUMULATOR
0704 00 4CC006DF  SVEXT BOSC I  SVINT       EXIT                    IX
                  *
                  *                 ** CONSTANTS **
                  *
0706 0  001F      SV0   DC      /001F       NUMBER OF AREA CODES
0707 0  00FF      SV1   DC      /00FF       NUMBER OF MODIFIERS
0708 0  0701      SV2   DC      /0701       SENSE/RESET DSW
0709 0  0700      SV3   DC      /0700       SENSE/RESET PISW
070A 0  0000      SV4   DC      0           AREA CODE INDICATOR
070B 0  0000      SV5   DC      0           MODIFIER INDICATOR
070C 0  0000      SV6   DC      0           IOCC IN USE
070D 0  0000      SV7   DC      0           PASS SWITCH
070E    0000            BSS   E 0
070E 0  0000      SVIO  DC      0           SENSE DSW IOCC
070F 0  0000            DC      0
                  *
                  ********************************************
                  *                PRINT MESSAGES            *
                  *                1443 CODED                *
                  ********************************************
                  *
                  *
0710 0  000D      TMM01 DC      /000D       WORD COUNT
0711 0  310A            DC      /310A       A0
0712 0  0A01            DC      /0A01       01
0713 0  0000            DC      /0000       SPACE
0714 0  0000            DC      /0000       SPACE
0715 C  1233            DC      /1233       SC
0716 0  2627            DC      /2627       OP
0717 0  3500            DC      /3500       E
0718 0  2913            DC      /2913       RT
0719 0  2500            DC      /2500       N
071A 0  1235            DC      /1235       SE
071B 0  2335            DC      /2335       LE
071C 0  3313            DC      /3313       CT
071D 0  3534            DC      /3534       ED
071E 0  FFFF            DC      /FFFF       TERM
                  *
071F 0  0008      TMM02 DC      /0008       WORD COUNT
0720 0  330A            DC      /330A       CO
0721 0  0A01            DC      /0A01       01
0722 0  0000            DC      /0000       SPACE
0723 0  0000            DC      /0000       SPACE
0724 0  2914            DC      /2914       RU
0725 0  2500            DC      /2500       N
0726 0  1233            DC      /1233       SC
0727 0  2627            DC      /2627       OP
0728 0  3500            DC      /3500       E
0729 0  2913            DC      /2913       RT
072A 0  2500            DC      /2500       N
072B 0  FFFF            DC      /FFFF       TERM
                  *
072C 0  000C      TMM03 DC      /000C       WORD COUNT
072D 0  310A            DC      /310A       A0
072E 0  0A02            DC      /0A02       02
072F 0  0000            DC      /0000       SPACE
0730 0  0000            DC      /0000       SPACE
0731 0  2729            DC      /2729       PR
0732 0  2637            DC      /2637       OG
0733 0  2931            DC      /2931       RA
0734 0  2400            DC      /2400       M
```

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8B219050
8B219060
8B219070
8B219080
8B219090
8B219100
8B219110
8B219120
8B219130
8B219140
8B219150
8B219160
8B219170
8B219180
8B219190
8B219200
8B219210
8B219220
8B219230
8B219240
8B219250
8B219260
8B219270
8B219280
8B219290
8B219300
8B219310
8B219320
8B219330
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8B219350
8B219360
8B219370
8B219380
8B219390
8B219400
8B219410
8B219420
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8B219470
8B219480
8B219490
8B219500
8B219510
8B219520
8B219530
8B219540
8B219550
8B219560
8B219570
8B219580
8B219590
8B219600
8B219610
8B219620
8B219630
8B219640
8B219650
8B219660
8B219670
8B219680
8B219690
8B219700
8B219710
8B219720
```



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0735 0  3326            DC      /3326       CO
0736 0  2427            DC      /2427       MP
0737 0  2335            DC      /2335       LE
0738 0  1335            DC      /1335       TE
0739 0  FFFF            DC      /FFFF       TERM
                  *
073A 0  000B      TMM04 DC      /000B       WORD COUNT
073B 0  350A            DC      /350A       EO
073C 0  0A01            DC      /0A01       01
073D 0  0000            DC      /0000       SPACE
073E 0  0000            DC      /0000       SPACE
073F 0  1235            DC      /1235       SE
0740 0  2814            DC      /2814       QU
0741 0  3525            DC      /3525       EN
0742 0  3335            DC      /3335       CE
0743 0  0035            DC      /0035        E
0744 0  2929            DC      /2929       RR
0745 0  2629            DC      /2629       OR
0746 0  FFFF            DC      /FFFF       TERM
                  *
0747 0  000E      TMM05 DC      /000E       WORD COUNT
0748 0  350A            DC      /350A       EO
0749 0  0A02            DC      /0A02       02
074A 0  0000            DC      /0000       SPACE
074B 0  0000            DC      /0000       SPACE
074C 0  1339            DC      /1339       TI
074D 0  2435            DC      /2435       ME
074E 0  2912            DC      /2912       RS
074F 0  0036            DC      /0036        F
0750 0  3139            DC      /3139       AI
0751 0  2300            DC      /2300       L
0752 0  1326            DC      /1326       TO
0753 0  0012            DC      /0012        S
0754 0  1335            DC      /1335       TE
0755 0  2700            DC      /2700       P
0756 0  FFFF            DC      /FFFF       TERM
                  *
0757 0  000E      TMM06 DC      /000E       WORD COUNT
0758 0  350A            DC      /350A       EO
0759 0  0A03            DC      /0A03       03
075A 0  0000            DC      /0000       SPACE
075B 0  0000            DC      /0000       SPACE
075C 0  1339            DC      /1339       TI
075D 0  2435            DC      /2435       ME
075E 0  2912            DC      /2912       RS
075F 0  0036            DC      /0036        F
0760 0  3139            DC      /3139       AI
0761 0  2300            DC      /2300       L
0762 0  1326            DC      /1326       TO
0763 0  0039            DC      /0039        I
0764 0  2513            DC      /2513       NT
0765 0  2927            DC      /2927       RP
0766 0  FFFF            DC      /FFFF       TERM
                  *
0767 0  0010      TMM07 DC      /0010       WORD COUNT
0768 0  340A            DC      /340A       DO
0769 0  0A01            DC      /0A01       01
076A 0  0000            DC      /0000       SPACE
076B 0  0000            DC      /0000       SPACE
076C 0  1339            DC      /1339       TI
076D 0  2435            DC      /2435       ME
076E 0  2912            DC      /2912       RS
076F 0  0026            DC      /0026        O
0770 0  2500            DC      /2500       N
0771 0  3925            DC      /3925       IN
0772 0  1329            DC      /1329       TR
0773 0  2700            DC      /2700       P
0774 0  2335            DC      /2335       LE
```

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8B220070
8B220080
8B220090
8B220100
8B220110
8B220120
8B220130
8B220140
8B220150
8B220160
8B220170
8B220180
8B220190
8B220200
8B220210
8B220220
8B220230
8B220240
8B220250
8B220260
8B220270
8B220280
8B220290
8B220300
8B220310
8B220320
8B220330
8B220340
8B220350
8B220360
8B220370
8B220380
8B220390
8B220400
```

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0775 0 1535          DC    /1535     VE                  8B220410
0776 0 2300          DC    /2300     L                   8B220420
0777 0 0000          DC    /0000     LEVEL NUMBER        8B220430
0778 0 FFFF          DC    /FFFF     TERM                8B220440
                     *                                   8B220450
0779 0 0014    TMM08 DC    /0014     WORD COUNT          8B220460
077A 0 350A          DC    /350A     EO                  8B220470
077B 0 0A04          DC    /0A04     04                  8B220480
077C 0 0000          DC    /0000     SPACE               8B220490
077D 0 0000          DC    /0000     SPACE               8B220500
077E 0 2913          DC    /2913     RT                  8B220510
077F 0 2500          DC    /2500     N                   8B220520
0780 0 0200          DC    /0200     2                   8B220530
0781 0 1339          DC    /1339     TI                  8B220540
0782 0 2435          DC    /2435     ME                  8B220550
0783 0 2900          DC    /2900     R                   8B220560
0784 0 0000          DC    /0000     TIMER NUMBER        8B220570
0785 0 0036          DC    /0036      F                  8B220580
0786 0 3139          DC    /3139     AI                  8B220590
0787 0 2335          DC    /2335     LE                  8B220600
0788 0 3400          DC    /3400     D                   8B220610
0789 0 1326          DC    /1326     TO                  8B220620
078A 0 0013          DC    /0013      T                  8B220630
078B 0 1429          DC    /1429     UR                  8B220640
078C 0 2500          DC    /2500     N                   8B220650
078D 0 2625          DC    /2625     ON                  8B220660
078E 0 FFFF          DC    /FFFF     TERM                8B220670
                     *                                   8B220680
078F 0 0015    TMM09 DC    /0015     WORD COUNT          8B220690
0790 0 350A          DC    /350A     EO                  8B220700
0791 0 0A05          DC    /0A05     05                  8B220710
0792 0 0000          DC    /0000     SPACE               8B220720
0793 0 0000          DC    /0000     SPACE               8B220730
0794 0 2913          DC    /2913     RT                  8B220740
0795 0 2500          DC    /2500     N                   8B220750
0796 0 0200          DC    /0200     2                   8B220760
0797 0 1339          DC    /1339     TI                  8B220770
0798 0 2435          DC    /2435     ME                  8B220780
0799 0 2900          DC    /2900     R                   8B220790
079A 0 0000          DC    /0000     TIMER NUMBER        8B220800
079B 0 0036          DC    /0036      F                  8B220810
079C 0 3139          DC    /3139     AI                  8B220820
079D 0 2335          DC    /2335     LE                  8B220830
079E 0 3400          DC    /3400     D                   8B220840
079F 0 1326          DC    /1326     TO                  8B220850
07A0 0 0013          DC    /0013      T                  8B220860
07A1 0 1429          DC    /1429     UR                  8B220870
07A2 0 2500          DC    /2500     N                   8B220880
07A3 0 2636          DC    /2636     OF                  8B220890
07A4 0 3600          DC    /3600     F                   8B220900
07A5 0 FFFF          DC    /FFFF     TERM                8B220910
                     *                                   8B220920
07A6 0 0013    TMM10 DC    /0013     WORD COUNT          8B220930
07A7 0 350A          DC    /350A     EO                  8B220940
07A8 0 0A06          DC    /0A06     06                  8B220950
07A9 0 0000          DC    /0000     SPACE               8B220960
07AA 0 0000          DC    /0000     SPACE               8B220970
07AB 0 2913          DC    /2913     RT                  8B220980
07AC 0 2500          DC    /2500     N                   8B220990
07AD 0 0300          DC    /0300     3                   8B221000
07AE 0 1339          DC    /1339     TI                  8B221010
07AF 0 2435          DC    /2435     ME                  8B221020
07B0 0 2900          DC    /2900     R                   8B221030
07B1 0 0000          DC    /0000     TIMER NUMBER        8B221040
07B2 0 0036          DC    /0036      F                  8B221050
07B3 0 3139          DC    /3139     AI                  8B221060
07B4 0 2335          DC    /2335     LE                  8B221070
07B5 0 3400          DC    /3400     D                   8B221080
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07B6 0 1326          DC    /1326     TO                  8B221090
07B7 0 0039          DC    /0039      I                  8B221100
07B8 0 2513          DC    /2513     NT                  8B221110
07B9 0 2927          DC    /2927     RP                  8B221120
07BA 0 FFFF          DC    /FFFF     TERM                8B221130
                     *                                   8B221140
07BC     0000        BSS   E  0                          8B221150
                     *                                   8B221160
07BC 0 000F    TMM11 DC    /000F     WORD COUNT          8B221170
07BD 0 350A          DC    /350A     EO                  8B221180
07BE 0 0A07          DC    /0A07     07                  8B221190
07BF 0 0000          DC    /0000     SPACE               8B221200
07C0 0 0000          DC    /0000     SPACE               8B221210
07C1 0 2913          DC    /2913     RT                  8B221220
07C2 0 2500          DC    /2500     N                   8B221230
07C3 0 0300          DC    /0300     3                   8B221240
07C4 0 1339          DC    /1339     TI                  8B221250
07C5 0 2435          DC    /2435     ME                  8B221260
07C6 0 2900          DC    /2900     R                   8B221270
07C7 0 0000          DC    /0000     TIMER NUMBER        8B221280
07C8 0 3412          DC    /3412     DS                  8B221290
07C9 0 1600          DC    /1600     W                   8B221300
07CA 0 0000          DC    /0000     DSW IN              8B221310
07CB 0 0000          DC    /0000     *ERROR              8B221320
07CC 0 FFFF          DC    /FFFF     TERM                8B221330
                     *                                   8B221340
07CE     0000        BSS   E  0                          8B221350
                     *                                   8B221360
07CE 0 0011    TMM12 DC    /0011     WORD COUNT          8B221370
07CF 0 350A          DC    /350A     EO                  8B221380
07D0 0 0A08          DC    /0A08     08                  8B221390
07D1 0 0000          DC    /0000     SPACE               8B221400
07D2 0 0000          DC    /0000     SPACE               8B221410
07D3 0 2913          DC    /2913     RT                  8B221420
07D4 0 2500          DC    /2500     N                   8B221430
07D5 0 0300          DC    /0300     3                   8B221440
07D6 0 1339          DC    /1339     TI                  8B221450
07D7 0 2435          DC    /2435     ME                  8B221460
07D8 0 2900          DC    /2900     R                   8B221470
07D9 0 0000          DC    /0000     TIMER NUMBER        8B221480
07DA 0 0039          DC    /0039      I                  8B221490
07DB 0 2312          DC    /2312     LS                  8B221500
07DC 0 1600          DC    /1600     W                   8B221510
07DD 0 0000          DC    /0000     BLANK               8B221520
07DE 0 0000          DC    /0000     ILSW                8B221530
07DF 0 0000          DC    /0000     *ON INTRP           8B221540
07E0 0 FFFF          DC    /FFFF     TERM                8B221550
                     *                                   8B221560
07E2     0000        BSS   C  0                          8B221570
                     *                                   8B221580
07E2 0 0017    TMM13 DC    /0017     WORD COUNT          8B221590
07E3 0 350A          DC    /350A     EO                  8B221600
07E4 0 0A09          DC    /0A09     09                  8B221610
07E5 0 0000          DC    /0000     SPACE               8B221620
07E6 0 0000          DC    /0000     SPACE               8B221630
07E7 0 2913          DC    /2913     RT                  8B221640
07E8 0 2500          DC    /2500     N                   8B221650
07E9 0 0400          DC    /0400     4                   8B221660
07EA 0 1339          DC    /1339     TI                  8B221670
07EB 0 2435          DC    /2435     ME                  8B221680
07EC 0 2900          DC    /2900     R                   8B221690
07ED 0 0000          DC    /0000     TIMER NUMBER        8B221700
07EE 0 1631          DC    /1631     WA                  8B221710
07EF 0 1200          DC    /1200     S                   8B221720
07F0 0 0000          DC    /0000     TIMER               8B221730
07F1 0 0000          DC    /0000     *CONTENTS           8B221740
07F2 0 0012          DC    /0012      S                  8B221750
07F3 0 3826          DC    /3826     HD                  8B221760
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07F4 0 1423          DC    /1423    UL                  8B221770
07F5 0 3400          DC    /3400    D                   8B221780
07F6 0 3235          DC    /3235    BE                  8B221790
07F7 0 0000          DC    /0000    BLANK               8B221800
07F8 0 0000          DC    /0000    EXPECTED            8B221810
07F9 0 0000          DC    /0000    *COUNT              8B221820
07FA 0 FFFF          DC    /FFFF    TERM                8B221830
                     *                                  8B221840
07FC    0000         BSS   E  0                         8B221850
                     *                                  8B221860
07FC 0 0017  TMM14   DC    /0017    WORD COUNT          8B221870
07FD 0 350A          DC    /35CA    EO                  8B221880
07FE 0 0A31          DC    /0A31    OA                  8B221890
07FF 0 0000          DC    /0000    SPACE               8B221900
0800 0 0000          DC    /0000    SPACE               8B221910
0801 0 2913          DC    /2913    RT                  8B221920
0802 0 2500          DC    /2500    N                   8B221930
0803 0 0500          DC    /0500    S                   8B221940
0804 0 1300          DC    /1300    T                   8B221950
0805 0 0000          DC    /0000    TIMER NUMBER        8B221960
0806 0 1631          DC    /1631    WA                  8B221970
0807 0 1200          DC    /1200    S                   8B221980
0808 0 0000          DC    /0000    ACTUAL              8B221990
0809 0 0000          DC    /0000    *COUNT              8B222000
080A 0 0035          DC    /0035     E                  8B222010
080B 0 1727          DC    /1727    XP                  8B222020
080C 0 3313          DC    /3313    CT                  8B222030
080D 0 3400          DC    /3400    D                   8B222040
080E 0 0000          DC    /0000    EXPECTED            8B222050
080F 0 0000          DC    /0000    *COUNT              8B222060
0810 0 0027          DC    /0027     P                  8B222070
0811 0 3112          DC    /3112    AS                  8B222080
0812 0 1200          DC    /1200    S                   8B222090
0813 0 0000          DC    0000     PASS NUMBER         8B222100
0814 0 FFFF          DC    /FFFF    TERM                8B222110
                     *                                  8B222120
0815 0 000E  TMM15   DC    /000E    WORD COUNT          8B222130
0816 0 330A          DC    /330A    CO                  8B222140
0817 0 0A02          DC    /0A02    02                  8B222150
0818 0 0000          DC    /0000    SPACE               8B222160
0819 0 0000          DC    /0000    SPACE               8B222170
081A 0 3525          DC    /3525    EN                  8B222180
081B 0 1335          DC    /1335    TE                  8B222190
081C 0 2900          DC    /2900    R                   8B222200
081D 0 1213          DC    /1213    ST                  8B222210
081E 0 3129          DC    /3129    AR                  8B222220
081F 0 1339          DC    /1339    TI                  8B222230
0820 0 2537          DC    /2537    NG                  8B222240
0821 0 0033          DC    /0033     C                  8B222250
0822 0 2614          DC    /2614    OU                  8B222260
0823 0 2513          DC    /2513    NT                  8B222270
0824 0 FFFF          DC    /FFFF    TERM                8B222280
                     *                                  8B222290
0825 0 000F  TMM16   DC    /000F    WORD COUNT          8B222300
0826 0 330A          DC    /330A    CO                  8B222310
0827 0 0A03          DC    /0A03    03                  8B222320
0828 0 0000          DC    /0000    SPACE               8B222330
0829 0 0000          DC    /0000    SPACE               8B222340
082A 0 3525          DC    /3525    EN                  8B222350
0828 0 1335          DC    /1335    TE                  8B222360
082C 0 2900          DC    /2900    R                   8B222370
082D 0 2514          DC    /2514    NU                  8B222380
082E 0 2432          DC    /2432    MB                  8B222390
082F 0 3529          DC    /3529    ER                  8B222400
0830 0 0026          DC    /0026     0                  8B222410
0831 0 3600          DC    /3600    F                   8B222420
0832 0 1213          DC    /1213    ST                  8B222430
0833 0 3527          DC    /3527    EP                  8B222440
```



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0834 0 1200          DC    /1200    S                   8B222450
0835 0 FFFF          DC    /FFFF    TERM                8B222460
                     *                                  8B222470
0836 0 000E  TMM17   DC    /000E    WORD COUNT          8B222480
0837 0 330A          DC    /330A    CO                  8B222490
0838 0 0A04          DC    /0A04    04                  8B222500
0839 0 0000          DC    /0000    SPACE               8B222510
083A 0 0000          DC    /0000    SPACE               8B222520
083B 0 3525          DC    /3525    EN                  8B222530
083C 0 1335          DC    /1335    TE                  8B222540
083D 0 2900          DC    /2900    R                   8B222550
083E 0 0013          DC    /0013     T                  8B222560
083F 0 3924          DC    /3924    IM                  8B222570
0840 0 3529          DC    /3529    ER                  8B222580
0841 0 0025          DC    /0025     N                  8B222590
0842 0 1424          DC    /1424    UM                  8B222600
0843 0 3235          DC    /3235    BE                  8B222610
0844 0 2900          DC    /2900    R                   8B222620
0845 0 FFFF          DC    /FFFF    TERM                8B222630
                     *                                  8B222640
0846 0 001C  TMM18   DC    /001C    WORD COUNT          8B222650
0847 0 350A          DC    /35CA    EO                  8B222660
0848 0 0A32          DC    /0A32    OB                  8B222670
0849 0 0000          DC    0        SPACE               8B222680
084A 0 0000          DC    0        SPACE               8B222690
084B 0 2913          DC    /2913    RT                  8B222700
084C 0 2500          DC    /2500    N                   8B222710
084D 0 0100          DC    /0100    1                   8B222720
084E 0 3426          DC    /3426    DO                  8B222730
084F 0 1432          DC    /1432    LB                  8B222740
0850 0 2335          DC    /2335    LE                  8B222750
0851 0 0039          DC    /0039     I                  8B222760
0852 0 2533          DC    /2533    NC                  8B222770
0853 0 2900          DC    /2900    R                   8B222780
0854 0 2636          DC    /2636    OF                  8B222790
0855 0 0039          DC    /0039     I                  8B222800
0856 0 0033          DC    /0033     C                  8B222810
0857 0 1329          DC    /1329    TR                  8B222820
0858 0 0034          DC    /0034     D                  8B222830
0859 0 1429          DC    /1429    UR                  8B222840
085A 0 3925          DC    /3925    IN                  8B222850
085B 0 3700          DC    /3700    G                   8B222860
085C 0 1324          DC    /1324    TM                  8B222870
085D 0 2900          DC    /2900    R                   8B222880
085E 0 0000          DC    /0000    TIMER NUMBER        8B222890
085F 0 3312          DC    /3312    CS                  8B222900
0860 0 0033          DC    /0033     C                  8B222910
0861 0 1833          DC    /1833    YC                  8B222920
0862 0 2335          DC    /2335    LE                  8B222930
0863 0 FFFF          DC    /FFFF    TERM                8B222940
                     *                                  8B222950
0864 0 0014  TMM19   DC    /0014    WORD COUNT          8B222960
0865 0 330A          DC    /330A    CO                  8B222970
0866 0 0A05          DC    /0A05    05                  8B222980
0867 0 0000          DC    0        SPACE               8B222990
0868 0 0000          DC    0        SPACE               8B223000
0869 0 2935          DC    /2935    RE                  8B223010
086A 0 2731          DC    /2731    PA                  8B223020
086B 0 3929          DC    /3929    IR                  8B223030
086C 0 0036          DC    /0036     F                  8B223040
086D 0 3139          DC    /3139    AI                  8B223050
086E 0 2314          DC    /2314    LU                  8B223060
086F 0 2935          DC    /2935    RE                  8B223070
0870 0 0032          DC    /0032     8                  8B223080
0871 0 3536          DC    /3536    EF                  8B223090
0872 0 2629          DC    /2629    OR                  8B223100
0873 0 3500          DC    /3500    E                   8B223110
0874 0 3326          DC    /3326    CO                  8B223120
```

INTERVAL TIMER FUNCTION TEST

```
0875 0  2513           DC    /2513    NT              8B223130
0876 0  3925           DC    /3925    IN              8B223140
0877 0  1439           DC    /1439    UI              8B223150
0878 0  2537           DC    /2537    NG              8B223160
0879 0  FFFF           DC    /FFFF    TERM            8B223170
                *
087A 0  000D    TMM20  DC    /000D    WORD COUNT      8B223180
087B 0  350A           DC    /350A    EO              8B223190
087C 0  0A33           DC    /0A33    OC              8B223200
087D 0  0000           DC    0        SPACE           8B223210
087E 0  0000           DC    0        SPACE           8B223220
087F 0  3923           DC    /3923    IL              8B223230
0880 0  2335           DC    /2335    LE              8B223240
0881 0  3731           DC    /3731    GA              8B223250
0882 0  2300           DC    /2300    L               8B223260
0883 0  2913           DC    /2913    RT              8B223270
0884 0  2500           DC    /2500    N               8B223280
0885 0  3525           DC    /3525    EN              8B223290
0886 0  1329           DC    /1329    TR              8B223300
0887 0  1800           DC    /1800    Y               8B223310
0888 0  FFFF           DC    /FFFF    TERM            8B223320
                *                                     8B223330
0889 0  0012    TMM21  DC    /0012    WORD COUNT      8B223340
088A 0  350A           DC    /350A    EO              8B223350
088B 0  0A34           DC    /0A34    OD              8B223360
088C 0  0000           DC    0        SPACE           8B223370
088D 0  0000           DC    0        SPACE           8B223380
088E 0  2913           DC    /2913    RT              8B223390
088F 0  2500           DC    /2500    N               8B223400
0890 0  0300           DC    /0300    3               8B223410
0891 0  1339           DC    /1339    TI              8B223420
0892 0  2435           DC    /2435    ME              8B223430
0893 0  2900           DC    /2900    R               8B223440
0894 0  0000           DC    0        TIMER NUMBER    8B223450
0895 0  3923           DC    /3923    IL              8B223460
0896 0  1216           DC    /1216    SW              8B223470
0897 0  0016           DC    /0016     W              8B223480
0898 0  3112           DC    /3112    AS              8B223490
0899 0  0019           DC    /0019     Z              8B223500
089A 0  3529           DC    /3529    ER              8B223510
089B 0  2600           DC    /2600    O               8B223520
089C 0  FFFF           DC    /FFFF    TERM            8B223530
                *                                     8B223540
089D 0  0017    TMM22  DC    /0017    WORD COUNT      8B223550
089E 0  350A           DC    /350A    EO              8B223560
089F 0  0A35           DC    /0A35    OE              8B223570
08A0 0  0000           DC    0        SPACE           8B223580
08A1 0  0000           DC    0        SPACE           8B223590
08A2 0  2913           DC    /2913    RT              8B223600
08A3 0  2500           DC    /2500    N               8B223610
08A4 0  0100           DC    /0100    1               8B223620
08A5 0  3100           DC    /3100    A               8B223630
08A6 0  2935           DC    /2935    RE              8B223640
08A7 0  3700           DC    /3700    G               8B223650
08A8 0  3338           DC    /3338    CH              8B223660
08A9 0  3125           DC    /3125    AN              8B223670
08AA 0  3735           DC    /3735    GE              8B223680
08AB 0  3400           DC    /3400    D               8B223690
08AC 0  2625           DC    /2625    ON              8B223700
08AD 0  0013           DC    /0013     T              8B223710
08AE 0  3924           DC    /3924    IM              8B223720
08AF 0  2900           DC    /2900    R               8B223730
08B0 0  0000           DC    /0000    TIMER NUMBER    8B223740
08B1 0  3312           DC    /3312    CS              8B223750
08B2 0  0033           DC    /0033     C              8B223760
08B3 0  1833           DC    /1833    YC              8B223770
08B4 0  2335           DC    /2335    LE              8B223780
08B5 0  FFFF           DC    /FFFF    TERM            8B223790
                                                      8B223800
```


INTERVAL TIMER FUNCTION TEST

```
                *
08B6 0  0008    TMM23  DC    /0008    WORD COUNT      8B223810
08B7 0  310A           DC    /310A    AO              8B223820
08B8 0  0A03           DC    /0A03    O3              8B223830
08B9 0  0000           DC    0        SPACE           8B223840
08BA 0  0000           DC    0        SPACE           8B223850
08BB 0  2731           DC    /2731    PA              8B223860
08BC 0  1212           DC    /1212    SS              8B223870
08BD 0  0033           DC    /0033     C              8B223880
08BE 0  2624           DC    /2624    ON              8B223890
08BF 0  2723           DC    /2723    PL              8B223900
08C0 0  3513           DC    /3513    ET              8B223910
08C1 0  3500           DC    /3500    E               8B223920
08C2 0  FFFF           DC    /FFFF    TERM            8B223930
                *                                     8B223940
08C3 0  0015    TMM24  DC    /0015    WORD COUNT      8B223950
08C4 0  350A           DC    /350A    EO              8B223960
08C5 0  0A36           DC    /0A36    OF              8B223970
08C6 0  0000           DC    0        SPACE           8B223980
08C7 0  0000           DC    0        SPACE           8B223990
08C8 0  2913           DC    /2913    RT              8B224000
08C9 0  2500           DC    /2500    N               8B224010
08CA 0  0600           DC    /0600    6               8B224020
08CB 0  1339           DC    /1339    TI              8B224030
08CC 0  2435           DC    /2435    ME              8B224040
08CD 0  2900           DC    /2900    R               8B224050
08CE 0  0000           DC    0        TIMER NUMBER    8B224060
08CF 0  3631           DC    /3631    FA              8B224070
08D0 0  3923           DC    /3923    IL              8B224080
08D1 0  3534           DC    /3534    ED              8B224090
08D2 0  0013           DC    /0013     T              8B224100
08D3 0  2600           DC    /2600    O               8B224110
08D4 0  3925           DC    /3925    IN              8B224120
08D5 0  3329           DC    /3329    CR              8B224130
08D6 0  3524           DC    /3524    EM              8B224140
08D7 0  3525           DC    /3525    EN              8B224150
08D8 0  1300           DC    /1300    T               8B224160
08D9 0  FFFF           DC    /FFFF    TERM            8B224170
                *                                     8B224180
08DA 0  0016    TMM25  DC    /0016    WORD COUNT      8B224190
08DB 0  350A           DC    /350A    EO              8B224200
08DC 0  010A           DC    /010A    10              8B224210
08DD 0  0000           DC    0        SPACE           8B224220
08DE 0  0000           DC    0        SPACE           8B224230
08DF 0  2913           DC    /2913    RT              8B224240
08E0 0  2500           DC    /2500    N               8B224250
08E1 0  0600           DC    /0600    6               8B224260
08E2 0  1227           DC    /1227    SP              8B224270
08E3 0  1500           DC    /1500    V               8B224280
08E4 0  3925           DC    /3925    IN              8B224290
08E5 0  1329           DC    /1329    TR              8B224300
08E6 0  2713           DC    /2713    PT              8B224310
08E7 0  0026           DC    /0026     O              8B224320
08E8 0  2500           DC    /2500    N               8B224330
08E9 0  1339           DC    /1339    TI              8B224340
08EA 0  2435           DC    /2435    ME              8B224350
08EB 0  2900           DC    /2900    R               8B224360
08EC 0  0000           DC    0        TIMER NUMBER    8B224370
08ED 0  3312           DC    /3312    CS              8B224380
08EE 0  0033           DC    /0033     C              8B224390
08EF 0  1833           DC    /1833    YC              8B224400
08F0 0  2335           DC    /2335    LE              8B224410
08F1 0  FFFF           DC    /FFFF    TERM            8B224420
                *                                     8B224430
08F2 0  0015    TMM26  DC    /0015    WORD COUNT      8B224440
08F3 0  350A           DC    /350A    EO              8B224450
08F4 0  0101           DC    /0101    11              8B224460
08F5 0  0000           DC    0        SPACE           8B224470
                                                      8B224480
```

```
08F6 0  0000            DC      0               SPACE                   8B224490
08F7 0  2913            DC      /2913           RT                      8B224500
08F8 0  2500            DC      /2500           N                       8B224510
08F9 0  0600            DC      /0600           6                       8B224520
08FA 0  2526            DC      /2526           NO                      8B224530
08FB 0  0039            DC      /0039            I                      8B224540
08FC 0  2513            DC      /2513           NT                      8B224550
08FD 0  2927            DC      /2927           RP                      8B224560
08FE 0  0026            DC      /0026            0                      8B224570
08FF 0  2500            DC      /2500           N                       8B224580
0900 0  1539            DC      /1539           VI                      8B224590
0901 0  2623            DC      /2623           OL                      8B224600
0902 0  3113            DC      /3113           AT                      8B224610
0903 0  3500            DC      /3500           E                       8B224620
0904 0  1339            DC      /1339           TI                      8B224630
0905 0  2435            DC      /2435           ME                      8B224640
0906 0  2900            DC      /2900           R                       8B224650
0907 0  0000            DC      0               TIMER NUMBER            8B224660
0908 0  FFFF            DC      /FFFF           TERM                    8B224670
                                                                        8B224680
090A    012D    END     TISRT                                   8B22468 8B224690
```


CROSS REFERENCE LISTING

PRSN	059C	0555
PRSNS	059A	0549,0559
PRWRT	059E	0548,0554
RESRT	01A6	013F
RTN	0196	0177
RTNNO	01B1	012E,016D,016F,0173,0175,0189,0202,024F,02CA,0335, 03D7,043E
RTNRT	018E	0206,0254,02CF,0340,03DC,0449
RTN00	01D5	01D4,01F9
RTN01	01DE	01EF,020E
RTN02	01F0	01E7
RTN03	0202	01F8
RTN04	0207	01F7
RTN05	01F8	01E1,0211
RTN10	0224	0269
RTN11	022D	0246,0259,0260
RTN12	0256	0236
RTN13	025D	0240
RTN14	0264	0248
RTN15	0245	025C,0263
RTN20	027B	027A,02AD
RTN21	0286	0292,02A7,02D8
RTN22	0294	064E
RTN23	02A8	0299,02D9
RTN24	0287	02C9
RTN25	02CA	0285
RTN26	02D1	02A8
RTN27	02AC	0293
RTN30	02EA	02E9,0334
RTN31	02F4	031F,0330
RTN32	02FC	0300,032E
RTN33	032A	0303,0329
RTN40	0366	03D2
RTN41	036F	03A0,0386
RTN42	037A	037E,03B2
RTN43	03AE	0381,03AD
RTN44	03D3	03B9
RTN50	0407	0406,042A
RTN51	0415	0423,0428
RTN52	0424	041F,0452
RTN53	042E	0437,0439,0451
RTN54	0438	044D
RTN55	044B	06D8
RTRN	0168	0190
RT00	0212	0204,04C7
RT100	026F	0251
RT200	02DA	0786
RT201	02D8	0270
RT202	02DC	0296,02CC
RT300	0342	02F9,02FE,0308,0326,032A
RT301	0343	0337
RT302	0344	0301,0309
RT400	03DE	0357
RT401	03DF	035E
RT402	03E0	03C2
RT403	03E1	0372,037C,0389,03A3,03AE
RT404	03E2	0371
RT405	03E3	03D9
RT406	03E4	037F,038A
RT500	0453	0440
SECCK	01B2	018E,0205,0252,02CD,0338,03DA,0441
SNSWS	01AE	0168
SPEED	01B4	014C,0505
SPVCK	0454	03F5,042B,044B
SPVCN	06DE	06D7,06DA
SPVTP	06D3	03EB,06D4
SVEXT	0704	06FD
SVINT	06DF	01A4,0704

SVINO	06E9	06F9,0702
SVIN1	06EB	06F3
SVIQ	070E	06E0,06EF,06F0,0703
SV0	0706	06F7
SV1	0707	06E9
SV2	0708	06E7
SV3	0709	06FE
SV4	070A	06E6,06EB,06F4,06F6,0701
SV5	070B	06EA,06ED,06F1
SV6	070C	06E8,06EE,06FF
SV7	070D	06E3,06FA
TIBCN	01B5	01C0,01D1,01DA,0207,0221,0227,0276,0280,02C1,02D1, 02E5,02F0,036B,03C5,0402,040F,042E
TIINT	04AD	015A,04B6,04EA,04F3,04F8
TIIN1	04C4	04CF
TIIN2	04D0	
TIIN3	04F0	04E3
TIIN4	04EB	04F4
TIIN5	04CB	06C4
TIIN6	04F5	04D2
TII00	04FA	04B0
TII01	04F8	04B3
TII02	04FC	04BE
TII03	04FD	0367,04D4
TII04	04FE	04B8
TIMA	0214	0132,0134,0136,01DE,04C9
TIMAA	0458	0458
TIMAB	0465	046F
TIMAC	047E	047D
TIMAD	0488	048F
TIMAI	04A4	01B5,03EF,049A,04AA
TIMAL	047C	0498
TIMAN	0456	017C,0499
TIMER	019D	019C
TIM00	018A	0196
TIM01	0217	0197
TIM02	0270	019A
TIM03	02E0	0199
TIM04	0355	019A
TIM05	03EB	019B
TISRT	012D	0187,0195,01A7,06D1,06DC,0909
TIX01	049A	0457
TIX02	049B	0464,0480
TIX03	049C	046D,0483
TIX04	049D	0478,047C
TIX05	049E	0484,048D
TIX06	049F	0485
TIX07	04A2	0478
TIX08	04A3	047A
TMCNT	026E	0225,0235,023A,023F,0244
TMM01	0710	0178
TMM02	071F	04ED
TMM03	072C	0185
TMM04	073A	0193
TMM05	0747	04E9
TMM06	0757	04F2
TMM07	0767	04F7,0688
TMM08	0779	0229,0258
TMM09	078F	022B,025F
TMM10	07A6	0282,0291
TMM11	078C	0284,02A2,02A6
TMM12	07CE	028F,02C9,02C7
TMM13	07E2	02F2,0310,031A,031E
TMM14	07FC	0360,0360,0391,0398,039F,03C8
TMM15	0815	045E
TMM16	0825	0467
TMM17	0836	0472
TMM18	0846	01DC,01EE

TMM19	0864	01FF
TMM20	087A	019F
TMM21	0889	02D3,02D7
TMM22	089D	0209,0200
TMM23	08B6	018C
TMM24	08C3	0411,0422
TMM25	08DA	0413,0450
TMM26	08F2	0430,0436
TRAP2	0640	02DB
TRA4A	03E6	03DE,03E9
TRP01	0650	02A8,02AE,0280,0282,0287,0645
TRP02	0653	0294,029A,0649
TWRTR	0564	0544,056C
TWRT0	0596	056D
TWRT1	0597	C57C
TWR01	056D	0569
TWR02	0578	0577,0595
TWR03	0592	058B
TWSNS	05A0	0566,057D,0585
TWWRT	05A2	056F,0586
UMSK0	01A8	0166,01CD,0248,033C,03BC,04C0,055C
UMSK1	01AA	0167,01CF,024D,033E,03BE,04C2,055E
WRDSW	0598	0565,0589,058F,0593
WTA	0550	300A,054A
WTB	0552	3008,054D
WTC	056B	300C
WTD	064D	300D
WTE	06D0	300E
WTF	06D8	300F
WT1	0146	3001,01AC,0200
WT2	0186	3002
WT3	0194	3003
WT4	03CF	3004

TABLE OF CONTENTS

1. PURPOSE

THE INTERRUPT FUNCTION TEST CHECKS THE OPERATING CONDITION OF THE INTERRUPT CIRCUITS IN THE PROCESSOR/CONTROLLER. AUTOMATIC AND MANUAL INTERRUPTS, INTERRUPT PRIORITY, MASK REGISTER, DISABLE INTERRUPT SWITCH, AND TRACE MODE ARE TESTED.

2. PREREQUISITES

2.1 PROGRAM PREREQUISITES

THE 1800 BASIC DIAGNOSTIC LOADER PROGRAM IS REQUIRED TO LOAD THE INTERRUPT FUNCTION TEST PROGRAM.

2.2 EQUIPMENT PREREQUISITES

THE FOLLOWING EQUIPMENT IS REQUIRED,

A. 1800 PROCESSOR/CONTROLLER.
B. 1442 CARD READ/PUNCH OR 1054 PAPER TAPE READER.
C. EITHER A 1053/1816, OR 1443 PRINTER.

3. USE PROCEDURE

3.1 PROGRAM LOADING

REFER TO 1800 BASIC DIAGNOSTIC LOADER DOCUMENTATION PARAGRAPH 3.1, FOR LOADING INSTRUCTIONS.

3.2 PROGRAM OPERATION

AFTER LOADING PROCESSOR STOPS AT WAIT 1 (B REG = 3001) WITH PROCESSOR STOPPED AT WAIT 1, PROCEED AS FOLLOWS -

A. SET DISABLE INTERRUPT SWITCH TO OFF.
B. SET CHECK STOP SWITCH TO OFF.
C. SET WRITE STORAGE PROTECT BITS SWITCH TO YES.
D. AT THE CE PANEL, INSURE THAT THE CE INTERRUPT SWITCH IS SET TO INTERRUPT TO MAIN STORAGE.
E. SELECT PROGRAM OPTIONS FROM TABLE 1.
F. IF LOOP ROUTINE IS DESIRED, REFER TO TABLE 2.
G. DEPRESS START PUSHBUTTON. PROGRAM SHOULD START EXECUTION.

1. OPERATOR SHOULD PERFORM THE ACTIONS REQUESTED BY THE PROGRAM. THE ACTIONS TO BE PERFORMED ARE INDICATED BY A PRINTOUT.
2. IF THE OPTIONS OF LOOP ROUTINE OR LOOP PROGRAM ARE NOT SELECTED, THEN ROUTINE 1 THROUGH 6 WILL BE EXECUTED ONCE, FOLLOWED BY PRINTOUT A001 PROGRAM COMPLETE. THE PROGRAM STOPS AT WAIT 2 B REG = 3002. PRESSING START RETURNS PROGRAM TO WAIT 1.
3. IF A ROUTINE WAS SELECTED FOR LOOPING, THEN THAT ROUTINE WILL LOOP UNTIL THE PROGRAM IS TERMINATED OR THE LOOP ROUTINE FUNCTION IS CHANGED OR CLEARED. IF THE LOOP ROUTINE FUNCTION IS CHANGED, THEN THE NEW ROUTINE SELECTED WILL BE LOOPED. IF THE LOOP ROUTINE FUNCTION IS CLEARED, THE PROGRAM WILL CONTINUE FROM THE PRESENT ROUTINE TO COMPLETION. FOR ROUTINE LOOPING WITH BYPASS MANUAL CHECKS, REFER TO NOTE 1 TABLE 2.
4. IF LOOP PROGRAM WAS SELECTED, AND THE MANUAL CHECKS WERE NOT BYPASSED, THEN ROUTINES 1 THROUGH 6 WILL BE RUN IN SEQUENCE IN LOOP FASHION.
5. IF LOOP PROGRAM WAS SELECTED AND THE MANUAL CHECKS ARE BYPASSED, THEN THE PROGRAM WILL RUN ROUTINE 1, 1ST PASS OF ROUTINE 2 AND ALL OF ROUTINE 3 AND 4 IN SEQUENTIAL LOOP FASHION. ROUTINE 5 AND 6 ARE NOT RUN UNDER THIS SETUP.

TABLE 1
PROGRAM OPTIONS - DATA ENTRY SWITCHES

NOTE

THE OPTIONS OF SELECT 1443 AS OUTPUT DEVICE, BYPASS MANUAL CHECKS, AND NUMBER OF INTERRUPT LEVELS SELECTED WILL BE HONORED ONLY IF THEY ARE ENTERED WHILE THE PROCESSOR IS STOPPED AT WAIT 1 (B REG = 3001).

DATA ENTRY SWITCHES 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	OPTION DESCRIPTION
. 1	HALT ON ERROR
. . . . . 1 .	BYPASS ERROR PRINT
. . . . . 1 . .	LOOP ON ERROR
. . . 1	LOOP PROGRAM
. . 1	USE 1443 AS OUTPUT DEVICE
. 1	BYPASS MANUAL CHECKS - NOTE 1.
1	BYPASS ROUTINE 3 PRIORITY PRINTOUT
0 0	12 INTERRUPT LEVELS
1 0	18 INTERRUPT LEVELS
0 1	24 INTERRUPT LEVELS

NOTE 1 -- MANUAL CHECKS INCLUDE DISABLE SWITCH, CONSOLE INTERRUPT PUSHBUTTON, CE INTERRUPT BUTTON AND TRACE MODE OPERATION. SWITCH 8 BYPASSES THESE CHECKS BY PREVENTING PASS 2 OF ROUTINE 2 AND ALL OF ROUTINES 5 AND 6 FROM OPERATING. SWITCH 8 IN CONJUCTION WITH OPTION SWITCHES 7 AND 11 WILL RUN THE PROGRAM IN A MODE ADAPTABLE TO SCOPING.

TABLE 2

SENSE / PROGRAM 0 1 2 3 4 5 6 7	OPTION DESCRIPTION
X X X	ROUTINE NUMBER TO LOOP. NUMBER MUST BE IN HEX AND MAY BE CHANGED AT ANY TIME.

NOTE -- IF ROUTINE ENTRY IS 5 OR 6 AND THE PROGRAM OPTION TO BYPASS MANUAL CHECKS HAS BEEN SELECTED, THEN THE PROGRAM WILL LOOP SELECTING THAT ROUTINE BUT NOT ALLOWING IT TO EXECUTE. IF ROUTINE ENTRY IS 2 AND BYPASS MANUAL CHECKS IS SELECTED, THEN ROUTINE 2 WILL LOOP WITHOUT CHECKING THE DISABLE INTERRUPT SWITCH.

3.3 PROGRAM TERMINATION

A NORMAL PROGRAM RUN TERMINATES BY PROGRAM STOPPING AT WAIT 2 FOLLOWING 'PROGRAM COMPLETE' PRINTOUT. DEPRESSION OF THE START PUSHBUTTON WILL CAUSE PROGRAM TO BRANCH TO WAIT 1 TO PERMIT PROGRAM TO BE REPEATED, IF DESIRED.

THE PROGRAM MAY ALSO BE TERMINATED AT ANY TIME BY DEPRESSING THE IMMED STOP PUSHBUTTON. DEPRESSING RESET AND START PUSHBUTTONS WILL BRANCH PROGRAM TO WAIT 1 TO PERMIT PROGRAM TO BE REPEATED.

3.4 RESTART PROCEDURE

PRESS THE STOP, RESET AND START BUTTONS. THE PROGRAM SHOULD GO TO WAIT 1. IF THIS DOES NOT OCCUR, THE PROGRAM MUST BE RELOADED.

3.5 PROGRAM HALTS (IN LISTING)

PROGRAM WAITS ARE USED IN THIS PROGRAM, AND ARE IDENTIFIED BY REFERENCING THE B REG AND I REG.

A PROGRAM WAIT IS OF THE FORM,

30XX, (B REG).

A DESCRIPTION OF THE INDIVIDUAL PROGRAM WAITS CAN BE FOUND AT THE BEGINNING OF THE PROGRAM LISTING. A TYPICAL WAIT DESCRIPTION FOLLOWS. IT IS INCLUDED TO SHOW THE FORMAT OF THE LISTING, AND IT IS NOT NECESSARILY A DESCRIPTION OF AN ACTUAL WAIT.

```
3001 0  01ED            DC      WAIT1+1
                *
                *               WAIT 1
                *
                *       ONE OF THE METERED I/O UNITS
                *       FAILED TO SEND A RESPONSE
                *       INTERRUPT TO THE PROGRAM.  INDEX
                *       REGISTER 1 WILL HAVE THE ADDRESS
                *       OF THE IOCC.  THE AREA CODE WILL
                *       INDICATE THE I/O UNIT NOT READY.
                *       IF A 2401/02 DRIVE IS NOT READY,
                *       PROGRAM WILL NOT STOP AT WAIT 1.
                *
```

B REG, (FIRST 4 DIGIT GROUP) CORRESPONDS TO B REG READING.

I REG, (SECOND 4 DIGIT GROUP) CORRESPONDS TO I REG READING.

4. PRINTOUTS

THE VARIOUS PRINTOUTS THAT MAY OCCUR DURING EXECUTION OF THIS PROGRAM FOLLOW.

4.1 STATUS MESSAGES

A001 PROGRAM COMPLETE

ONE PASS THROUGH THE PROGRAM HAS BEEN COMPLETED. DEPRESS START TO RETURN TO WAIT 1.

4.2 COMMAND MESSAGES

C001 TURN DISABLE SW ON PUSH START

COMMAND TO OPERATOR.

C002 TURN DISABLE SW OFF

COMMAND TO OPERATOR. PROGRAM SHOULD START EXECUTIONG WHEN SWITCH IS TURNED OFF. IF IT DOES NOT, PUSH START TO CONTINUE.

INTERRUPT FUNCTION TEST

C003 PUSH CE INTERRUPT BUTTON

COMMAND TO OPERATOR.

C004 PUSH CONS INTRP BUTTON

COMMAND TO OPERATOR. THE PROGRAM DELAYS FOR 1 MINUTE WAITING FOR THE BUTTON TO BE PUSHED. IF THE BUTTON IS NOT PUSHED, OR IF IT FAILS TO INTERRUPT, AN ERROR PRINTOUT WILL OCCUR.

C005 SET TRACE MODE PUSH START

COMMAND TO OPERATOR.

C006 SET RUN MODE PUSH START

COMMAND TO OPERATOR.

C007 SET DISABLE ON HIT CE AND CONS BTNS SET TRACE AND START

COMMAND TO OPERATOR TO CHECK CE AND CONSOLE INTERRUPT BUTTONS FOR INTERRUPTS WITH DISABLE INTERRUPT SWITCH ON.

C008 REPAIR FAILURE BEFORE CONTINUING

THIS PRINTOUT WILL FOLLOW ERROR MESSAGE E008. THE FAILURE INDICATED BY MESSAGE E008 CAN CAUSE LOSS OF PROGRAM CONTROL IF THE PROGRAM IS CONTINUED AND SHOULD THEREFORE BE REPAIRED BEFORE THE REMAINDER OF THE PROGRAM IS RUN.

4.3 DATA MESSAGES

D001 RTN 0X PRIORITY CHECK

PRIORITY CHECK HEADING PRINTOUT. ROUTINE NUMBER CAN BE 3 OR 4.

```
REQ SEQUENCE  XX XX XX XX . . . . . . . . . . . XX
SRVC SEQUENCE XX XX XX XX . . . . . . . . . . . XX
```

THESE TWO PRINTOUTS WILL OCCUR FOLLOWING THE HEADING PRINTOUT. REQUEST SEQUENCE INDICATES THE ORDER (READING FROM LEFT TO RIGHT) IN WHICH THE INTERRUPTS WERE RECEIVED BY THE TRAP ROUTINES. SERVICED SEQUENCE INDICATES (READING FROM LEFT TO RIGHT) THE ORDER IN WHICH THE INTERRUPTS WERE SERVICED BY THE TRAP ROUTINES.

THE FIRST INTERRUPT IS ISSUED BY ROUTINE 3, OR WITH EITHER THE TRACE MODE OR CE INTERRUPT BUTTON BY ROUTINE 5. THE FIRST TRAP ROUTINE ENTERED, WILL ISSUE AN INTERRUPT TO THE NEXT HIGHER LEVEL ETC, UNTIL LEVEL 00 IS REACHED. LEVEL 00 WILL CAUSE AN OP CODE VIOLATE TO INTERRUPT TO LEVEL ERROR. LEVEL ERROR WILL BE SERVICED IMMEDIATELY AND CAUSE THE SERVICING OF ALL NESTED INTERRUPTS IN THE OPPOSITE ORDER THAN THEY WERE RECEIVED.

IF THE FIRST INTERRUPT REQUEST FAILS, BOTH THE REQUEST AND SERVICED SEQUENCE PRINTOUTS WILL BE BLANK. IF A REQUEST FAILS TO INTERRUPT FROM A TRAP ROUTINE, THEN, THE LEVEL FROM WHICH THE REQUEST WAS ISSUED WILL BE THE FIRST ONE SERVICED.

INTERRUPT FUNCTION TEST

TYPICAL CORRECT PRINTOUTS FOLLOW.

FOR ROUTINE 3 AND SYSTEM WITH 12 INTERRUPT LEVELS,

```
REQ SEQUENCE  11 10 09 08 . . . . . .02 01 00 ER
SRVC SEQUENCE ER 00 01 02 . . . . . .08 09 10 11
```

FOR ROUTINE 3 AND SYSTEM WITH 18 INTERRUPT LEVELS,

```
REQ SEQUENCE  17 16 15 14 . . . . . .02 01 00 ER
SRVC SEQUENCE ER 00 01 02 . . . . . .14 15 16 17
```

FOR ROUTINE 3 AND SYSTEM WITH 24 INTERRUPT LEVELS,

```
REQ SEQUENCE  23 22 21 20 . . . . . .02 01 00 ER
SRVC SEQUENCE ER 00 01 02 . . . . . .20 21 22 23
```

FOR ROUTINE 5 AND SYSTEM WITH 12 INTERRUPT LEVELS,

```
REQ SEQUENCE  CE (OR TR) 11 10 09 . . . . .02 01 00 ER
SRVC SEQUENCE ER         00 01 02 . . . . .09 10 11 CE (OR TR)
```

FOR ROUTINE 5 AND SYSTEM WITH 18 INTERRUPT LEVELS,

```
REQ SEQUENCE  CE (OR TR) 17 16 15 . . . . .02 01 00 ER
SRVC SEQUENCE ER         00 01 02 . . . . .15 16 17 CE (OR TR)
```

FOR ROUTINE 5 AND SYSTEM WITH 24 INTERRUPT LEVELS,

```
REQ SEQUENCE  CE (OR TR) 23 22 21 . . . . .02 01 00 ER
SRVC SEQUENCE ER         00 01 02 . . . . .21 22 23 CE (OR TR)
```

D002 CONSOLE BUTTON ON LEVEL XX ILSW BIT X

THIS PRINTOUT IS GIVEN BY ROUTINE 4 TO INDICATE THE LEVEL TO WHICH THE CONSOLE INTERRUPT PUSHBUTTON INTERRUPTS. THE ILSW BIT IS IN DECIMAL. IF NO ILSW BIT WAS ON, IT WILL BE INDICATED BY AN '' N ''.

4.4 ERROR MESSAGES

E001 RTN 0X LEVEL XX FAILED TO INTRP

ROUTINE NUMBER (RTN) CAN BE 2, 4, OR 5.

THIS ERROR PRINTOUT INDICATES THAT,

A. THE LEVEL SPECIFIED FAILED TO RESPOND TO A PROGRAMMED INTERRUPT.
B. IF RTN 03, LEVEL ER, OP CODE VIOLATE FAILED TO INTERRUPT.
C. IF RTN 05, LEVEL ER, VIOLATING A STORAGE PROTECTED LOCATION FAILED TO CAUSE AN INTERRUPT.
D. IF RTN 04, THE LEVEL SPECIFIED FAILED TO INTERRUPT AFTER THE MASK REGISTER WAS RESET OFF.

E002 RTN 0X REQ XX GIVEN LEVL XX SRVCD

ROUTINE NUMBER CAN BE 2, 4, OR 5. PRINTOUT OCCURS WHEN THE INTERRUPT GIVEN INTERRUPTS TO THE WRONG LEVEL.

INTERRUPT FUNCTION TEST

E003 RTN OX REQ XX INTRPD WITH DISABLE SW ON

ROUTINE NUMBER CAN BE 2 OR 5. THE REQUEST NUMBER SPECIFIED RESULTED IN AN INTERRUPT WHILE THE DISABLE INTERRUPT SWITCH WAS ON.

E004 RTN OX WRONG ILSW ON ERR INTRP

IF ROUTINE 2, THE ILSW WAS WRONG FOR AN OP CODE VIOLATE. IF ROUTINE 5, THE ILSW WAS WRONG FOR A STORAGE PROTECT VIOLATION.

E005 SEQUENCE ERROR RTN OX

ROUTINE NUMBER SPECIFIED SHOULD HAVE BEEN RUN, BUT WAS NOT. PUSH START TO GO TO WAIT 1.

E006 RTN 4 LEVEL XX INTRPD WHILE MASKED

THE LEVEL SPECIFIED INTERRUPTED WHILE THE MASK REGISTER WAS SET ON.

E007 RTN 2 INT XX ILSW NOT ZERO

THE ILSW FOR THE LEVEL INDICATED WAS NOT ZERO AFTER A PROGRAMMED INTERRUPT. FOLLOWING THIS PRINTOUT, IF THE PROGRAM IS IN A NORMAL PROGRAM RUN, IT WILL STOP AT WAIT 15 WITH ILSW IN A REGISTER.

E008 RTN 6 TRACE DID NOT INTRPT ON PASS XX

TEN PASSES ARE MADE THROUGH THIS ROUTINE. IF ANY PASS IS MADE WITHOUT RECEIVING A TRACE INTERRUPT THIS PRINTOUT WILL OCCUR, INDICATING THE PASS NUMBER.

E009 RTN 6 EXPECTED INTRPT FROM INSTRN XX GOT XX

THE ROUTINE HAS 10 INSTRUCTIONS WHICH SHOULD INTERRUPT IN SEQUENCE. IF THE SEQUENCE IS DESTROYED DUE TO A SKIPPED INSTRUCTION OR BECAUSE TRACE FAILED TO INTERRUPT, THE PRINTOUT WILL OCCUR, INDICATING THE INSTRUCTION THAT INTERRUPTED, AND THE INSTRUCTION THAT SHOULD HAVE INTERRUPTED.

THE INSTRUCTIONS USED IN THE ROUTINE FOLLOW.

1	LD	6	M
2	RTE	7	A
3	STO	8	BSC
4	S	9	NOP
5	EOR	10	MDX

E00A CONSOLE BUTTON FAILED

IF THE CONSOLE BUTTON DOES NOT CAUSE AN INTERRUPT, OR IF THE CONSOLE BUTTON IS NOT DEPRESSED WITHIN 1 MINUTE AFTER THE OPERATOR WAS REQUESTED TO DO SO, THIS PRINTOUT WILL OCCUR.

E00B RTN1 INTRPT NOT INHIBITED AFTER XXX

XXX REPRESENTS EITHER XIO OR BSI. THIS PRINTOUT INDICATES THAT AN INTERRUPT WAS NOT INHIBITED FOR 1 INSTRUCTION FOLLOWING THE EXECUTION OF AN XIO OR BSI INSTRUCTION.

INTERRUPT FUNCTION TEST

E00C ILLEGAL RTN ENTRY

AN ENTRY OF 7 WAS ENTERED IN THE SENSE PROGRAM SWITCHES. THIS IS AN INVALID ENTRY. PROGRAM RETURNS TO WAIT 1, B REG = 3001.

5. COMMENTS

THE INTERRUPT FUNCTION TEST CONSISTS OF A CONTROL ROUTINE AND SIX TESTING ROUTINES. INTERRUPT LEVELS 0 THROUGH 23 ARE CHECKED USING THE PROGRAMMED INTERRUPT FEATURE. LEVEL INTERNAL IS CHECKED BY ISSUING OP CODE VIOLATES AND STORAGE PROTECT VIOLATES. LEVELS TR AND CE ARE CHECKED OUT THROUGH THEIR ASSOCIATED HARDWARE. THE CONSOLE INTR PUSHBUTTON IS ALSO CHECKED.

THE CONTROL ROUTINE SEQUENCES THE TEST ROUTINES AND ACCOMPLISHES THE PROGRAM OPTIONS SPECIFIED BY THE OPERATOR.

ROUTINE 1 CHECKS TO INSURE THAT THE INTERRUPT IS DELAYED FOR 1 INSTRUCTION FOLLOWING THE EXECUTION OF AN XIO AND BSI. THE XIO CHECK IS MADE FIRST. THE BSI CHECK IS THEN MADE BY EXECUTING THE BSI IMMEDIATELY AFTER AN XIO. IF AN ERROR IS DETECTED, THE CE WILL RECEIVE A FIX COMMAND AND THE PROGRAM WILL GO TO WAIT 1.

ROUTINE 2 CHECKS THE BASIC OPERATION OF INTERRUPT LEVELS 0 THROUGH 23 AND INTERRUPT LEVEL INTERNAL. PASS 1 CHECKS FOR PROPER INTERRUPTING AND PASS 2 CHECKS FOR NO INTERRUPTS WITH THE DISABLE INTERRUPT SWITCH SET TO ON. LEVEL INTERNAL IS CHECKED WITH AN OP CODE VIOLATE, AND IS ALSO CHECKED FOR PROPER ILSW BIT ON. LEVELS 0 THROUGH 23 ARE CHECKED FOR NO ILSW BIT BEING ON AFTER PROGRAM INTERRUPT. EACH PASS IS RUN 500 TIMES.

ROUTINE 3 CHECKS LEVELS 0 THROUGH 23 AND LEVEL INTERNAL FOR PROPER PRIORITY SEQUENCING. THE METHOD USED TO CHECK PRIORITY SEQUENCING IS EXPLAINED IN PARAGRAPH 4. PRINTOUTS, UNDER THE 'RTN OX PRIORITY CHECK' PRINTOUT.

ROUTINE 4 CHECKS THE MASK REGISTER. THE FIRST PASS CHECKS THAT THE MASK REG. CAN BE SET ON, AND THE SECOND PASS CHECKS THAT IT CAN BE RESET OFF. THE CHECK IS MADE 500 TIMES.

ROUTINE 5 CHECKS THE HARDWARE INTERRUPT FEATURES, THAT IS THE CONSOLE INTR AND CE INTERRUPT PUSHBUTTONS, AND THE TRACE MODE CIRCUITRY. PROPER INTERRUPTING, PRIORITY, AND INTERRUPT DISABLE ARE CHECKED. LEVEL INTERNAL ILSW IS CHECKED FOR PROPER BIT ON AFTER A STORAGE PROTECT VIOLATION.

ROUTINE 6 IS A CHECK OF TRACE MODE WHILE RUNNING A 10 INSTRUCTION ROUTINE. TEN PASSES ARE MADE THROUGH THIS ROUTINE. THE 10 INSTRUCTIONS USED ARE LISTED IN PARAGRAPH 4. PRINTOUTS, UNDER 'RTN05 EXPECTED INTRPT FROM INSTRN XX GOT XX' PRINTOUT.

```
                        ABS
02BC                    ORG     /3001                                   8B300010
                                                                        8B300020
                *                                                       8B300030
                *               ** PROGRAM WAITS **                     8B300040
                *                                                       8B300050
3001 0  013D            DC      WT1+1       WAIT 1                      8B300060
                *                                                       8B300070
                *               WAIT OCCURS AFTER PROGRAM               8B300080
                *               HAS LOADED. PERFORM SETUP,              8B300090
                *               ENTER DESIRED OPTIONS IN                8B300100
                *               DATA ENTRY SWITCHES AND                 8B300110
                *               DEPRESS START.                          8B300120
                *                                                       8B300130
3002 0  0175            DC      WT2+1       WAIT 2                      8B300140
                *                                                       8B300150
                *               PROGRAM RAN TO COMPLETION.              8B300160
                *               DEPRESSING START RETURNS                8B300170
                *               PROGRAM TO WAIT 1.                      8B300180
                *                                                       8B300190
3003 0  0184            DC      WT3+1       WAIT 3                      8B300200
                *                                                       8B300210
                *               PROGRAM SEQUENCE ERROR.                 8B300220
                *               SUPERVISOR SECTION OF                   8B300230
                *               PROGRAM DECTED AN ERROR                 8B300240
                *               IN ROUTINE SEQUENCING.                  8B300250
                *                                                       8B300260
3004 0  027F            DC      WT4+1       WAIT 4                      8B300270
                *                                                       8B300280
                *               ROUTINE 2 WAIT. TURN THE                8B300290
                *               DISABLE INTERRUPT SWITCH                8B300300
                *               ON AND DEPRESS THE START                8B300310
                *               PUSHBUTTON.                             8B300320
                *                                                       8B300330
3005 0  0250            DC      WT5+1       WAIT 5                      8B300340
                *                                                       8B300350
                *               ROUTINE 2 WAIT. TURN THE                8B300360
                *               DISABLE INTERRUPT SWITCH                8B300370
                *               OFF. PROGRAM SHOULD START               8B300380
                *               EXECUTION. IF IT DOES NOT               8B300390
                *               (DUE TO INTERNAL INTERRUPT              8B300400
                *               FAILURE)PRESS START BUTTON              8B300410
                *               TO CONTINUE.                            8B300420
                *                                                       8B300430
3006 0  035C            DC      WT6+1       WAIT 6                      8B300440
                *                                                       8B300450
                *               ROUTINE 5 WAIT. WRONG ILSW              8B300460
                *               WAS SENSED ON STORAGE                   8B300470
                *               PROTECT VIOLATE INTERRUPT.              8B300480
                *               THE ILSW IS IN THE A REG.               8B300490
                *               PUSH START TO CONTINUE.                 8B300500
                *                                                       8B300510
3007 0  0386            DC      WT7+1       WAIT 7                      8B300520
                *                                                       8B300530
                *               ROUTINE 5 WAIT. SET MODE                8B300540
                *               SWITCH TO TRACE AND PRESS               8B300550
                *               START. PROGRAM WILL CHECK               8B300560
                *               TRACE INTERRUPT.                        8B300570
                *                                                       8B300580
3008 0  038E            DC      WT8+1       WAIT 8                      8B300590
                *                                                       8B300600
                *               ROUTINE 5 WAIT. SET MODE                8B300610
                *               SWITCH TO RUN AND DEPRESS               8B300620
                *               START BUTTON.                           8B300630
                *                                                       8B300640
3009 0  03CF            DC      WT9+1       WAIT 9                      8B300650
                *                                                       8B300660
                *               ROUTINE 5 WAIT. SET MODE                8B300670
                *               SWITCH TO TRACE AND PRESS               8B300680
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                *               START. PROGRAM WILL MAKE                8B300690
                *               AN INTERRUPT PRIORITY                   8B300700
                *               CHECK IN TRACE MODE                     8B300710
                *               OPERATION.                              8B300720
                *                                                       8B300730
300A 0  03D6            DC      WTA+1       WAIT A                      8B300740
                *                                                       8B300750
                *               ROUTINE 5 WAIT. SET MODE                8B300760
                *               SWITCH TO RUN AND DEPRESS               8B300770
                *               START BUTTON.                           8B300780
                *                                                       8B300790
3008 0  03E6            DC      WTB+1       WAIT B                      8B300800
                *                                                       8B300810
                *               ROUTINE 5 WAIT. DEPRESS                 8B300820
                *               C.E. INTERRUPT BUTTON.                  8B300830
                *               PROGRAM WILL MAKE AN                    8B300840
                *               INTERRUPT PRIOPITY CHECK                8B300850
                *               WITH THE C.E. INTERRUPT                 8B300860
                *               LEVEL.                                  8B300870
                *                                                       8B300880
300C 0  03F7            DC      WTC+1       WAIT C                      8B300890
                *                                                       8B300900
                *               ROUTINE 5 WAIT. SET THE                 8B300910
                *               DISABLE INTERRUPT SWITCH                8B300920
                *               ON,THEN DEPRESS THE C.E.                8B300930
                *               INTERRUPT AND CONSOLE                   8B300940
                *               INTERRUPT BUTTONS. NO                   8B300950
                *               INTERRUPT SHOULD OCCUR.                 8B300960
                *               THEN SET TRACE MODE AND                 8B300970
                *               DEPRESS START.                          8B300980
                *                                                       8B300990
300D 0  040A            DC      WTD+1       WAIT D                      8B301000
                *                                                       8B301010
                *               ROUTINE 5 WAIT. SET THE                 8B301020
                *               MODE SWITCH TO RUN AND                  8B301030
                *               DEPRESS START.                          8B301040
                *                                                       8B301050
300E 0  040E            DC      WTE+1       WAIT E                      8B301060
                *                                                       8B301070
                *               ROUTINE 5 WAIT. TURN THE                8B301080
                *               DISABLE INTERRUPT SWITCH                8B301090
                *               OFF. PROGRAM SHOULD CONTI-              8B301100
                *               NUE. IF IT DOES NOT(DUE                 8B301110
                *               TO DISABLE INTERRUPT IN-                8B301120
                *               OPERATIVE* ,HEN PUSH START              8B301130
                *               TO CONTINUE.                            8B301140
                *                                                       8B301150
300F 0  045D            DC      WTF+1       WAIT F                      8B301160
                *                                                       8B301170
                *               ROUTINE 6 WAIT. SET MODE                8B301180
                *               SWITCH TO TRACE AND PRESS               8B301190
                *               START BUTTON. PROGRAM WILL              8B301200
                *               CHECK TRACE MODE OPERATION              8B301210
                *                                                       8B301220
3010 0  0475            DC      WT10+1      WAIT 10                     8B301230
                *                                                       8B301240
                *               ROUTINE 6 WAIT. SET MODE                8B301250
                *               SWITCH TO RUN AND DEPRESS               8B301260
                *               START BUTTON.                           8B301270
                *                                                       8B301280
3011 0  051F            DC      WT11+1      WAIT 11                     8B301290
                *                                                       8B301300
                *               HALT ON ERROR OPTION                    8B301310
                *               REQUESTED. DEPRESS START                8B301320
                *               BUTTON TO CONTINUE.                     8B301330
                *                                                       8B301340
3012 0  0538            DC      WT12+1      WAIT 12                     8B301350
                *                                                       8B301360
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                    *                   1443 NOT READY. MAKE 1443          8B301370
                    *                   READY AND DEPRESS START.           8B301380
                    *                                                      8B301390
3013 0  053A                DC      WT13+1      WAIT 13                    8B301400
                    *                                                      8B301410
                    *                   1443 BUSY. THIS IS AN              8B301420
                    *                   ERROR CONDITION. REMEDY            8B301430
                    *                   CAUSE,THEN PUSH START TO           8B301440
                    *                   CONTINUE.                          8B301450
                    *                                                      8B301460
3014 0  0553                DC      WT14+1      WAIT 14                    8B301470
                    *                                                      8B301480
                    *                   1816/1053 NUMBER 1 NOT             8B301490
                    *                   READY. MAKE READY AND PUSH         8B301500
                    *                   START TO CONTINUE.                 8B301510
                    *                                                      8B301520
3015 0  06C8                DC      WT15+1      WAIT 15                    8B301530
                    *                                                      8B301540
                    *                   THIS WAIT WILL OCCUR               8B301550
                    *                   DURING ROUTINE 2 IF OPTION         8B301560
                    *                   BIT SWITCH 8 IS NOT ON,AND         8B301570
                    *                   AN ILSW ERROR IS DETECTED          8B301580
                    *                   ON A PROG.GENERATED INTER-         8B301590
                    *                   RUPT. THE ILSW IS IN THE           8B301600
                    *                   A REG. DEPRESS START TO            8B301610
                    *                   CONTINUE.                          8B301620
                    *                                                      8B301630
3016                        ORG     300                                    8B301640
012C 0  B300                DC      /B300       PID                        8B301650
                    *                   *                   *              8B301660
                    *                   *  INTERRUPT FUNCT TEST  *         8B301670
                    *                   *    ** INTRP **       *          8B301680
                    *                   *                      *          8B301690
                    *                   ********.*****************        8B301700
                    *                                                      8B301710
                    *                       CONTROL ROUTINE                8B301720
                    *                                                      8B301730
012D 00 4400048E    START BSI   L   INTST       SET SPURIOUS INT ADR       8B301740
                    *                                                      8B301750
012F 0  C864                LDD     CNC02       SET RESTART ADDRESS        8B301760
0130 00 DC000026            STD   L /0026       IN LOCATION 26             8B301770
0132 0  C863                LDD     CNC03                                  8B301780
0133 00 DC000000            STD   L /0000                                  8B301790
                    *                                                      8B301800
0135 0  1010                SLA     16          CLEAR BIT SWITCH           8B301810
0136 0  D058                STO     BSW00       *READ IN AREA AND BY       8B301820
0137 0  D061                STO     RUNSW       *PASS MAN CKS SWITCH       8B301830
0138 00 D4000428            STO   L CN400       CLEAR TRACE INDICATO       8B301840
013A 0  2C40                DC      /2C40       INSURE SP AREA IS          8B301850
013B 0  0429                DC      CN401       *CLEAR                     8B301860
                    *                                                      8B301870
013C 0  3001        WT1     WAIT    1           ENTER PROG.OPTIONS         8B301880
                    *                                                      8B301890
013D 0  084C                XIO     BSW0        READ BIT SWITCHES          8B301900
                    *                                                      8B301910
013E 0  10A0        CON01   SLT     32          CLEAR A AND Q              8B301920
013F 0  C052                LD      BSW00       GET OPTION ENTRY           8B301930
0140 0  18C8                RTE     8                                      8B301940
0141 0  1010                SLA     16                                     8B301950
0142 0  1081                SLT     1                                      8B301960
0143 0  D055                STO     RUNSW       SET RUN SWITCH             8B301970
0144 0  1010                SLA     16                                     8B301980
0145 0  1081                SLT     1                                      8B301990
0146 0  D053                STO     OPIND       SET OUTPUT DEVICE ID       8B302000
                    *                                                      8B302010
                    *                                                      8B302020
                    *                       DETERMINE NUMBER OF LEVELS     8B302030
                    *                                                      8B302040
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0147 0  C04A                LD      BSW00       GET OPTION ENTRIES         8B302050
0148 0  4810                BSC     -           SKIP IF BIT 0 ON           8B302060
0149 0  7004                MDX     CTRL1       BRANCH ON NOT BIT 0        8B302070
014A 0  6311                LDX   3 17          SET LEVEL INDICATOR        8B302080
014B 0  6B4C                STX   3 LVSAV       *FOR 18 LEVELS             8B302090
014C 0  6302                LDX   3 2           SET INDEX FOR 18 LVL       8B302100
014D 0  700A                MDX     CTRL3       CONTINUE                   8B302110
014E 0  1001        CTRL1   SLA     1           CHECK FOR BIT 1            8B302120
014F 0  4810                BSC     -           SKIP IF BIT 1 ON           8B302130
0150 0  7004                MDX     CTRL2       BRANCH ON NOT BIT 1        8B302140
0151 0  6317                LDX   3 23          SET LEVEL INDICATOR        8B302150
0152 0  6B45                STX   3 LVSAV       *FOR 24 LEVELS             8B302160
0153 0  6304                LDX   3 4           SET INDEX FOR 24 LVL       8B302170
0154 0  7003                MDX     CTRL3       CONTINUE                   8B302180
0155 0  630B        CTRL2   LDX   3 11          SET LEVEL INDICATOR        8B302190
0156 0  6B41                STX   3 LVSAV       *FOR 12 LEVELS             8B302200
0157 0  6300                LDX   3 0           SET INDEX FOR 12 LVL       8B302210
0158 0  6B35        CTRL3   STX   3 LVLIX       SAVE INDEX SETTING         8B302220
                    *                                                      8B302230
0159 0  1010        CON06   SLA     16                                     8B302240
015A 0  D034                STO     RTNNO       CLEAR ROUTN. NUMBER        8B302250
                    *                                                      8B302260
015B 0  082C        CNTRL   XIO     SNSWS       READ SENSE SWITCHES        8B302270
015C 0  1005                SLA     5           CHECK FOR LOOP RTN         8B302280
015D 0  180D                SRA     13                                     8B302290
015E 0  4808                BSC     *           SKIP IF LOOP ROUTINE       8B302300
015F 0  7002                MDX     *+2                                    8B302310
0160 0  D02E                STO     RTNNO                                  8B302320
0161 0  7006                MDX     CON05+2     GO EXECUTE ROUTINE         8B302330
0162 0  C02C                LD      RTNNO                                  8B302340
0163 0  902C                S       SIX         CK IF ALL RTNS RUN         8B302350
0164 0  4818                BSC     +-                                     8B302360
0165 0  7006                MDX     CON03       ALL ROUTINES HAVE RN       8B302370
0166 00 7401018F    CON05   MDX   L RTNNO,1      ADD 1 TO RTN.NO.           8B302380
0168 00 6580018F            LDX   I1 RTNNO                                 8B302390
016A 00 4D80019A            BSC   I1 RTN-1        EXIT TO ROUTINE            8B302400
                    *                                                      8B302410
                    *                   ALL ROUTINES HAVE RUN              8B302420
                    *                                                      8B302430
016C 0  081D        CON03   XIO     BSW0        READ BIT SWITCHES          8B302440
016D 0  C024                LD      BSW00       GET BIT SWITCHES           8B302450
016E 0  1804                SRA     4           CK LOOP PROGRAM            8B302460
016F 0  4804                BSC     E                                      8B302470
0170 0  70E8                MDX     CON06       LOOP PROGRAM               8B302480
                    *                                                      8B302490
                    ********************************************         8B302500
0171 00 44000523            BSI   L LOG         PRINT PROGRAM        SRC   8B302510
0173 0  09C9                DC      INM07       IS COMPLETE                8B302520
                    ********************************************         8B302530
                    *                                                      8B302540
0174 0  3002        WT2     WAIT    2           PROGRAM COMPLETE           8B302550
0175 00 4C000127            BSC   L START       PROGRAM RESTART            8B302560
                    *                                                      8B302570
                    *                   *** ROUTINE RETURN ***             8B302580
                    *                                                      8B302590
0177 0  C019        RTNRT   LD      SEQCK       SEQUENCE CHECK             8B302600
0178 0  4818                BSC     +-                                     8B302610
0179 0  70E1                MDX     CNTRL       CHECK OK                   8B302620
                    *                                                      8B302630
017A 00 6780018F            LDX   I3 RTNNO                                8B302640
017C 00 C700092F            LD    L3 INLVT+1    GET HEX.VALUE OF RTN       8B302650
017E 00 D4000A2C            STO   L INM12+15    SET IN MESSAGE             8B302660
                    *                                                      8B302670
                    ********************************************         8B302680
0180 00 44000523            BSI   L LOG         PRINT SEQUENCE       SRC   8B302690
0182 0  0A1D                DC      INM12       ERROR                      8B302700
                    ********************************************         8B302710
                    *                                                      8B302720
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0183 0  3003        WT3   WAIT   3          SEQUENCE ERROR                8B302730
0184 00 4C00012D          BSC  L  START                                   8B302740
                    *                                                    8B302750
                    *                    CONTROL ROUTINE CONSTANTS       8B302760
                    *                                                    8B302770
0186 00 00000000          DEC    0                                       8B302780
0188 0  0000        SNSWS DC     /0000      READ SENSE SW IOCC            8B302790
0189 0  0760              DC     /0760                                    8B302800
018A 0  0192        BSW0  DC     BSW00      READ BIT SWITCH IOCC          8B302810
018B 0  0240              DC     /0240                                    8B302820
                    *                                                    8B302830
018C 0  0193        BSW1  DC     BSW01       READ BIT SWITCH IOCC         8B302840
018D 0  0240              DC     /0240                                    8B302850
                    *                                                    8B302860
018E 0  0000        LVLIX DC     0          NO.OF LEVELS INDEX            8B302870
018F 0  0000        RTNNO DC     0          ROUTINE NUMBER                8B302880
0190 0  0006        SIX   DC     6          CONSTANT 6                    8B302890
0191 0  0000        SEQCK DC     0          SEQUENCE CHECK SAVE           8B302900
                    *                                                    8B302910
0192 0  0000        BSW00 DC     0          BIT SW. CONTROL DATA          8B302920
0193 0  0000        BSW01 DC     0          NO INTERRUPT LEVELS           8B302930
                    *                                                    8B302940
0194 0  4C00        CNC02 DC     /4C00      RESTART INSTRUCTIONS          8B302950
0195 0  012D              DC     START                                    8B302960
0196 0  7025        CNC03 DC     /7025                                    8B302970
0197 0  4400              DC     /4400                                    8B302980
0198 0  0000        LVSAV DC     0          NO.INTR.LVLS SAVE             8B302990
0199 0  0000        RUNSW DC     0                                        8B303000
019A 0  0000        OPIND DC     0          OUTPUT DEVICE INDCTR          8B303010
                    *                                                    8B303020
                    *                    ROUTINE ADDRESSES               8B303030
                    *                                                    8B303040
019B 0  01A6        RTN   DC     INT00      ROUTINE 1                     8B303050
019C 0  01FE              DC     INT01      ROUTINE 2                     8B303060
019D 0  0292              DC     INT02      ROUTINE 3                     8B303070
019E 0  02B5              DC     INT03      ROUTINE 4                     8B303080
019F 0  0328              DC     INT04      ROUTINE 5                     8B303090
01A0 0  0446              DC     INT05      ROUTINE 6                     8B303100
01A1 0  01A2              DC     INTER      INVALID ENTRY                 8B303110
                    *                                                    8B303120
                    ********************************************         8B303130
01A2 00 44000523    INTER BSI  L  LOG        PRINT INVALID ENTRY  SRC    8B303140
01A4 0  089F              DC     INM25                                    8B303150
                    ********************************************         8B303160
                    *                                                    8B303170
01A5 0  7096              MDX    WT1         RETURN TO WAIT 1              8B303180
                    *                                                    8B303190
                    ********************************************         8B303200
                    *                  ROUTINE NUMBER ONE                8B303210
                    ********************************************         8B303220
                    *                                                    8B303230
01A6 00 0C000320    INT00 XIO  L  MASK0      MASK INTERRUPTS               8B303240
01A8 00 0C000322          XIO  L  MASK1                                    8B303250
                    *                                                    8B303260
01AA 0  631B              LDX    3 27        SET INTERRUPT                 8B303270
01AB 00 C40001F5          LD   L VCTOR       *TRANSFER VECTOR              8B303280
01AD 00 D7000007          STO  L3 7                                        8B303290
01AF 0  73FF              MDX    3 -1                                      8B303300
01B0 0  70FC              MDX      *-4                                     8B303310
                    *                                                    8B303320
01B1 0  C848              LDD      XIO       SET UP MESSAGE                8B303330
01B2 00 DC000886          STD  L   INM23+22                                8B303340
01B4 00 CC00028C          LDD  L   XIOCC     SET UP IOCC                   8B303350
01B6 00 DC00028A          STD  L   ISINT                                   8B303360
01B8 0  630C              LDX    3 12        SET INTRP INDEX               8B303370
01B9 00 650001C5          LDX  L1  PL1+1     SET UP TRAP ROUTINE           8B303380
01BB 00 6D000608          STX  L1  PLEXT+1   RETURN                        8B303390
01BD 00 0C000324          XIO  L   UMSK0     UNMASK INTERRUPTS             8B303400
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018F 00 0C000326          XIO  L  UMSK1                                  8B303410
01C1 00 0C00028A    INO01 XIO  L  ISINT      ISSUE INTRP  CHECK          8B303420
01C3 0  1000              NOP              *POLL ON XIO                  8B303430
01C4 0  701C        PL1   MDX    FAIL       INTERRUPT FAILED              8B303440
01C5 0  C030              LD     ICTR       CHECK FOR PROPER I            8B303450
01C6 0  F030              EOR    XIOCK      *COUNT ON INTERRUPT           8B303460
01C7 00 4C2001E9          BSC  L POLER,Z    BRANCH ON WRONG I CT          8B303470
                    *                                                    8B303480
01C9 0  C832              LDD    BSI        SET UP MESSAGE                8B303490
01CA 00 DC000886          STD  L INM23+22                                  8B303500
01CC 00 650001D6          LDX  L1 PL2+1      SET UP TRAP ROUTINE           8B303510
01CE 00 6D000608          STX  L1 PLEXT+1    *RETURN                       8B303520
                    *                                                    8B303530
01D0 00 0C00028A          XIO  L  ISINT      ISSUE INTRP   CHECK           8B303540
01D2 0  4000              BSI    *           *FOLL ON BSI                  8B303550
01D3 0  1000              NOP                                              8B303560
01D4 0  1000              NOP                                              8B303570
01D5 0  7004        PL2   MDX      *+4       BRNCH IF INTRP FAILD          8B303580
01D6 0  C01F              LD     ICTR       CHECK FOR PROPER I            8B303590
01D7 0  F020              EOR    BSICK      *COUNT ON INTERRUPT           8B303600
01D8 00 4C2001E9          BSC  L POLER,Z    BRANCH ON WRONG I CT          8B303610
                    *                                                    8B303620
01DA 0  C084        INO02 LD     RTNNO      PREPARE SEQUENCE CK           8B303630
01DB 0  F01D              EOR    CN001                                    8B303640
01DC 0  D084              STO    SEQCK                                    8B303650
01DD 00 4400048E          BSI  L INTST       SETUP XFER VECTORS   SRC     8B303660
                    *                                                    8B303670
01DF 00 4C000177          BSC  L RTNRT       RETURN TO CONTROL             8B303680
01E1 00 C400028A    FAIL  LD   L ISINT       MODIFY IOCC FOR               8B303690
01E3 0  1001              SLA    1           *NEXT INTERRUPT               8B303700
01E4 00 D400028A          STO  L ISINT                                     8B303710
01E6 0  73FF              MDX    3 -1                                      8B303720
01E7 0  7009              MDX      IN001     CONTINUE                      8B303730
01E8 0  70F1              MDX      IN002     END ROUTINE                   8B303740
                    *                                                    8B303750
01E9 00 650001A6    POLER LDX  L1 INT00      SET LOOP ERROR                8B303760
01EB 00 6D000521          STX  L1 LPERR+1    *RETURN                       8B303770
                    *                                                    8B303780
                    ********************************************         8B303790
01ED 00 440004F5          BSI  L ERROR       PRINT POLL ERROR      SRC     8B303800
01EF 0  0B70              DC     INM23       MESSAGE TAG                   8B303810
01F0 00 44000523          BSI  L LOG         PRINT FIX COMMAND             8B303820
01F2 0  0B89              DC     INM24                                     8B303830
                    ********************************************         8B303840
                    *                                                    8B303850
01F3 00 4C00013C          BSC  L WT1         GO TO WAIT 1                  8B303860
                    *                                                    8B303870
                    *                  ROUTINE 1 CONSTANTS               8B303880
                    *                                                    8B303890
01F5 0  0601        VCTOR DC     POLL       TRANSFER VECTOR               8B303900
01F6 0  0000        ICTR  DC     0          I COUNT ON INTERRUPT          8B303910
01F7 0  0104        XIOCK DC     PL1        XIO CHECK CONSTANT            8B303920
01F8 0  0105        BSICK DC     PL2        BSI CHECK CONSTANT            8B303930
01F9 0  0001        CN001 DC     1          CONSTANT 1                    8B303940
01FA    0000              BSS  E                                          8B303950
01FA 0  0017        XIO   DC     /0017       X                            8B303960
01F8 0  3926              DC     /3926       IO                           8B303970
01FC 0  0032        BSI   DC     /0032       B                            8B303980
01FD 0  1239              DC     /1239       SI                           8B303990
                    *                                                    8B304000
                    ********************************************         8B304010
                    *                  ROUTINE NUMBER TWO                8B304020
                    ********************************************         8B304030
                    *                                                    8B304040
01FE 00 C4000931    INT01 LD   L INLVT+3     GET HEX 2                     8B304050
0200 00 D4000975          STO  L INM03+7     SET ROUTINE NUMBER            8B304060
0202 00 D400098A          STO  L INM04+7     IN ERROR MESSAGES             8B304070
0204 00 D40009A1          STO  L INM05+7                                   8B304080
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0206 00 D400098B          STO  L  INM06+7                          8B304090
                  *                                                8B304100
0209 00 440004AA          BSI  L  LVLST      GO SET INTERPT ADRSS  8B304110
                  *                                                8B304120
020A 00 C4000280          LD   L  CN101                            8B304130
020C 00 D4000281          STO  L  CN102      SET 1ST PASS SWITCH   8B304140
020E 00 C4000284          LD   L  CN105      SET PASS SWITCH       8B304150
0210 00 D4000285          STO  L  PSSW                             8B304160
                  *                                                8B304170
0212 00 C4000282  RT100   LD   L  CN103                            8B304180
0214 00 D4000286          STO  L  ECKSW      SE LVL ER CHECK SW.   8B304190
0216 00 65800198          LDX  I1 LVSAV                            8B304200
0218 0  7101              MDX   1 1          IX 1 = NO.LEVELS +1   8B304210
0219 00 66800198          LDX  I2 LVSAV                            8B304220
021B 0  7201              MDX   2 1          IX 2 = NO.LEVELS +1   8B304230
021C 00 67000226          LDX  L3 RT101                            8B304240
021E 00 6F000521          STX  L3 LPERR+1    SET LOOP ERR RETURN   8B304250
                  *                                                8B304260
0220 00 6780018E          LDX  I3 LVLIX      SET UP INTERRUPT      8B304270
0222 00 CF00028C          LDD  L3 XIOCC      IOCC                  8B304280
0224 00 DC00028A          STD  L  ISINT                            8B304290
                  *                                                8B304300
0226 00 C600092E  RT101   LD   L2 INLVT      SET REQUEST NUMBER    8B304310
0228 00 D4000979          STO  L  INM03+11   IN ERROR MESSAGES     8B304320
022A 00 D400098E          STO  L  INM04+11                         8B304330
022C 00 D40009A5          STO  L  INM05+11                         8B304340
022E 00 D4000A4F          STO  L  INM14+10                         8B304350
                  *                                                8B304360
0230 0  0859              XIO      ISINT     ISSUE PROGMD INTRPT   8B304370
0231 0  1000              NOP                                      8B304380
0232 00 440006D7          BSI  L  SERVC      PRGM OPERATION PROT SRC 8B304390
                  *                                                8B304400
0234 00 C4000281  RT109   LD   L  CN102      REQUEST DID NOT INRP  8B304410
0236 0  4818              BSC      ←                               8B304420
0237 0  7003              MDX      RT104     NOT 1ST PASS  OK      8B304430
                  *                                                8B304440
                  ************************************************ 8B304450
0238 00 440004F5          BSI  L  ERROR      PRINT REQUEST FAILED SRC 8B304460
023A 0  096E              DC       INM03     TO INTERRUPT          8B304470
                  ************************************************ 8B304480
                  *                                                8B304490
                  *                RETURN FROM TRAP ROUTINES       8B304500
                  *                                                8B304510
023B 0  71FF      RT104   MDX   1 -1         CK IF ALL LVLS DONE   8B304520
023C 0  701C              MDX      RT105     NO                    8B304530
023D 00 74FF0286          MDX  L   ECKSW,-1  LEVEL ERROR CHECKED   8B304540
023F 0  7027              MDX      RT106     NO                    8B304550
0240 00 74FF0285          MDX  L   PSSW,-1   SKIP IF 500 PASSES    8B304560
0242 0  70CF              MDX      RT100                           8B304570
                  *                                                8B304580
                  *                1ST PASS COMPLETE CHECK IF      8B304590
                  *                MODE IS RUN WITHOUT STOPS       8B304600
                  *                                                8B304610
0243 00 C4000199          LD   L  RUNSW      GET RUN SWITCH        8B304620
0245 00 4C200250          BSC  L  RT110,Z    RUN WITH OUT STOPS    8B304630
                  *                                                8B304640
                  *                RUN NORMAL PROGRAM MODE         8B304650
                  *                                                8B304660
0247 0  C039              LD       CN102     GET 1ST PASS SWITCH   8B304670
0248 0  4820              BSC      Z                               8B304680
0249 0  702F              MDX      RT107     1ST PASS              8B304690
                  *                                                8B304700
                  *                ROUTINE ONE COMPLETE            8B304710
                  *                                                8B304720
024A 00 440004A0          BSI  L  NEST1      SET NEST ADDRESSES    8B304730
                  *                                                8B304740
                  ************************************************ 8B304750
024C 00 44000523          BSI  L  LOG        PRINT TURN DISABLE   SRC 8B304760
```



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024E 0  095E              DC       INM02     SWITCH OFF            8B304770
                  ************************************************ 8B304780
                  *                                                8B304790
024F 0  3005      WT5     WAIT     5         TURN DISABLE SW OFF   8B304800
                  *                                                8B304810
0250 00 C400018F  RT110   LD   L   RTNNO     PREPARE SEQUENCE CK   8B304820
0252 0  902F              S        CN103                           8B304830
0253 00 D4000191          STO  L   SEQCK                           8B304840
                  *                                                8B304850
0255 00 4400048E          BSI  L   INTST     SET SPURIOUS INT ADR  8B304860
                  *                                                8B304870
0257 00 4C000177          BSC  L   RTNRT     RETURN TO CONTROL     8B304880
                  *                                                8B304890
0259 0  C030      RT105   LD       ISINT     GET IOCC ADDRS WD     8B304900
025A 0  4808              BSC      +         CK BIT 0 = 1          8B304910
025B 0  7004              MDX      RT108     BIT 0 = 1             8B304920
025C 0  1001              SLA      1                               8B304930
025D 0  D02C              STO      ISINT                           8B304940
025E 0  72FF              MDX    2 -1        SET FOR NEXT LVL. NO  8B304950
025F 0  70C6              MDX      RT101     CONTINUE              8B304960
                  *                                                8B304970
0260 0  C02A      RT108   LD       ISINT+1   CLEAR BIT 15 FROM     8B304980
0261 0  901E              S        CN101     IOCC CONTROL WORD     8B304990
0262 0  D028              STO      ISINT+1                         8B305000
0263 0  C01C              LD       CN101     SET BIT 13 IN IOCC    8B305010
0264 0  1002              SLA      2         ADDRESS WORD          8B305020
0265 0  D024              STO      ISINT                           8B305030
0266 0  70F7              MDX      RT105+5                         8B305040
                  *                                                8B305050
0267 0  72FF      RT106   MDX    2 -1                              8B305060
0268 0  1000              NOP                                      8B305070
0269 00 C600092E          LD   L2  INLVT     LEVEL ERROR           8B305080
026B 00 D4000979          STO  L   INM03+11  SET IN ERROR          8B305090
026D 00 D400098E          STO  L   INM04+11  *MESSAGES             8B305100
026F 00 D40009A5          STO  L   INM05+11                        8B305110
0271 00 D4000A4F          STO  L   INM14+10                        8B305120
0273 00 67000277          LDX  L3  RT106+16                        8B305130
0275 00 6F000521          STX  L3  LPERR+1   LOOP ERROR RETURN     8B305140
                  *                                                8B305150
0277 0  0100              DC       /0100     ILLEGAL OP CODE       8B305160
                  *                                                8B305170
                  *                ILLEGAL OP CODE DID             8B305180
                  *                NOT INTERRUPT                   8B305190
                  *                                                8B305200
0278 0  70B8              MDX      RT109                           8B305210
                  *                                                8B305220
0279 0  1010      RT107   SLA      16                              8B305230
027A 0  D006              STO      CN102     CLEAR 1ST PASS SW.    8B305240
                  *                                                8B305250
                  ************************************************ 8B305260
027B 00 44000523          BSI  L   LOG       PRINT TURN DISABLE   SRC 8B305270
027D 0  0949              DC       INM01     SWITCH ON             8B305280
                  ************************************************ 8B305290
                  *                                                8B305300
027E 0  3004      WT4     WAIT     4         SET DISABLE SW ON     8B305310
                  *                                                8B305320
027F 0  708E              MDX      RT100-4   GO MAKE 2ND PASS      8B305330
                  *                                                8B305340
                  *                                                8B305350
                  *                ROUTINE TWO CONSTANTS           8B305360
                  *                                                8B305370
0280 0  0001      CN101   DC       1                               8B305380
0281 0  0000      CN102   DC       0         1ST PASS SWITCH       8B305390
0282 0  0002      CN103   DC       2                               8B305400
0283 0  06D7      CN104   DC       SERVC                           8B305410
0284 0  01F4      CN105   DC       /01F4     PASS CONSTANT         8B305420
0285 0  0000      PSSW    DC       0         PASS SWITCH           8B305430
                  *                                                8B305440
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0286 0  0000        ECKSW DC      0          LEVEL ERR CHECK SW.      8B305450
                    *                                                8B305460
0288 00 00000000          DEC     0                                  8B305470
028A 0  0000        ISINT DC      0          PROGRAMED INTERRUPT      8B305480
0288 0  0000              DC      0          IOCC                     8B305490
                    *                                                8B305500
028C 0  0010        XIOCC DC      /0010      12 LEVELS OF INTRPT      8B305510
028D 0  04A0              DC      /04A0                               8B305520
028E 0  1000              DC      /1000      18 LEVELS OF INTRP       8B305530
028F 0  04A1              DC      /04A1                               8B305540
0290 0  0040              DC      /0040      24 LEVELS OF INTRPT      8B305550
0291 0  04A1              DC      /04A1                               8B305560
                    *                                                8B305570
                    *                                                8B305580
                    ************************************************ 8B305590
                    *                ROUTINE NUMBER THREE            * 8B305600
                    ************************************************ 8B305610
                    *                                                8B305620
0292 00 C4000932    INT02 LD   L  INLVT+4    GET HEX 3                8B305630
0294 00 D4000A5F          STO  L  INM15+7    SET IN LOG MESSAGE       8B305640
                    *                                                8B305650
0296 00 44000488          BSI  L  PRIST      GO SET TRAP ADDRESS  SRC 8B305660
                    *                                                8B305670
0298 00 6580018E          LDX  I1 LVLIX      SET IOCC FOR LOWEST      8B305680
029A 00 CD00028C          LDD  L1 XIOCC      INTERRUPT LEVEL          8B305690
029C 0  D815              STD     CN200                               8B305700
                    *                                                8B305710
029D 00 67800198          LDX  I3 LVSAV      NUMBER OF INTERRUPTS     8B305720
029F 0  7302              MDX  3 2           TO BE GENERATED          8B305730
                    *                                                8B305740
02A0 0  6100              LDX  1 0           PRINT TABLE INDEX        8B305750
02A1 0  6200              LDX  2 0                                    8B305760
                    *                                                8B305770
02A2 0  080F              XIO     CN200      ISSUE INTERRUPT          8B305780
02A3 0  1000              NOP                                         8B305790
                    *                                                8B305800
                    *              RETURN FROM TRAP ROUTINES         8B305810
                    *                                                8B305820
02A4 00 440004E2          BSI  L  PRIPT      GO OUTPUT PRIO. SEQ      8B305830
                    *                                                8B305840
02A6 00 4400048E          BSI  L  INTST      SET SPURIOUS INT ADR     8B305850
                    *                                                8B305860
02A8 00 C400018F          LD   L  RTNNO      PREPARE SEQUENCE CK      8B305870
02AA 0  9009              S       CN201                               8B305880
02A8 00 D4000191          STO  L  SEQCK                               8B305890
                    *                                                8B305900
02AD 00 4C000177          BSC  L  RTNRT      RETURN TO CONTROL        8B305910
                    *                                                8B305920
                    *              ROUTINE THREE CONSTANTS           8B305930
                    *                                                8B305940
0280 00 00000000          DEC     0                                  8B305950
0282 0  0000        CN200 DC      0          INTERRUPT IOCC           8B305960
0283 0  0000              DC      0                                   8B305970
                    *                                                8B305980
0284 0  0003        CN201 DC      3          CONSTANT 3               8B305990
                    *                                                8B306000
                    ************************************************ 8B306010
                    *                ROUTINE NUMBER FOUR             * 8B306020
                    ************************************************ 8B306030
                    *                                                8B306040
0285 00 C4000933    INT03 LD   L  INLVT+5    GET HEX 4                8B306050
0287 00 D4000975          STO  L  INM03+7    SET RTN NO. IN ERROR     8B306060
0289 00 D400098A          STO  L  INM04+7    *MESSAGES                8B306070
                    *                                                8B306080
0288 00 440004AA          BSI  L  LVLST      GO SET UP TRAP ADDRS     8B306090
028D 0  C0C6              LD      CN105      SET PASS SWITCH          8B306100
028E 0  D0C6              STO     PSSW                                8B306110
                    *                                                8B306120
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028F 00 C4000280    RT300 LD   L  CN101                               8B306130
02C1 0  D057              STO     CN300      SET 1ST PASS SW.         8B306140
                    *                                                8B306150
02C2 00 650002D0          LDX  L1 RT301      SET UP LOOP ON           8B306160
02C4 00 6D000521          STX  L1 LPERR+1    ERROR RETURN             8B306170
                    *                                                8B306180
02C6 0  0859              XIO     MASK0      MASK UPPEP LEVELS        8B306190
02C7 0  085A              XIO     MASK1      MASK LOWER LEVELS        8B306200
                    *                                                8B306210
02C8 00 6780018E    RT306 LDX  I3 LVLIX      SET UP INITIAL IOCC      8B306220
02CA 00 CF00028C          LDD  L3 XIOCC      FOR LOWEST LEVEL         8B306230
02CC 0  D851              STD     CN301                               8B306240
                    *                                                8B306250
02CD 00 67800198          LDX  I3 LVSAV      SET IX FOR NO.OF         8B306260
02CF 0  7301              MDX  3 1           INTERRUPTS               8B306270
                    *                                                8B306280
02D0 00 C700092E    RT301 LD   L3 INLVT      GET REQUEST NUMBER       8B306290
02D2 00 D4000979          STO  L  INM03+11   SET IN ERROR             8B306300
02D4 00 D400098E          STO  L  INM04+11   *MESSAGES                8B306310
02D6 00 D4000A39          STO  L  INM13+11                            8B306320
                    *                                                8B306330
02D8 0  0845        RT302 XIO     CN301      ISSUE INTERRUPT          8B306340
02D9 0  1000              NOP                                         8B306350
                    *                                                8B306360
02DA 0  C03E              LD      CN300      GET 1ST PASS SWITCH      8B306370
02DB 0  4808              BSC     +                                   8B306380
02DC 0  7011              MDX     RT303      NOT 1ST PASS INTR ER     8B306390
                    *                                                8B306400
02DD 0  73FF        RT305 MDX  3 -1          CHECK IF ALL LVLS        8B306410
02DE 0  701A              MDX     RT304      NO                       8B306420
02DF 0  C039              LD      CN300      YES                      8B306430
02E0 0  4820              BSC     Z                                   8B306440
02E1 0  7012              MDX     RT311      1ST PASS COMPL.CNTNU     8B306450
02E2 00 74FF0285          MDX  L  PSSW,-1    SKIP IF 500 PASSES       8B306460
02E4 0  70DA              MDX     RT300                               8B306470
                    *                                                8B306480
                    *              ROUTINE COMPLETED                 8B306490
                    *                                                8B306500
02E5 00 4400048E          BSI  L  INTST      SET SPURIOUS INT ADR     8B306510
                    *                                                8B306520
02E7 00 C400018F          LD   L  RTNNO      PREPARE SEQUENCE CK      8B306530
02E9 0  9031              S       CN303                               8B306540
02EA 00 D4000191          STO  L  SEQCK                               8B306550
                    *                                                8B306560
02EC 00 4C000177          BSC  L  RTNRT      RETURN TO CONTROL        8B306570
                    *                                                8B306580
                    *                                                8B306590
                    *              REQ DID NOT INTRP MASK OFF        8B306600
                    *                                                8B306610
                    ************************************************ 8B306620
02EE 00 440004F5    RT303 BSI  L  ERROR      LOG REQUEST FAILED   SRC 8B306630
02F0 0  096E              DC      INM03      TO INTERRUPT             8B306640
                    ************************************************ 8B306650
                    *                                                8B306660
02F1 00 44000609          BSI  L  SVINT                               8B306670
02F3 0  70E9              MDX     RT305                               8B306680
                    *                                                8B306690
                    *              SET UP FOR 2ND PASS               8B306700
                    *                                                8B306710
02F4 0  1010        RT311 SLA     16                                  8B306720
02F5 0  D023              STO     CN300      CLEAR 1ST PASS SWITC     8B306730
                    *                                                8B306740
02F6 0  082D              XIO     UMSK0      UNMASK UPPER LEVELS      8B306750
02F7 0  082E              XIO     UMSK1      UNMASK LOWER LEVELS      8B306760
                    *                                                8B306770
02F8 0  70CF              MDX     RT306      GO MAKE SECOND PASS      8B306780
                    *                                                8B306790
02F9 0  C024        RT304 LD      CN301      MODIFY IOCC FOR          8B306800
```

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                        ABS
02BC                    ORG     /3001                                   8B300010
                                                                        8B300020
                                                                        8B300030
                *               ** PROGRAM WAITS **                     8B300040
                *                                                       8B300050
3001 0  013D            DC      WT1+1       WAIT 1                      8B300060
                *                                                       8B300070
                *           WAIT OCCURS AFTER PROGRAM                   8B300080
                *           HAS LOADED. PERFORM SETUP,                  8B300090
                *           ENTER DESIRED OPTIONS IN                    8B300100
                *           DATA ENTRY SWITCHES AND                     8B300110
                *           DEPRESS START.                              8B300120
                *                                                       8B300130
3002 0  0175            DC      WT2+1       WAIT 2                      8B300140
                *                                                       8B300150
                *           PROGRAM RAN TO COMPLETION.                  8B300160
                *           DEPRESSING START RETURNS                    8B300170
                *           PROGRAM TO WAIT 1.                          8B300180
                *                                                       8B300190
3003 0  0184            DC      WT3+1       WAIT 3                      8B300200
                *                                                       8B300210
                *           PROGRAM SEQUENCE ERROR.                     8B300220
                *           SUPERVISOR SECTION OF                       8B300230
                *           PROGRAM DECTED AN ERROR                     8B300240
                *           IN ROUTINE SEQUENCING.                      8B300250
                *                                                       8B300260
3004 0  027F            DC      WT4+1       WAIT 4                      8B300270
                *                                                       8B300280
                *           ROUTINE 2 WAIT. TURN THE                    8B300290
                *           DISABLE INTERRUPT SWITCH                    8B300300
                *           ON AND DEPRESS THE START                    8B300310
                *           PUSHBUTTON.                                 8B300320
                *                                                       8B300330
3005 0  0250            DC      WT5+1       WAIT 5                      8B300340
                *                                                       8B300350
                *           ROUTINE 2 WAIT. TURN THE                    8B300360
                *           DISABLE INTERRUPT SWITCH                    8B300370
                *           OFF. PROGRAM SHOULD START                   8B300380
                *           EXECUTION. IF IT DOES NOT                   8B300390
                *           (DUE TO INTERNAL INTERRUPT                  8B300400
                *           FAILURE)PRESS START BUTTON                  8B300410
                *           TO CONTINUE.                                8B300420
                *                                                       8B300430
3006 0  035C            DC      WT6+1       WAIT 6                      8B300440
                *                                                       8B300450
                *           ROUTINE 5 WAIT. WRONG ILSW                  8B300460
                *           WAS SENSED ON STORAGE                       8B300470
                *           PROTECT VIOLATE INTERRUPT.                  8B300480
                *           THE ILSW IS IN THE A REG.                   8B300490
                *           PUSH START TO CONTINUE.                     8B300500
                *                                                       8B300510
3007 0  0386            DC      WT7+1       WAIT 7                      8B300520
                *                                                       8B300530
                *           ROUTINE 5 WAIT. SET MODE                    8B300540
                *           SWITCH TO TRACE AND PRESS                   8B300550
                *           START. PROGRAM WILL CHECK                   8B300560
                *           TRACE INTERRUPT.                            8B300570
                *                                                       8B300580
3008 0  038E            DC      WT8+1       WAIT 8                      8B300590
                *                                                       8B300600
                *           ROUTINE 5 WAIT. SET MODE                    8B300610
                *           SWITCH TO RUN AND DEPRESS                   8B300620
                *           START BUTTON.                               8B300630
                *                                                       8B300640
3009 0  03CF            DC      WT9+1       WAIT 9                      8B300650
                *                                                       8B300660
                *           ROUTINE 5 WAIT. SET MODE                    8B300670
                *           SWITCH TO TRACE AND PRESS                   8B300680
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                *           START. PROGRAM WILL MAKE                    8B300690
                *           AN INTERRUPT PRIORITY                       8B300700
                *           CHECK IN TRACE MODE                         8B300710
                *           OPERATION.                                  8B300720
                *                                                       8B300730
300A 0  03D6            DC      WTA+1       WAIT A                      8B300740
                *                                                       8B300750
                *           ROUTINE 5 WAIT. SET MODE                    8B300760
                *           SWITCH TO RUN AND DEPRESS                   8B300770
                *           START BUTTON.                               8B300780
                *                                                       8B300790
300B 0  03E6            DC      WTB+1       WAIT B                      8B300800
                *                                                       8B300810
                *           ROUTINE 5 WAIT. DEPRESS                     8B300820
                *           C.E. INTERRUPT BUTTON.                      8B300830
                *           PROGRAM WILL MAKE AN                        8B300840
                *           INTERRUPT PRIOPITY CHECK                    8B300850
                *           WITH THE C.E. INTERRUPT                     8B300860
                *           LEVEL.                                      8B300870
                *                                                       8B300880
300C 0  03F7            DC      WTC+1       WAIT C                      8B300890
                *                                                       8B300900
                *           ROUTINE 5 WAIT. SET THE                     8B300910
                *           DISABLE INTERRUPT SWITCH                    8B300920
                *           ON,THEN DEPRESS THE C.E.                    8B300930
                *           INTERRUPT AND CONSOLE                       8B300940
                *           INTERRUPT BUTTONS. NO                       8B300950
                *           INTERRUPT SHOULD OCCUR.                     8B300960
                *           THEN SET TRACE MODE AND                     8B300970
                *           DEPRESS START.                              8B300980
                *                                                       8B300990
300D 0  040A            DC      WTD+1       WAIT D                      8B301000
                *                                                       8B301010
                *           ROUTINE 5 WAIT. SET THE                     8B301020
                *           MODE SWITCH TO RUN AND                      8B301030
                *           DEPRESS START.                              8B301040
                *                                                       8B301050
300E 0  040E            DC      WTE+1       WAIT E                      8B301060
                *                                                       8B301070
                *           ROUTINE 5 WAIT. TURN THE                    8B301080
                *           DISABLE INTERRUPT SWITCH                    8B301090
                *           OFF. PROGRAM SHOULD CONTI-                  8B301100
                *           NUE. IF IT DOES NOT(DUE                     8B301110
                *           TO DISABLE INTERRUPT IN-                    8B301120
                *           OPERATIVE* ,HEN PUSH START                  8B301130
                *           TO CONTINUE.                                8B301140
                *                                                       8B301150
300F 0  045D            DC      WTF+1       WAIT F                      8B301160
                *                                                       8B301170
                *           ROUTINE 6 WAIT. SET MODE                    8B301180
                *           SWITCH TO TRACE AND PRESS                   8B301190
                *           START BUTTON. PROGRAM WILL                  8B301200
                *           CHECK TRACE MODE OPERATION                  8B301210
                *                                                       8B301220
3010 0  0475            DC      WT10+1      WAIT 10                     8B301230
                *                                                       8B301240
                *           ROUTINE 6 WAIT. SET MODE                    8B301250
                *           SWITCH TO RUN AND DEPRESS                   8B301260
                *           START BUTTON.                               8B301270
                *                                                       8B301280
3011 0  051F            DC      WT11+1      WAIT 11                     8B301290
                *                                                       8B301300
                *           HALT ON ERROR OPTION                        8B301310
                *           REQUESTED. DEPRESS START                    8B301320
                *           BUTTON TO CONTINUE.                         8B301330
                *                                                       8B301340
3012 0  0538            DC      WT12+1      WAIT 12                     8B301350
                *                                                       8B301360
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                  *                1443 NOT READY. MAKE 1443     8B301370
                  *                READY AND DEPRESS START.      8B301380
                  *                                              8B301390
3013 0  053A             DC    WT13+1    WAIT 13                 8B301400
                  *                                              8B301410
                  *                1443 BUSY. THIS IS AN         8B301420
                  *                ERROR CONDITION. REMEDY       8B301430
                  *                CAUSE,THEN PUSH START TO      8B301440
                  *                CONTINUE.                     8B301450
                  *                                              8B301460
3014 0  0553             DC    WT14+1    WAIT 14                 8B301470
                  *                                              8B301480
                  *                1816/1053 NUMBER 1 NOT        8B301490
                  *                READY. MAKE READY AND PUSH    8B301500
                  *                START TO CONTINUE.            8B301510
                  *                                              8B301520
3015 0  06C8             DC    WT15+1    WAIT 15                 8B301530
                  *                                              8B301540
                  *                THIS WAIT WILL OCCUR          8B301550
                  *                DURING ROUTINE 2 IF OPTION    8B301560
                  *                BIT SWITCH 8 IS NOT ON,AND    8B301570
                  *                AN ILSW ERROR IS DETECTED     8B301580
                  *                ON A PROG.GENERATED INTER-    8B301590
                  *                RUPT. THE ILSW IS IN THE      8B301600
                  *                A REG. DEPRESS START TO       8B301610
                  *                CONTINUE.                     8B301620
                  *                                              8B301630
3016                     ORG   300                               8B301640
012C 0  B300             DC    /B300     PID                     8B30165C
                  *                *                        *    8B301660
                  *                *  INTERRUPT FUNCT TEST  *    8B301670
                  *                *    **  INTRP  **       *    8B301680
                  *                *                        *    8B301690
                  *                ********.*****************    8B301700
                  *                                              8B301710
                  *                CONTROL ROUTINE               8B301720
                  *                                              8B301730
012D 00 4400048E  START BSI  L INTST     SET SPURIOUS INT ADR    8B301740
                  *                                              8B301750
012F 0  C864             LDD   CNC02     SET RESTART ADDRESS     8B301760
0130 00 DC000026         STD  L /0026    IN LOCATION 26          8B301770
0132 0  C863             LDD   CNC03                             8B301780
0133 00 DC000000         STD  L /0000                            8B301790
                  *                                              8B301800
0135 0  1010             SLA   16        CLEAR BIT SWITCH        8B301810
0136 0  D05B             STO   BSW00     *READ IN AREA AND BY    8B301820
0137 0  D061             STO   RUNSW     *PASS MAN CKS SWITCH    8B301830
0138 00 D4000428         STO  L CN400    CLEAR TRACE INDICATO    8B301840
013A 0  2C40             DC    /2C40     INSURE SP AREA IS       8B301850
013B 0  0429             DC    CN401     *CLEAR                  8B301860
                  *                                              8B301870
013C 0  3001      WT1    WAIT  1         ENTER PROG.OPTIONS      8B301880
                  *                                              8B301890
013D 0  084C             XIO   BSWO      READ BIT SWITCHES       8B301900
                  *                                              8B301910
013E 0  10A0      CON01  SLT   32        CLEAR A AND Q           8B301920
013F 0  C052             LD    BSW00     GET OPTION ENTRY        8B301930
0140 0  18C8             RTE   8                                 8B301940
0141 0  1010             SLA   16                                8B301950
0142 0  1081             SLT   1                                 8B301960
0143 0  D055             STO   RUNSW     SET RUN SWITCH          8B301970
0144 0  1010             SLA   16                                8B301980
0145 0  1081             SLT   1                                 8B301990
0146 0  D053             STO   OPIND     SET OUTPUT DEVICE ID    8B302000
                  *                                              8B302010
                  *                                              8B302020
                  *                DETERMINE NUMBER OF LEVELS    8B302030
                  *                                              8B302040
```



```
0147 0  C04A             LD     BSW00     GET OPTION ENTRIES          8B302050
0148 0  4810             BSC    -         SKIP IF BIT 0 ON            8B302060
0149 0  7004             MDX    CTRL1     BRANCH ON NOT BIT 0         8B302070
014A 0  6311             LDX  3 17        SET LEVEL INDICATOR         8B302080
014B 0  6B4C             STX  3 LVSAV     *FOR 18 LEVELS              8B302090
014C 0  6302             LDX  3 2         SET INDEX FOR 18 LVL        8B302100
014D 0  700A             MDX    CTRL3     CONTINUE                    8B302110
014E 0  1001      CTRL1  SLA    1         CHECK FOR BIT 1             8B302120
014F 0  4810             BSC    -         SKIP IF BIT 1 ON            8B302130
0150 0  7004             MDX    CTRL2     BRANCH ON NOT BIT 1         8B302140
0151 0  6317             LDX  3 23        SET LEVEL INDICATOR         8B302150
0152 0  6B45             STX  3 LVSAV     *FOR 24 LEVELS              8B302160
0153 0  6304             LDX  3 4         SET INDEX FOR 24 LVL        8B302170
0154 0  7003             MDX    CTRL3     CONTINUE                    8B302180
0155 0  630B      CTRL2  LDX  3 11        SET LEVEL INDICATOR         8B302190
0156 0  6B41             STX  3 LVSAV     *FOR 12 LEVELS              8B302200
0157 0  6300             LDX  3 0         SET INDEX FOR 12 LVL        8B302210
0158 0  6B35      CTRL3  STX  3 LVLIX     SAVE INDEX SETTING          8B302220
                  *                                                   8B302230
0159 0  1010      CON06  SLA    16                                    8B302240
015A 0  D034             STO    RTNNO     CLEAR ROUTN. NUMBER         8B302250
                  *                                                   8B302260
015B 0  082C      CNTRL  XIO    SNSWS     READ SENSE SWITCHES         8B302270
015C 0  1005             SLA    5         CHECK FOR LOOP RTN          8B302280
015D 0  180D             SRA    13                                    8B302290
015E 0  4808             BSC    +         SKIP IF LOOP ROUTINE        8B302300
015F 0  7002             MDX    *+2                                   8B302310
0160 0  D02E             STO    RTNNO                                 8B302320
0161 0  7006             MDX    CON05+2   GO EXECUTE ROUTINE          8B302330
0162 0  C02C             LD     RTNNO                                 8B302340
0163 0  902C             S      SIX       CK IF ALL RTNS RUN          8B302350
0164 0  4818             BSC    +-                                    8B302360
0165 0  7006             MDX    CON03     ALL ROUTINES HAVE RN        8B302370
0166 00 7401018F  CON05  MDX  L RTNNO,1   ADD 1 TO RTN.NO.            8B302380
0168 00 6580018F         LDX I1 RTNNO                                 8B302390
016A 00 4D80019A         BSC I1 RTN-1     EXIT TO ROUTINE             8B302400
                  *                                                   8B302410
                  *                 ALL ROUTINES HAVE RUN             8B302420
                  *                                                   8B302430
016C 0  081D      CON03  XIO    BSWO      READ BIT SWITCHES           8B302440
016D 0  C024             LD     BSW00     GET BIT SWITCHES            8B302450
016E 0  1804             SRA    4         CK LOOP PROGRAM             8B302460
016F 0  4804             BSC    E                                     8B302470
0170 0  70E8             MDX    CON06     LOOP PROGRAM                8B302480
                  *                                                   8B302490
                  *******************************************         8B302500
0171 00 44000523         BSI  L LOG       PRINT PROGRAM         SRC   8B302510
0173 0  09C9             DC     INM07     IS COMPLETE                 8B302520
                  *******************************************         8B302530
                  *                                                   8B302540
0174 0  3002      WT2    WAIT   2         PROGRAM COMPLETE            8B302550
0175 00 4C00012D         BSC  L START     PROGRAM RESTART             8B302560
                  *                                                   8B302570
                  *                 *** ROUTINE RETURN ***            8B302580
                  *                                                   8B302590
0177 0  C019      RTNRT  LD     SEQCK     SEQUENCE CHECK              8B302600
0178 0  4818             BSC    +-                                    8B302610
0179 0  70E1             MDX    CNTRL     CHECK OK                    8B302620
                  *                                                   8B302630
017A 00 6780018F         LDX I3 RTNNO                                 8B302640
017C 00 C700092F         LD  L3 INLVT+1   GET HEX.VALUE OF RTN        8B302650
017E 00 D4000A2C         STO  L INM12+15  SET IN MESSAGE              8B302660
                  *                                                   8B302670
                  *******************************************         8B302680
0180 00 44000523         BSI  L LOG       PRINT SEQUENCE        SRC   8B302690
0182 0  0A1D             DC     INM12     ERROR                       8B302700
                  *******************************************         8B302710
                  *                                                   8B302720
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0183 0  3003          WT3   WAIT    3           SEQUENCE ERROR                  8B302730
0184 00 4C00012D            BSC   L START                                       8B302740
                      *                                                       8B302750
                      *                    CONTROL ROUTINE CONSTANTS          8B302760
                      *                                                       8B302770
0186 00 00000000            DEC     0                                         8B302780
0188 0  0000          SNSWS DC      /0000       READ SENSE SW IOCC              8B302790
0189 0  0760                DC      /0760                                       8B302800
018A 0  0192          BSWO  DC      BSW00       READ BIT SWITCH IOCC            8B302810
018B 0  0240                DC      /0240                                       8B302820
                      *                                                       8B302830
018C 0  0193          BSW1  DC      BSW01        READ BIT SWITCH IOCC           8B302840
018D 0  0240                DC      /0240                                       8B302850
                      *                                                       8B302860
018E 0  0000          LVLIX DC      0           NO.OF LEVELS INDEX              8B302870
018F 0  0000          RTNNO DC      0           ROUTINE NUMBER                  8B302880
0190 0  0006          SIX   DC      6           CONSTANT 6                      8B302890
0191 0  0000          SEQCK DC      0           SEQUENCE CHECK SAVE             8B302900
                      *                                                       8B302910
0192 0  0000          BSW00 DC      0           BIT SW. CONTROL DATA            8B302920
0193 0  0000          BSW01 DC      0           NO INTERRUPT LEVELS             8B302930
                      *                                                       8B302940
0194 0  4C00          CNC02 DC      /4C00       RESTART INSTRUCTIONS            8B302950
0195 0  012D                DC      START                                       8B302960
0196 0  7025          CNC03 DC      /7025                                       8B302970
0197 0  4400                DC      /4400                                       8B302980
0198 0  0000          LVSAV DC      0           NO.INTR.LVLS SAVE               8B302990
0199 0  0000          RUNSW DC      0                                           8B303000
019A 0  0000          OPIND DC      0           OUTPUT DEVICE INDCTR            8B303010
                      *                                                       8B303020
                      *                    ROUTINE ADDRESSES                  8B303030
                      *                                                       8B303040
019B 0  01A6          RTN   DC      INT00       ROUTINE 1                       8B303050
019C 0  01FE                DC      INT01       ROUTINE 2                       8B303060
019D 0  0292                DC      INT02       ROUTINE 3                       8B303070
019E 0  02B5                DC      INT03       ROUTINE 4                       8B303080
019F 0  0328                DC      INT04       ROUTINE 5                       8B303090
01A0 0  0446                DC      INT05       ROUTINE 6                       8B303100
01A1 0  01A2                DC      INTER       INVALID ENTRY                   8B303110
                      *                                                       8B303120
                      ********************************************            8B303130
01A2 00 44000523      INTER BSI   L LOG         PRINT INVALID ENTRY  SRC       8B303140
01A4 0  089F                DC      INM25                                       8B303150
                      ********************************************            8B303160
                      *                                                       8B303170
01A5 0  7096                MDX     WT1         RETURN TO WAIT 1                8B303180
                      *                                                       8B303190
                      ********************************************            8B303200
                      *                    ROUTINE NUMBER ONE                 8B303210
                      ********************************************            8B303220
                      *                                                       8B303230
01A6 00 0C000320      INT00 XIO   L MASK0       MASK INTERRUPTS                 8B303240
01A8 00 0C000322            XIO   L MASK1                                       8B303250
                      *                                                       8B303260
01AA 0  631B                LDX     3 27        SET INTERRUPT                   8B303270
01AB 00 C40001F5            LD    L VCTOR       *TRANSFER VECTOR                8B303280
01AD 00 D7000007            STO   L3 7                                        8B303290
01AF 0  73FF                MDX     3 -1                                      8B303300
01B0 0  70FC                MDX     *-4                                       8B303310
                      *                                                       8B303320
01B1 0  C848                LDD     XIO         SET UP MESSAGE                  8B303330
01B2 00 DC000886            STD   L INM23+22                                  8B303340
01B4 00 CC00028C            LDD   L XIOCC       SET UP IOCC                     8B303350
01B6 00 DC00028A            STD   L ISINT                                     8B303360
01B8 0  630C                LDX     3 12        SET INTRP INDEX                 8B303370
01B9 00 650001C5            LDX   L1 PL1+1      SET UP TRAP ROUTINE             8B303380
01BB 00 6D000608            STX   L1 PLEXT+1    RETURN                          8B303390
01BD 00 0C000324            XIO   L UMSK0       UNMASK INTERRUPTS               8B303400
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01BF 00 0C000326            XIO   L UMSK1                                     8B303410
01C1 00 0C00028A      INO01 XIO   L ISINT       ISSUE INTRP  CHECK             8B303420
01C3 0  1000                NOP                *POLL ON XIO                    8B303430
01C4 0  701C          PL1   MDX     FAIL        INTERRUPT FAILED                8B303440
01C5 0  C030                LD      ICTR        CHECK FOR PROPER I              8B303450
01C6 0  F030                EOR     XIOCK       *COUNT ON INTERRUPT             8B303460
01C7 00 4C2001E9            BSC   L POLER,Z    BRANCH ON WRONG I CT            8B303470
                      *                                                       8B303480
01C9 0  C832                LDD     BSI         SET UP MESSAGE                  8B303490
01CA 00 DC000886            STD   L INM23+22                                  8B303500
01CC 00 650001D6            LDX   L1 PL2+1      SET UP TRAP ROUTINE             8B303510
01CE 00 6D000608            STX   L1 PLEXT+1    *RETURN                         8B303520
                      *                                                       8B303530
01D0 00 0C00028A            XIO   L ISINT       ISSUE INTRP   CHECK             8B303540
01D2 0  4000                BSI     *           *POLL ON BSI                    8B303550
01D3 0  1000                NOP                                               8B303560
01D4 0  1000                NOP                                               8B303570
01D5 0  7004          PL2   MDX     *+4         BRNCH IF INTRP FAILD            8B303580
01D6 0  C01F                LD      ICTR        CHECK FOR PROPER I              8B303590
01D7 0  F020                EOR     BSICK       *COUNT ON INTERRUPT             8B303600
01D8 00 4C2001E9            BSC   L POLER,Z    BRANCH ON WRONG I CT            8B303610
                      *                                                       8B303620
01DA 0  C084          INO02 LD      RTNNO       PREPARE SEQUENCE CK             8B303630
01DB 0  F01D                EOR     CN001                                       8B303640
01DC 0  D084                STO     SEQCK                                       8B303650
01DD 00 4400048E            BSI   L INTST       SETUP XFER VECTORS   SRC        8B303660
                      *                                                       8B303670
01DF 00 4C000177            BSC   L RTNRT       RETURN TO CONTROL               8B303680
01E1 00 C400028A      FAIL  LD    L ISINT       MODIFY IOCC FOR                 8B303690
01E3 0  1001                SLA     1           *NEXT INTERRUPT                 8B303700
01E4 00 D400028A            STO   L ISINT                                     8B303710
01E6 0  73FF                MDX     3 -1                                      8B303720
01E7 0  70D9                MDX     INO01       CONTINUE                        8B303730
01E8 0  70F1                MDX     INO02       END ROUTINE                     8B303740
                      *                                                       8B303750
01E9 00 650001A6      POLER LDX   L1 INT00      SET LOOP ERROR                  8B303760
01EB 00 6D000521            STX   L1 LPERR+1    *RETURN                         8B303770
                      *                                                       8B303780
                      ********************************************            8B303790
01ED 00 440004F5            BSI   L ERROR       PRINT POLL ERROR     SRC        8B303800
01EF 0  0870                DC      INM23       MESSAGE TAG                     8B303810
01F0 00 44000523            BSI   L LOG         PRINT FIX COMMAND               8B303820
01F2 0  0889                DC      INM24                                       8B303830
                      ********************************************            8B303840
                      *                                                       8B303850
01F3 00 4C00013C            BSC   L WT1         GO TO WAIT 1                    8B303860
                      *                                                       8B303870
                      *                    ROUTINE 1 CONSTANTS                8B303880
                      *                                                       8B303890
01F5 0  0601          VCTOR DC      POLL        TRANSFER VECTOR                 8B303900
01F6 0  0000          ICTR  DC      0           I COUNT ON INTERRUPT            8B303910
01F7 0  01C4          XIOCK DC      PL1         XIO CHECK CONSTANT              8B303920
01F8 0  01C5          BSICK DC      PL2         BSI CHECK CONSTANT              8B303930
01F9 0  0001          CN001 DC      1           CONSTANT 1                      8B303940
01FA    0000                BSS   E                                           8B303950
01FA 0  0017          XIO   DC      /0017        X                              8B303960
01FB 0  3926                DC      /3926       IO                              8B303970
01FC 0  0032          BSI   DC      /0032        B                              8B303980
01FD 0  1239                DC      /1239       SI                              8B303990
                      *                                                       8B304000
                      ********************************************            8B304010
                      *                    ROUTINE NUMBER TWO                 8B304020
                      ********************************************            8B304030
                      *                                                       8B304040
01FE 00 C4000931      INT01 LD    L INLVT+3     GET HEX 2                       8B304050
0200 00 D4000975            STO   L INM03+7     SET ROUTINE NUMBER              8B304060
0202 00 D400098A            STO   L INM04+7     IN ERROR MESSAGES               8B304070
0204 00 D40009A1            STO   L INM05+7                                     8B304080
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INTERRUPT FUNCTION TEST

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0206 00 D400098B          STO  L  INM06+7                         8B304090
                     *                                            8B304100
0208 00 440004AA          BSI  L  LVLST      GO SET INTERPT ADRSS 8B304110
                     *                                            8B304120
020A 00 C4000280          LD   L  CN101                           8B304130
020C 00 D4000281          STO  L  CN102      SET 1ST PASS SWITCH  8B304140
020E 00 C4000284          LD   L  CN105      SET PASS SWITCH      8B304150
0210 00 D4000285          STO  L  PSSW                            8B304160
                     *                                            8B304170
0212 00 C4000282     RT100 LD  L  CN103                           8B304180
0214 00 D4000286          STO  L  ECKSW      SE LVL ER CHECK SW.  8B304190
0216 00 65800198          LDX  I1 LVSAV                           8B304200
0218 0  7101              MDX   1 1          IX 1 = NO.LEVELS +1  8B304210
0219 00 66800198          LDX  I2 LVSAV                           8B304220
021B 0  7201              MDX   2 1          IX 2 = NO.LEVELS +1  8B304230
021C 00 67000226          LDX  L3 RT101                           8B304240
021E 00 6F000521          STX  L3 LPERR+1    SET LOOP ERR RETURN  8B304250
                     *                                            8B304260
0220 00 6780018E          LDX  I3 LVLIX      SET UP INTERRUPT     8B304270
0222 00 CF00028C          LDD  L3 XIOCC      IOCC                 8B304280
0224 00 DC00028A          STD  L  ISINT                           8B304290
                     *                                            8B304300
0226 00 C600092E     RT101 LD  L2 INLVT      SET REQUEST NUMBER   8B304310
0228 00 D4000979          STO  L  INM03+11   IN ERROR MESSAGES    8B304320
022A 00 D400098E          STO  L  INM04+11                        8B304330
022C 00 D40009A5          STO  L  INM05+11                        8B304340
022E 00 D4000A4F          STO  L  INM14+10                        8B304350
                     *                                            8B304360
0230 0  0859              XIO     ISINT      ISSUE PROGMD INTRPT  8B304370
0231 0  1000              NOP                                     8B304380
0232 00 440006D7          BSI  L  SERVC      PRGM OPERATION PROT  SRC 8B304390
                     *                                            8B304400
0234 00 C4000281     RT109 LD  L  CN102      REQUEST DID NOT INRP 8B304410
0236 0  4818              BSC     -                               8B304420
0237 0  7003              MDX     RT104      NOT 1ST PASS  OK     8B304430
                     *                                            8B304440
                     ******************************************** 8B304450
0238 00 440004F5          BSI  L  ERROR      PRINT REQUEST FAILED SRC 8B304460
023A 0  096E              DC      INM03      TO INTERRUPT         8B304470
                     ******************************************** 8B304480
                     *                                            8B304490
                     *              RETURN FROM TRAP ROUTINES     8B304500
                     *                                            8B304510
023B 0  71FF         RT104 MDX  1 -1         CK IF ALL LVLS DONE  8B304520
023C 0  701C              MDX     RT105      NO                   8B304530
023D 00 74FF0286          MDX  L  ECKSW,-1   LEVEL ERROR CHECKED  8B304540
023F 0  7027              MDX     RT106      NO                   8B304550
0240 00 74FF0285          MDX  L  PSSW,-1    SKIP IF 500 PASSES   8B304560
0242 0  70CF              MDX     RT100                           8B304570
                     *                                            8B304580
                     *              1ST PASS COMPLETE CHECK IF    8B304590
                     *              MODE IS RUN WITHOUT STOPS     8B304600
                     *                                            8B304610
0243 00 C4000199          LD   L  RUNSW      GET RUN SWITCH       8B304620
0245 00 4C200250          BSC  L  RT110,Z    RUN WITH OUT STOPS   8B304630
                     *                                            8B304640
                     *              RUN NORMAL PROGRAM MODE       8B304650
                     *                                            8B304660
0247 0  C039              LD      CN102      GET 1ST PASS SWITCH  8B304670
0248 0  4820              BSC     Z                               8B304680
0249 0  702F              MDX     RT107      1ST PASS             8B304690
                     *                                            8B304700
                     *              ROUTINE ONE COMPLETE          8B304710
                     *                                            8B304720
024A 00 440004A0          BSI  L  NEST1      SET NEST ADDRESSES   8B304730
                     *                                            8B304740
                     ******************************************** 8B304750
024C 00 44000523          BSI  L  LOG        PRINT TURN DISABLE   SRC 8B304760
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INTERRUPT FUNCTION TEST

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024E 0  095E              DC      INM02      SWITCH OFF           8B304770
                     ******************************************** 8B304780
                     *                                            8B304790
024F 0  3005         WT5  WAIT    5          TURN DISABLE SW OFF  8B304800
                     *                                            8B304810
0250 00 C400018F     RT110 LD  L  RTNNO      PREPARE SEQUENCE CK  8B304820
0252 0  902F              S       CN103                           8B304830
0253 00 D4000191          STO  L  SEQCK                           8B304840
                     *                                            8B304850
0255 00 4400048E          BSI  L  INTST      SET SPURIOUS INT ADR 8B304860
                     *                                            8B304870
0257 00 4C000177          BSC  L  RTNRT      RETURN TO CONTROL    8B304880
                     *                                            8B304890
0259 0  C030         RT105 LD     ISINT      GET IOCC ADDRS WD    8B304900
025A 0  4808              BSC     +          CK BIT 0 = 1         8B304910
025B 0  7004              MDX     RT108      BIT 0 = 1            8B304920
025C 0  1001              SLA     1                               8B304930
025D 0  D02C              STO     ISINT                           8B304940
025E 0  72FF              MDX   2 -1         SET FOR NEXT LVL. NO 8B304950
025F 0  70C6              MDX     RT101      CONTINUE             8B304960
                     *                                            8B304970
0260 0  C02A         RT108 LD     ISINT+1    CLEAR BIT 15 FROM    8B304980
0261 0  901E              S       CN101      IOCC CONTROL WORD    8B304990
0262 0  D028              STO     ISINT+1                         8B305000
0263 0  C01C              LD      CN101      SET BIT 13 IN IOCC   8B305010
0264 0  1002              SLA     2          ADDRESS WORD         8B305020
0265 0  D024              STO     ISINT                           8B305030
0266 0  70F7              MDX     RT105+5                         8B305040
                     *                                            8B305050
0267 0  72FF         RT106 MDX  2 -1                              8B305060
0268 0  1000              NOP                                     8B305070
0269 00 C600092E          LD   L2 INLVT      LEVEL ERROR          8B305080
026B 00 D4000979          STO  L  INM03+11   SET IN ERROR         8B305090
026D 00 D400098E          STO  L  INM04+11   *MESSAGES            8B305100
026F 00 D40009A5          STO  L  INM05+11                        8B305110
0271 00 D4000A4F          STO  L  INM14+10                        8B305120
0273 00 67000277          LDX  L3 RT106+16                        8B305130
0275 00 6F000521          STX  L3 LPERR+1    LOOP ERROR RETURN    8B305140
                     *                                            8B305150
0277 0  0100              DC      /0100      ILLEGAL OP CODE      8B305160
                     *                                            8B305170
                     *              ILLEGAL OP CODE DID           8B305180
                     *              NOT INTERRUPT                 8B305190
                     *                                            8B305200
0278 0  70B8              MDX     RT109                           8B305210
                     *                                            8B305220
0279 0  1010         RT107 SLA    16                              8B305230
027A 0  D006              STO     CN102      CLEAR 1ST PASS SW.   8B305240
                     *                                            8B305250
                     ******************************************** 8B305260
027B 00 44000523          BSI  L  LOG        PRINT TURN DISABLE   SRC 8B305270
027D 0  0949              DC      INM01      SWITCH ON            8B305280
                     ******************************************** 8B305290
                     *                                            8B305300
027E 0  3004         WT4  WAIT    4          SET DISABLE SW ON    8B305310
                     *                                            8B305320
027F 0  708E              MDX     RT100-4    GO MAKE 2ND PASS     8B305330
                     *                                            8B305340
                     *                                            8B305350
                     *              ROUTINE TWO CONSTANTS         8B305360
                     *                                            8B305370
0280 0  0001         CN101 DC     1                               8B305380
0281 0  0000         CN102 DC     0          1ST PASS SWITCH      8B305390
0282 0  0002         CN103 DC     2                               8B305400
0283 0  06D7         CN104 DC     SERVC                           8B305410
0284 0  01F4         CN105 DC     /01F4      PASS CONSTANT        8B305420
0285 0  0000         PSSW  DC     0          PASS SWITCH          8B305430
                     *                                            8B305440
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0286 0  0000       ECKSW DC      0          LEVEL ERR CHECK SW.        8B305450
                   *                                                   8B305460
0288 00 00000000         DEC     0                                     8B305470
028A 0  0000       ISINT DC      0          PROGRAMED INTERRUPT        8B305480
0288 0  0000             DC      0          IOCC                       8B305490
                   *                                                   8B305500
028C 0  0010       XIOCC DC      /0010      12 LEVELS OF INTRPT        8B305510
028D 0  04A0             DC      /04A0                                 8B305520
028E 0  1000             DC      /1000      18 LEVELS OF INTRP         8B305530
028F 0  04A1             DC      /04A1                                 8B305540
0290 0  0040             DC      /0040      24 LEVELS OF INTRPT        8B305550
0291 0  04A1             DC      /04A1                                 8B305560
                   *                                                   8B305570
                   *                                                   8B305580
                   ***********************************************     8B305590
                   *                ROUTINE NUMBER THREE         *     8B305600
                   ***********************************************     8B305610
                   *                                                   8B305620
0292 00 C4000932   INT02 LD   L  INIVT+4    GET HEX 3                  8B305630
0294 00 D4000A5F         STO  L  INM15+7     SET IN LOG MESSAGE         8B305640
                   *                                                   8B305650
0296 00 44000488         BSI  L  PRIST       GO SET TRAP ADDRESS  SRC   8B305660
                   *                                                   8B305670
0298 00 6580018E         LDX  I1 LVLIX       SET IOCC FOR LOWEST        8B305680
029A 00 CD00028C         LDD  L1 XIOCC       INTERRUPT LEVEL            8B305690
029C 0  D815             STD     CN200                                 8B305700
                   *                                                   8B305710
029D 00 67800198         LDX  I3 LVSAV       NUMBER OF INTERRUPTS       8B305720
029F 0  7302             MDX  3 2            TO BE GENERATED            8B305730
                   *                                                   8B305740
02A0 0  6100             LDX  1 0            PRINT TABLE INDEX          8B305750
02A1 0  6200             LDX  2 0                                       8B305760
                   *                                                   8B305770
02A2 0  080F             XIO     CN200       ISSUE INTERRUPT            8B305780
02A3 0  1000             NOP                                            8B305790
                   *                                                   8B305800
                   *                RETURN FROM TRAP ROUTINES          8B305810
                   *                                                   8B305820
02A4 00 440004E2         BSI  L  PRIPT       GO OUTPUT PRIO. SEQ        8B305830
                   *                                                   8B305840
02A6 00 4400048E         BSI  L  INTST       SET SPURIOUS INT ADR       8B305850
                   *                                                   8B305860
02A8 00 C400018F         LD   L  RTNNO       PREPARE SEQUENCE CK        8B305870
02AA 0  9009             S       CN201                                  8B305880
02AB 00 D4000191         STO  L  SEQCK                                  8B305890
                   *                                                   8B305900
02AD 00 4C000177         BSC  L  RTNRT       RETURN TO CONTROL          8B305910
                   *                                                   8B305920
                   *                ROUTINE THREE CONSTANTS            8B305930
                   *                                                   8B305940
0280 00 00000000         DEC     0                                      8B305950
0282 0  0000       CN200 DC      0          INTERRUPT IOCC             8B305960
0283 0  0000             DC      0                                      8B305970
                   *                                                   8B305980
0284 0  0003       CN201 DC      3          CONSTANT 3                 8B305990
                   *                                                   8B306000
                   ***********************************************     8B306010
                   *                ROUTINE NUMBER FOUR          *     8B306020
                   ***********************************************     8B306030
                   *                                                   8B306040
0285 00 C4000933   INT03 LD   L  INLVT+5    GET HEX 4                  8B306050
0287 00 D4000975         STO  L  INM03+7     SET RTN NO. IN ERROR       8B306060
0289 00 D400098A         STO  L  INM04+7     *MESSAGES                  8B306070
                   *                                                   8B306080
028B 00 440004AA         BSI  L  LVLST       GO SET UP TRAP ADDRS       8B306090
028D 0  C0C6             LD      CN105       SET PASS SWITCH            8B306100
028E 0  D0C6             STO     PSSW                                   8B306110
                   *                                                   8B306120
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028F 00 C4000280   RT300 LD   L  CN101                                 8B306130
02C1 0  D057             STO     CN300       SET 1ST PASS SW.          8B306140
                   *                                                   8B306150
02C2 00 650002D0         LDX  L1 RT301       SET UP LOOP ON             8B306160
02C4 00 6D000521         STX  L1 LPERR+1     ERROR RETURN               8B306170
                   *                                                   8B306180
02C6 0  0859             XIO     MASK0       MASK UPPER LEVELS          8B306190
02C7 0  085A             XIO     MASK1       MASK LOWER LEVELS          8B306200
                   *                                                   8B306210
02C8 00 6780018E   RT306 LDX  I3 LVLIX       SET UP INITIAL IOCC        8B306220
02CA 00 CF00028C         LDD  L3 XIOCC       FOR LOWEST LEVEL           8B306230
02CC 0  D851             STD     CN301                                  8B306240
                   *                                                   8B306250
02CD 00 67800198         LDX  I3 LVSAV       SET IX FOR NO.OF           8B306260
02CF 0  7301             MDX  3 1            INTERRUPTS                 8B306270
                   *                                                   8B306280
02D0 00 C700092E   RT301 LD   L3 INLVT       GET REQUEST NUMBER         8B306290
02D2 00 D4000979         STO  L  INM03+11    SET IN ERROR               8B306300
02D4 00 D400098E         STO  L  INM04+11    *MESSAGES                  8B306310
02D6 00 D4000A39         STO  L  INM13+11                               8B306320
                   *                                                   8B306330
02D8 0  0845       RT302 XIO     CN301       ISSUE INTERRUPT            8B306340
02D9 0  1000             NOP                                            8B306350
                   *                                                   8B306360
02DA 0  C03E             LD      CN300       GET 1ST PASS SWITCH        8B306370
02DB 0  4808             BSC     +                                      8B306380
02DC 0  7011             MDX     RT303       NOT 1ST PASS INTR ER       8B306390
                   *                                                   8B306400
02DD 0  73FF       RT305 MDX  3 -1           CHECK IF ALL LVLS          8B306410
02DE 0  701A             MDX     RT304       NO                         8B306420
02DF 0  C039             LD      CN300       YES                        8B306430
02E0 0  4820             BSC     Z                                      8B306440
02E1 0  7012             MDX     RT311       1ST PASS COMPL.CNTNU       8B306450
02E2 00 74FF0285         MDX  L  PSSW,-1     SKIP IF 500 PASSES         8B306460
02E4 0  70DA             MDX     RT300                                  8B306470
                   *                                                   8B306480
                   *                ROUTINE COMPLETED                  8B306490
                   *                                                   8B306500
02E5 00 4400048E         BSI  L  INTST       SET SPURIOUS INT ADR       8B306510
                   *                                                   8B306520
02E7 00 C400018F         LD   L  RTNNO       PREPARE SEQUENCE CK        8B306530
02E9 0  9031             S       CN303                                  8B306540
02EA 00 D4000191         STO  L  SEQCK                                  8B306550
                   *                                                   8B306560
02EC 00 4C000177         BSC  L  RTNRT       RETURN TO CONTROL          8B306570
                   *                                                   8B306580
                   *                                                   8B306590
                   *                REQ DID NOT INTRP MASK OFF         8B306600
                   *                                                   8B306610
                   ***********************************************     8B306620
02EE 00 440004F5   RT303 BSI  L  ERROR       LOG REQUEST FAILED   SRC   8B306630
02F0 0  096E             DC      INM03       TO INTERRUPT               8B306640
                   ***********************************************     8B306650
                   *                                                   8B306660
02F1 00 44000609         BSI  L  SVINT                                  8B306670
02F3 0  70E9             MDX     RT305                                  8B306680
                   *                                                   8B306690
                   *                SET UP FOR 2ND PASS                8B306700
                   *                                                   8B306710
02F4 0  1010       RT311 SLA     16                                     8B306720
02F5 0  D023             STO     CN300       CLEAR 1ST PASS SWITC       8B306730
                   *                                                   8B306740
02F6 0  082D             XIO     UMSK0       UNMASK UPPER LEVELS        8B306750
02F7 0  082E             XIO     UMSK1       UNMASK LOWER LEVELS        8B306760
                   *                                                   8B306770
02F8 0  70CF             MDX     RT306       GO MAKE SECOND PASS        8B306780
                   *                                                   8B306790
02F9 0  C024       RT304 LD      CN301       MODIFY IOCC FOR            8B306800
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02FA 0  4808            BSC     *           NEXT INTERRUPT              8B306810
02FB 0  7003            MDX     RT307                                   8B306820
02FC 0  1001            SLA     1                                       8B306830
02FD 0  D020            STO     CN301                                   8B306840
02FE 0  7001            MDX     RT301       GO ISSUE NEXT INTRPT        8B306850
                *                                                       8B306860
02FF 0  C01F    RT307 LD        CN301+1     CLEAR BIT 1K FROM           8B306870
0300 00 94000280        S   L   CN101       COMMAND WORD                8B306880
0302 0  D01C            STO     CN301+1                                 8B306890
0303 0  C016            LD      CN302       SET BIT 13 IN IOCC          8B306900
0304 0  D019            STO     CN301       ADDRESS WORD                8B306910
0305 0  70CA            MDX     RT301       GO ISSUE NEXT INTRPT        8B306920
                *                                                       8B306930
                *                   RETURN FROM TRAP ROUTINES           8B306940
                *                                                       8B306950
0306 0  C012    RT308 LD        CN300       GET PASS SWITCH             8B306960
0307 0  4820            BSC     Z           SKIP IF 2ND PASS            8B306970
0308 0  7C06            MDX     RT309                                   8B306980
0309 00 C40006CA        LD  L   CNM00                                   8B306990
030B 0  4820            BSC     Z                                       8B307000
030C 0  7008            MDX     RT310       WRONG LEVEL SERVICED        8B307010
030D 00 4C4002DD        BOSC L  RT305       OK   GO ON                  8B307020
                *                                                       8B307030
                ************************************************        8B307040
030F 00 440004F5  RT309 BSI  L  ERROR       REQ INTRPD WHILE     SRC    8B307050
0311 0  0A2E            DC      INM13       MASKED                      8B307060
                ************************************************        8B307070
                *                                                       8B307080
0312 0  080D            XIO     MASK0                                   8B307090
0313 0  080E            XIO     MASK1                                   8B307100
0314 0  70C8            MDX     RT305                                   8B307110
                *                                                       8B307120
                ************************************************        8B307130
0315 00 440004F5  RT310 BSI  L  ERROR       WRONG LEVEL SERVICED        8B307140
0317 0  0983            DC      INM04                                   8B307150
                ************************************************        8B307160
                *                                                       8B307170
0318 0  70C4            MDX     RT305                                   8B307180
                *                                                       8B307190
                *                   ROUTINE FOUR CONSTANTS              8B307200
                *                                                       8B307210
0319 0  0000    CN300 DC        0           1ST PASS SWITCH             8B307220
031A 0  0004    CN302 DC        /0004                                   8B307230
031B 0  0004    CN303 DC        4                                       8B307240
                *                                                       8B307250
031C 00 00000J00        DEC     0                                       8B307260
031E 0  0000    CN301 DC        0           INTERRUPT IOCC              8B307270
031F 0  0000            DC      0                                       8B307280
                *                                                       8B307290
0320 0  FFFF    MASK0 DC        /FFFF       MASK UPPER IOCC             8B307300
0321 0  0480            DC      /0480                                   8B307310
0322 0  FFFF    MASK1 DC        /FFFF       MASK LOWER IOCC             8B307320
0323 0  0481            DC      /0481                                   8B307330
                *                                                       8B307340
0324 0  0000    UMSK0 DC        /0000       UNMASK UPPER IOCC           8B307350
0325 0  0480            DC      /0480                                   8B307360
0326 0  0000    UMSK1 DC        /0000       UNMASK LOWER IOCC           8B307370
0327 0  0481            DC      /0481                                   8B307380
                *                                                       8B307390
                *                                                       8B307400
                ************************************************        8B307410
                *                   ROUTINE NUMBER FIVE               8B307420
                ************************************************        8B307430
                *                                                       8B307440
0328 00 C4000199  INT04 LD   L  RUNSW       CK.IF RUN NO STOPS          8B307450
032A 00 4C20040E        BSC  L  RT414,Z     BRNCH IF RUN NO STOP        8B307460
                *                                                       8B307470
032C 00 C4000934        LD   L  INLVT+6     GET HEX 5                   8B307480
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032E 00 D4000975        STO  L  INM03+7     SET IN ERROR MESSAGE        8B307490
0330 00 D400098A        STO  L  INM04+7                                 8B307500
0332 00 D40009A1        STO  L  INM05+7                                 8B307510
0334 00 D4000A5F        STO  L  INM15+7                                 8B307520
0336 00 D40009BB        STO  L  INM06+7                                 8B307530
                *                                                       8B307540
0338 00 440004AA        BSI  L  LVLST       GO SET UP INT.ADDRSS        8B307550
                *                                                       8B307560
033A 00 66000438        LDX  L2 RT401       SET TRAP RTNS RETURN        8B307570
033C 00 6700034A        LDX  L3 RT400       SET LOOP ON ERROR           8B307580
033E 00 6F000521        STX  L3 LPERR+1     RETURN                      8B307590
0340 00 67000350        LDX  L3 RT402       SET COMN RTN RETURN         8B307600
0342 00 C400092E        LD   L  INLVT       SET REQUEST NO IN           8B307610
0344 00 D4000979        STO  L  INM03+11    *ERROR MESSAGES             8B307620
0346 00 D400098E        STO  L  INM04+11                                8B307630
                *                                                       8B307640
0348 0  2C41            DC      /2C41       WRITE STORAGE PROTCT        8B307650
0349 0  0429            DC      CN401                                   8B307660
                *                                                       8B307670
034A 00 D4000429  RT400 STO  L  CN401       VIOLATE PROT.STORAGE        8B307680
                *                                                       8B307690
                ************************************************        8B307700
034C 00 440004F5        BSI  L  ERROR       REQUEST FAILED TO    SRC    8B307710
034E 0  096E            DC      INM03       INTERRUPT                   8B307720
                ************************************************        8B307730
                *                                                       8B307740
034F 0  700C            MDX     RT413                                   8B307750
                *                                                       8B307760
0350 00 C40006D6  RT402 LD   L  ILSAV       CHECK IF PROPER ILSW        8B307770
0352 00 F400042A        EOR  L  CN402       *BIT FOR SPV                8B307780
0354 0  4818            BSC     +-          SKIP ON WRONG BIT           8B307790
0355 0  7006            MDX     RT413       BRANCH IF ILSW OK           8B307800
                *                                                       8B307810
                ************************************************        8B307820
0356 00 44000523        BSI  L  LOG         WRONG ILSW BIT              8B307830
0358 0  0984            DC      INM06                                   8B307840
                ************************************************        8B307850
                *                                                       8B307860
0359 00 C40006D6        LD   L  ILSAV       ILSW TO  A                  8B307870
                *                                                       8B307880
035B 0  3006    WT6   WAIT      6           ILSW ERROR                  8B307890
                *                                                       8B307900
035C 00 C4000948  RT413 LD   L  INLVT+26    SET CE REQ IN ERROR         8B307910
035E 00 D400098E        STO  L  INM04+11    MESSAGES                    8B307920
0360 00 D4000979        STO  L  INM03+11                                8B307930
0362 00 6700036C        LDX  L3 RT404       SET LOOP ERROR              8B307940
0364 00 6F000521        STX  L3 LPERR+1     RETURN                      8B307950
                *                                                       8B307960
0366 00 67000374        LDX  L3 RT403       SET COMN RTN RETURN         8B307970
0368 00 C400042C        LD   L  CN404       CE INTERRUPT BRANCH         8B307980
036A 00 D4000002        STO  L  /0002       *TO ADDRESS                 8B307990
                *                                                       8B308000
                ************************************************        8B308010
036C 00 44000523  RT404 BSI  L  LOG         PUSH CE INTERRUPT    SRC    8B308020
036E 0  09D7            DC      INM08       BUTTON                      8B308030
                ************************************************        8B308040
                *                                                       8B308050
036F 00 440005F3        BSI  L  DELAY       GO WAIT FOR INTRPT          8B308060
                *                                                       8B308070
                ************************************************        8B308080
0371 00 440004F5        BSI  L  ERROR       LOG CE REQ FAILED    SRC    8B308090
0373 0  096E            DC      INM03                                   8B308100
                ************************************************        8B308110
                *                                                       8B308120
0374 00 C4000947  RT403 LD   L  INLVT+25    SET TRACE REQUEST           8B308130
0376 00 D400098E        STO  L  INM04+11    IN ERROR MESSAGES           8B308140
0378 00 D4000979        STO  L  INM03+11                                8B308150
                *                                                       8B308160
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037A 00 67000382          LDX  L3 RT412      SET LOOP ERROR RETRN          8B308170
037C 00 6F000521          STX  L3 LPERR+1                                  8B308180
                     *                                                     8B308190
037E 00 6700038A          LDX  L3 RT405      SET COMN RTN RETURN           8B308200
0380 G0 74010428          MDX  L  CN400,1    SET TRACE INDICATOR           8B308210
                     *                                                     8B308220
                     ************************************************      8B308230
0382 00 44000523     RT412 BSI  L  LOG        LOG SET TRACE                 8B308240
0384 0  09F8               DC       INM10                                   8B308250
                     ************************************************      8B308260
                     *                                                     8B308270
0385 0  3007         WT7   WAIT   7           SET TRACE MODE                8B308280
                     *                                                     8B308290
0386 0  1000               NOP                INT AFTER THIS INSTR          8B308300
                     *                                                     8B308310
                     ************************************************      8B308320
0387 00 440004F5           BSI  L  ERROR      TRACE FAILED TO       SRC     8B308330
0389 0  096E               DC       INM03     *INTERRUPT                    8B308340
                     ************************************************      8B308350
                     *                                                     8B308360
                     ************************************************      8B308370
038A 00 44000523     RT405 BSI  L  LOG        LOG SET RUN           SRC     8B308380
038C 0  0A0B               DC       INM11                                   8B308390
                     ************************************************      8B308400
                     *                                                     8B308410
038D 0  3008         WT8   WAIT   8           SET RUN MODE                  8B308420
                     *                                                     8B308430
038E 00 44000609           BSI  L  SVINT      RESET TRACE INTRPT            8B308440
0390 0  1010               SLA      16        CLEAR TRACE INDICATR          8B308450
0391 00 D4000428           STO  L  CN400                                    8B308460
0393 00 6600038E           LDX  L2 WT8+1      SETUP LOOP ON ERRCR           8B308470
0395 00 6E000521           STX  L2 LPERR+1    *RETURN                       8B308480
0397 00 660003A4           LDX  L2 RT406      SET TRAP RTNS RETURN          8B308490
                     *                                                     8B308500
                     ************************************************      8B308510
0399 00 44000523           BSI  L  LOG        LOG PUSH CONSOLE      SRC     8B308520
039B 0  09E7               DC       INM09     INTERRUPT BUTTON              8B308530
                     ************************************************      8B308540
                     *                                                     8B308550
039C 00 440005F3           BSI  L  DELAY      GO WAIT FOR INTRPT.           8B308560
                     *                                                     8B308570
039E 00 0C000436           XIO  L  CNSNS      RESET CONSOLE CNTRLS          8B308580
                     *                                                     8B308590
                     ************************************************      8B308600
03A0 00 440004F5           BSI  L  ERROR      LOG CONSOLE BUTTON    SRC     8B308610
03A2 0  0822               DC       INM20     FAILED                        8B308620
                     ************************************************      8B308630
                     *                                                     8B308640
03A3 0  7020               MDX      RT415     BYPASS CONSOLE MESAG          8B308650
                     *                                                     8B308660
03A4 00 44000609     RT406 BSI  L  SVINT      RESET CONSOLE CNTRL           8B308670
03A6 00 C4800688           LD   I  CMTRP      GET INTERRUPTING LVL          8B308680
03A8 00 D4000844           STO  L  INM21+17   SET IN MESSAGE                8B308690
03AA 00 C40006D6           LD   L  ILSAV      SET ILSW BIT IN MSSG          8B308700
03AC 0  4820               BSC      Z         SKIP IF NO BIT ON             8B308710
03AD 0  7005               MDX      *+5                                     8B308720
03AE 00 67000025           LDX  L3 /0025      NO ILSW  SET MESSAGE          8B308730
03B0 00 6F000B4A           STX  L3 INM21+23   *FOR BIT N                    8B308740
03B2 0  700E               MDX      *+14                                    8B308750
03B3 0  630F               LDX   3 15         DETERMINE WHICH ILSW          8B308760
03B4 0  1340               SLCA  3            *BIT IS ON                    8B308770
03B5 0  687C               STX   3 HOLD                                     8B308780
03B6 0  C07B               LD       HOLD      COMPLEMENT BITS 12            8B308790
03B7 0  F07B               EOR      COMP      *THROUGH 15                   8B308800
03B8 0  D079               STO      HOLD                                    8B308810
03B9 00 67800432           LDX  I3 HOLD       GET CODED EQUIVELANT          8B308820
03BB 00 C700092F           LD   L3 INLVT+1    *OF ILSW BIT AND SET          8B308830
03BD 00 E4000431           AND  L  CN409      *IN MESSAGE                   8B308840
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03BF 00 D4000B4A           STO  L  INM21+23                                 8B308850
                     ************************************************      8B308860
03C1 00 44000523           BSI  L  LOG        LOG CONSOLE BUTTON    SRC     8B308870
03C3 0  0833               DC       INM21     INTRPT LEVEL                  8B308880
                     ************************************************      8B308890
                     *                                                     8B308900
                     *                TRACE AND CE PRIORITY CK             8B308910
                     *                                                     8B308920
03C4 00 44000488     RT415 BSI  L  PRIST      GO SET XFER VECTORS   SRC     8B308930
                     *                                                     8B308940
03C6 00 67800198           LDX  I3 LVSAV      IX 3 = NO.LVLS.+ 3            8B308950
03C8 0  7303               MDX   3 3                                        8B308960
                     *                                                     8B308970
03C9 0  6100               LDX   1 0          PRINT INDEX                   8B308980
03CA 0  62C0               LDX   2 0                                        8B308990
                     *                                                     8B309000
                     ************************************************      8B309010
03CB 00 44000523           BSI  L  LOG        LOG SET TRACE MODE    SRC     8B309020
03CD 0  09F8               DC       INM10                                   8B309030
                     ************************************************      8B309040
                     *                                                     8B309050
03CE 0  3009         WT9   WAIT   9           SET TRACE MODE                8B309060
03CF 0  1000               NOP                INT AFTER THIS INSTR          8B309070
                     *                                                     8B309080
                     *                RETURN FROM TRAP ROUTINES            8B309090
                     *                                                     8B309100
03D0 00 440004E2     RT407 BSI  L  PRIPT      GO LOG PRIORITY SEQ   SRC     8B309110
                     *                                                     8B309120
                     ************************************************      8B309130
03D2 00 44000523           BSI  L  LOG        LOG SET RUN MODE      SRC     8B309140
03D4 0  0A0B               DC       INM11                                   8B309150
                     ************************************************      8B309160
                     *                                                     8B309170
03D5 0  300A         WTA   WAIT   10          SET RUN MODE                  8B309180
                     *                                                     8B309190
03D6 00 44000609           BSI  L  SVINT      RESET TRACE INTRPT            8B309200
                     *                                                     8B309210
03D8 00 44000B88           BSI  L  PRIST      GO SET TRAP ADDRS             8B309220
03DA 0  C052               LD       CN405     CE INTERRUPT BRANCH           8B309230
03DB 00 D4000002           STO  L  /0002      *TO ADDRESS                   8B309240
                     *                                                     8B309250
03DD 00 67800198           LDX  I3 LVSAV      IX 3 = NO.LEVELS +3           8B309260
03DF 0  7303               MDX   3 3                                        8B309270
03E0 0  6100               LDX   1 0          PRINT INDEX                   8B309280
03E1 0  6200               LDX   2 0                                        8B309290
                     ************************************************      8B309300
03E2 00 44000523     RT409 BSI  L  LOG        LOG PUSH CE BUTTON    SRC     8B309310
03E4 0  09D7               DC       INM08                                   8B309320
                     ************************************************      8B309330
                     *                                                     8B309340
03E5 0  3008         WTB   WAIT   11          PUSH CE INTRP BUTTON          8B309350
                     *                                                     8B309360
                     *                RETURN FROM TRAP ROUTINES            8B309370
                     *                                                     8B309380
03E6 00 440004E2     RT408 BSI  L  PRIPT      GO LOG PRIORITY SEQ   SRC     8B309390
                     *                                                     8B309400
                     *                CHECK CE AND CONSOLE BUTNS           8B309410
                     *                AND TRACE MODE WITH DISABL           8B309420
                     *                SWITCH ON                            8B309430
                     *                                                     8B309440
03E8 00 440004AA           BSI  L  LVLST      GO SET UP TRAP ADRSS          8B309450
                     *                                                     8B309460
03EA 0  C041               LD       CN404     SET CE INTERRUPT              8B309470
03EB 00 D4000002           STO  L  /0002      *BRANCH ADDRESS               8B309480
03ED 00 66000417           LDX  L2 RT410      SET TRAP RTNS RETUR           8B309490
                     *                                                     8B309500
03EF 00 67000420           LDX  L3 RT411      SET LOOP ERR RETURN           8B309510
03F1 00 6F000521           STX  L3 LPERR+1                                  8B309520
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INTERRUPT FUNCTION TEST

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                   *                                                           8B309530
                   *********************************************               8B309540
03F3 00 44000523         BSI  L  LOG        LOG SET DISABLE       SRC          8B309550
03F5 0  084C             DC      INM22      CHECK BUTTONS                      8B309560
                   *********************************************               8B309570
                   *                                                           8B309580
03F6 0  300C       WTC   WAIT    12         SET DISABLE CK BTTNS               8B309590
                   *                                                           8B309600
03F7 00 4C4003F9         BOSC L  *          RESET IF TRACE ERROR               8B309610
03F9 00 440004A0         BSI  L  NEST1      SET NST ADDRESSES                  8B309620
                   *                                                           8B309630
03FB 0  C032             LD      CN406      SET CE INTERRUPT                   8B309640
03FC 00 D4000002         STO  L  /0002      *BRANCH ADDRESS                    8B309650
03FE 0  C030             LD      CN407      SET CE INTERRUPT                   8B309660
03FF 00 D4000003         STO  L  /0003      *RETURN ADDRESS                    8B309670
0401 0  C02E             LD      CN408                                         8B309680
0402 00 D4000004         STO  L  /0004                                         8B309690
0404 0  2C40             DC      /2C40      CLEAR STORAGE PROTCT               8B309700
0405 0  0429             DC      CN401                                         8B309710
                   *                                                           8B309720
                   *********************************************               8B309730
0406 00 44000523         BSI  L  LOG                              SRC          8B309740
0408 0  0A0B             DC      INM11                                         8B309750
                   *********************************************               8B309760
                   *                                                           8B309770
0409 0  300D       WTD   WAIT    13         SET RUN MODE                       8B309780
                   *                                                           8B309790
                   *********************************************               8B309800
040A 00 44000523         BSI  L  LOG        TURN DISABLE SW OFF                8B309810
040C 0  095E             DC      INM02                                         8B309820
                   *********************************************               8B309830
                   *                                                           8B309840
040D 0  300E       WTE   WAIT    14         TURN DISABLE SW OFF                8B309850
                   *                                                           8B309860
040E 00 C400018F   RT414 LD   L  RTNNO      PREPARE SEQUENCE CK                8B309870
0410 0  F01A             EOR     CN403                                         8B309880
0411 00 D4000191         STO  L  SEQCK                                         8B309890
                   *                                                           8B309900
0413 00 4400048E         BSI  L  INTST      SET SPURIOUS INT ADR               8B309910
                   *                                                           8B309920
0415 00 4C000177         BSC  L  RTNRT                                         8B309930
                   *                                                           8B309940
                   *                 RETURN IF INTERRUPT                       8B309950
                   *                                                           8B309960
0417 00 0C000436   RT410 XIO  L  CNSNS      CONSOLE CNTRL RESET                8B309970
0419 00 C480068B         LD   I  CMTRP                                         8B309980
041B 00 D40009A5         STO  L  INM05+11                                      8B309990
                   *                                                           8B310000
                   *********************************************               8B310010
041D 00 440004F9         BSI  L  ERALT      LOG DISABLED INTRPT  SRC           8B310020
041F 0  099A             DC      INM05                                         8B310030
                   *********************************************               8B310040
                   *                                                           8B310050
0420 00 C40009A5   RT411 LD   L  INM05+11   PICK UP FAILING LVL                8B310060
0422 00 F40006FE         EOR  L  REQTR      CHECK IF LEVEL TRACE               8B310070
0424 00 4C1803F6         BSC  L  WTC,+-     NONRESET BR IF TRACE               8B310080
0426 00 4C4003F6         BOSC L  WTC        RESET BRANCH                       8B310090
                   *                                                           8B310100
                   *                 ROUTINE FIVE CONSTANTS                    8B310110
                   *                                                           8B310120
0428 0  0000       CN400 DC      0          TRACE INDICATOR                    8B310130
0429 0  0000       CN401 DC      0                                             8B310140
042A 0  2000       CN402 DC      /2000      SPV ILSW CK WORD                   8B310150
042B 0  0005       CN403 DC      5                                             8B310160
042C 0  0640       CN404 DC      LVL27                                         8B310170
042D 0  0702       CN405 DC      PRI27                                         8B310180
042E 0  06D7       CN406 DC      SERVC      *CE INTERRUPT                      8B310190
042F 0  4C80       CN407 DC      /4C80      *SERVICE CONSTANTS                 8B310200
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INTERRUPT FUNCTION TEST

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0430 0  000A       CN408 DC      /000A      *                                  8B310210
0431 0  01FF       CN409 DC      /01FF                                         8B310220
0432 0  0000       HOLD  DC      0          TEMP STORAGE                       8B310230
0433 0  000F       COMP  DC      /000F      COMPLEMENT CONSTANT                8B310240
                   *                                                           8B310250
0434 00 00000000         DEC     0                                             8B310260
0436 0  0000       CNSNS DC      /0000      SENSE AREA 0                       8B310270
0437 0  07C1             DC      /07C1      IOCC                               8B310280
                   *                                                           8B310290
                   *                 RTN 4 COMMON INTRPT RTN                   8B310300
                   *                                                           8B310310
0438 0  C0EF       RT401 LD      CN400      GET TRACE INDICATOR                8B310320
0439 0  4820             BSC     Z          SKIP IF OFF                        8B310330
043A 0  7002             MDX     *+2                                           8B310340
043B 00 44000609         BSI  L  SVINT      RESET INTRPT CONTROL               8B310350
043D 00 C40006CA         LD   L  CNM00      GET SERVICED COMPARE               8B310360
043F 00 4F180000         BSC  L3 0,+-       RETURN TO USER IF OK               8B310370
                   *                                                           8B310380
                   *********************************************               8B310390
0441 00 440004F5         BSI  L  ERROR      WRONG LEVEL SERVICED SRC           8B310400
0443 0  0983             DC      INM04                                         8B310410
                   *********************************************               8B310420
                   *                                                           8B310430
0444 0  1010             SLA     16                                            8B310440
0445 0  70F9             MDX     RT401+7                                       8B310450
                   *                                                           8B310460
                   *********************************************               8B310470
                   *                 ROUTINE NUMBER SIX                        8B310480
                   *********************************************               8B310490
                   *                                                           8B310500
0446 00 C4000199   INT05 LD   L  RUNSW      CK IF RUN NO STOPS                 8B310510
0448 00 4C200481         BSC  L  RT504,Z    RUN BYPASS ROUTINE 5               8B310520
044A 00 670008F6         LDX  L3 TRACE                                         8B310530
044C 00 6F000009         STX  L3 /0009      SET TRACE TRAP ADDRS               8B310540
                   *                                                           8B310550
044E 00 67000930         LDX  L3 INLVT+2                                       8B310560
0450 0  6B27             STX   3 TRAER+1    HEX PASS NO.                       8B310570
                   *                                                           8B310580
0451 00 6700047F         LDX  L3 RT502                                         8B310590
0453 00 6F000521         STX  L3 LPERR+1    SET LOOP ON ERROR                  8B310600
                   *                                                           8B310610
0455 0  630A             LDX   3 10         PASS CONTROL                       8B310620
                   *                                                           8B310630
0456 0  1010             SLA     16                                            8B310640
0457 0  D035             STO     TRIND      CLEAR TRACED INDICTR               8B310650
                   *                                                           8B310660
0458 0  6200             LDX   2 0          EXPECTED INSTRN.INDX               8B310670
                   *                                                           8B310680
                   *********************************************               8B310690
0459 00 44000523         BSI  L  LOG        LOG SET TRACE         SRC          8B310700
045B 0  09F8             DC      INM10                                         8B310710
                   *********************************************               8B310720
                   *                                                           8B310730
045C 0  300F       WTF   WAIT    15         SET TRACE MODE                     8B310740
                   *                                                           8B310750
                   *                                                           8B310760
                   *              THE 1ST 10 INSTRUCTION                       8B310770
                   *              ARE CHECKED FOR PROPER                       8B310780
                   *              SEQUENCE OF INTERRUPTS                       8B310790
                   *                                                           8B310800
045D 0  C02C       RT500 LD      CN500                                         8B310810
045E 0  18DF             RTE     31                                            8B310820
045F 0  D02B             STO     CN501                                         8B310830
0460 0  9029             S       CN500                                         8B310840
0461 0  F029             EOR     CN501                                         8B310850
0462 0  A028             M       CN501                                         8B310860
0463 0  8026             A       CN500                                         8B310870
0464 0  4820             BSC     Z                                             8B310880
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0465 0  1000            NOP                                              8B310890
0466 0  7000            MDX     RT501                                    8B310900
                        *                                                8B310910
0467 0  C025        RT501 LD    TRIND       GET TRACED INDICATOR         8B310920
0468 00 4C180477        BSC L   TRAER,+-    BRANCH NO INSTR TRCD         8B310930
046A 00 74010478        MDX L   TRAER+1,1                                8B310940
046C 0  6200            LDX   2 0                                        8B310950
046D 0  1010            SLA     16                                       8B310960
046E 0  D01E            STO     TRIND       CLEAR TRACED INDICTR         8B310970
                        *                                                8B310980
046F 0  73FF            MDX   3 -1          CHECK IF 10 PASSES           8B310990
0470 0  700E            MDX     RT502       NO                           8B311000
                        *                                                8B311010
                        ************************************************ 8B311020
0471 00 44000523        BSI L   LOG         LOG SET RUN MODE     SRC     8B311030
0473 0  0A0B            DC      INM11                                    8B311040
                        ************************************************ 8B311050
                        *                                                8B311060
0474 0  3010        WT10 WAIT   16          SET RUN MODE                 8B311070
                        *                                                8B311080
0475 00 4C400481        BOSC L  RT504       RESET BRANCH                 8B311090
                        *                                                8B311100
0477 00 C4000000    TRAER LD    L   0       SET PASS NUMBER IN           8B311110
0479 00 D4000803        STO     L   INM18+23    *ERROR MESSAGE           8B311120
                        *                                                8B311130
                        ************************************************ 8B311140
047B 00 440004F5        BSI L   ERROR       LOG TRACE DID NOT    SRC     8B311150
047D 0  0AEC            DC      INM18       INTERRUPT                    8B311160
                        ************************************************ 8B311170
                        *                                                8B311180
047E 0  70EB            MDX     RT501+3                                  8B311190
                        *                                                8B311200
047F 00 4C400457    RT502 BOSC L    RT500       MAKE ANOTHER PASS        8B311210
                        *                                                8B311220
0481 00 C400018F    RT504 LD    L   RTNNO       PREPARE SEQUENCE CK      8B311230
0483 0  F008            EOR     CN502                                    8B311240
0484 00 D4000191        STO     L   SEQCK                                8B311250
                        *                                                8B311260
0486 00 4400048E        BSI L   INTST       SET SPURIOUS INT ADR         8B311270
                        *                                                8B311280
0488 00 4C000177        BSC L   RTNRT                                    8B311290
                        *                                                8B311300
                        *               ROUTINE SIX CONSTANTS            8B311310
                        *                                                8B311320
048A 0  0001        CN500 DC    1                                        8B311330
048B 0  0000        CN501 DC    0                                        8B311340
048C 0  0006        CN502 DC    6                                        8B311350
048D 0  0000        TRIND DC    0                                        8B311360
                        *                                                8B311370
                        *                                                8B311380
                        *               ROUTINE TO LOAD SPURIOUS         8B311390
                        *               INTERRUPT TRAP ADDRESSES         8B311400
                        *                                                8B311410
048E 0  0000        INTST DC    0                                SE      8B311420
048F 00 0C000320        XIO L   MASK0       MASK INTERRUPTS              8B311430
0491 00 0C000322        XIO L   MASK1                                    8B311440
0493 0  631B            LDX   3 27                                       8B311450
0494 0  C00A            LD      INCN        ADDRESS SVINT                8B311460
0495 00 D7000007        STO   L3 /0007      SET ADDRESS SVINT            8B311470
0497 0  73FF            MDX   3 -1          *INTO ALL INTERRUPT          8B311480
0498 0  70FC            MDX     *-4         *LOCATIONS                   8B311490
0499 00 0C000324        XIO L   UMSK0       UNMASK INTERRUPTS            8B311500
049B 00 0C000326        XIO L   UMSK1                                    8B311510
049D 00 4C80048E        BSC I   INTST       RETURN TO USER       SX      8B311520
                        *                                                8B311530
049F 0  0609        INCN DC     SVINT       TRAP ROUTINE ADDRES          8B311540
                        *                                                8B311550
                        *               SET TRAP ADDRESSES TO            8B311560
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                        *               SERVICE NESTED INTERRUPTS        8B311570
                        *               WHILE DISABLED                   8B311580
                        *                                                8B311590
04A0 0  0000        NEST1 DC    0                                        8B311600
04A1 0  621B            LDX   2 27          SET INDEX                    8B311610
04A2 0  C006            LD      NSTCN       ADDRESS SERVC                8B311620
04A3 00 D6000007        STO   L2 7          SET ADDRS IN XFER LC         8B311630
04A5 0  72FF            MDX   2 -1          SKIP IF DONE                 8B311640
04A6 0  70FC            MDX     *-4         BR TO DO NEXT VECTOR         8B311650
04A7 00 4C8004A0        BSC I   NEST1       EXIT SUBROUTINE      SX      8B311660
                        *                                                8B311670
04A9 0  06D7        NSTCN DC    SERVC                                    8B311680
                        *                                                8B311690
                        *                                                8B311700
                        *               TRAP ADDRESS SETUP               8B311710
                        *                                                8B311720
04AA 0  0000        LVLST DC    0                                SE      8B311730
04AB 0  6300            LDX   3 0                                        8B311740
04AC 0  621B            LDX   2 27                                       8B311750
04AD 0  C008            LD      LVLS1       = LVL01                      8B311760
04AE 00 D7000008    LVST1 STO   L3 /0008                                 8B311770
04B0 0  8006            A       LVLS2       ADD 3 FOR NEXT ADDRS         8B311780
04B1 0  7301            MDX   3 1                                        8B311790
04B2 0  72FF            MDX   2 -1                                       8B311800
04B3 0  70FA            MDX     LVST1                                    8B311810
04B4 00 4C8004AA        BSC I   LVLST       RETURN               SX      8B311820
                        *                                                8B311830
04B6 0  063A        LVLS1 DC    LVL01       1ST TRAP RTN.ADDRESS         8B311840
04B7 0  0003        LVLS2 DC    3                                        8B311850
                        *                                                8B311860
                        *               PRIORITY TRAP ADDRESS AND        8B311870
                        *               PRINT TABLE SETUP                8B311880
                        *                                                8B311890
04B8 0  0000        PRIST DC    0                                SE      8B311900
04B9 0  6300            LDX   3 0           SET INDEX                    8B311910
04BA 0  621A            LDX   2 26          SET INDEX                    8B311920
04BB 0  C020            LD      CNST0       PICKUP STARTING ADRS         8B311930
04BC 00 D7000009    SET01 STO   L3 9        SET IN XFER VECTOR           8B311940
04BE 0  7301            MDX   3 1           ADD 1 TO STORE IX            8B311950
04BF 0  801D            A       CNST1       ADD 20 FOR NEXT ADRS         8B311960
04C0 0  72FF            MDX   2 -1          SKIP WHEN DONE               8B311970
04C1 0  70FA            MDX     SET01       GO LOAD NEXT VECTOR          8B311980
04C2 00 670006E0        LDX   L3 PRI01      LOAD INTERNAL INTRPT         8B311990
04C4 00 6F000008        STX   L3 8          *XFER VECTOR                 8B312000
                        *                                                8B312010
                        *                                                8B312020
                        *               SET UP PRIORITY SEQUENCE         8B312030
                        *               PRINT TABLE                      8B312040
                        *                                                8B312050
04C6 0  6334            LDX   3 52                                       8B312060
04C7 0  C818            LDD     CNST2                                    8B312070
04C8 00 DF000A76    SET02 STD   L3 IN16V-2  REQUEST SEQUENCE MSG         8B312080
04CA 00 DF000AB6        STD   L3 IN17V-2    SERVICD SEQUENCE MSG         8B312090
04CC 0  73FE            MDX   3 -2                                       8B312100
04CD 0  70FA            MDX     SET02                                    8B312110
04CE 00 D4000AAB        STO   L IN16V+51    SET TERMINATOR AT            8B312120
04D0 00 D4000AEB        STO   L IN17V+51    END OF MESSAGE TABLE         8B312130
                        *                                                8B312140
                        *               SET IOCC FOR LOWEST LEVEL        8B312150
                        *                                                8B312160
04D2 00 6580018E        LDX   I1 LVLIX                                   8B312170
04D4 00 CD00028C        LDD   L1 XIOCC      GET COMMAND FROM TBL         8B312180
04D6 00 DC000700        STD   L PR262       SET IN TR AND CE             8B312190
04D8 00 DC000714        STD   L PR272       TRAP ROUTINES                8B312200
04DA 00 4C8004B8        BSC I   PRIST       EXIT                 SX      8B312210
                        *                                                8B312220
                        *               SETUP CONSTANTS                  8B312230
                        *                                                8B312240
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04DC 0  06EE       CNST0 DC    PRI26     LOWEST LEVEL ADDRESS        8B312250
04DD 0  0014       CNST1 DC    20                                    8B312260
                   *                                                 8B312270
04DE 00 00000000         DEC   0                                     8B312280
04E0 0  FFFF       CNST2 DC    /FFFF     TERMINATOR                  8B312290
04E1 0  0000             DC    /0000     BLANK                       8B312300
                   *                                                 8B312310
                   *                                                 8B312320
                   *          PRIORITY SEQUENCE LOG                  8B312330
                   *                                                 8B312340
04E2 0  0000       PRIPT DC    0                              SE     8B312350
                   *                                                 8B312360
04E3 00 0C00018A         XIO L BSW0      CHECK IF BYPASS             8B312370
04E5 00 C4000192         LD  L BSW00     *PRIORITY PRINTOUT          8B312380
04E7 0  1007             SLA   7                                     8B312390
04E8 0  4828             BSC   +Z                                    8B312400
04E9 0  7009             MDX   PRIXT                                 8B312410
                   *                                                 8B312420
                   *          LOG PRIORITY HEADING                   8B312430
                   ********************************************      8B312440
04EA 00 44000523         BSI L LOG                            SRC    8B312450
04EC 0  0A58             DC    INM15                                 8B312460
                   *                                                 8B312470
                   *          OUTPUT REQUEST SEQUENCE                8B312480
                   *                                                 8B312490
                   ********************************************      8B312500
04ED 00 44000523         BSI L LOG                            SRC    8B312510
04EF 0  0A6C             DC    INM16                                 8B312520
                   *                                                 8B312530
                   *          OUTPUT SERVICED SEQUENCE               8B312540
                   *                                                 8B312550
                   ********************************************      8B312560
04F0 00 44000523         BSI L LOG                            SRC    8B312570
04F2 0  0AAC             DC    INM17                                 8B312580
                   *                                                 8B312590
                   *                                                 8B312600
04F3 00 4C8004E2   PRIXT BSC I PRIPT     EXIT                        8B312610
                   ********************************************      8B312620
                   *               ERROR   ROUTINE                   8B312630
                   ********************************************      8B312640
                   *                                                 8B312650
04F5 0  0000       ERROR DC    0                              SE     8B312660
04F6 00 44000609         BSI L SVINT     RESET POSSIBLE DSW   SRC    8B312670
04F8 0  7003             MDX   ERALT+3   SKIP ALTERNATE ENTRY         8B312680
04F9 0  0000       ERALT DC    0         ALTERNATE TRACE ENTR        8B312690
04FA 0  C0FE             LD    ERALT     STORE ALTERNATE ENTR        8B312700
04FB 0  D0F9             STO   ERROR     *I CTR IN NORMAL ENT        8B312710
04FC 00 C48004F5         LD  I ERROR     SET MESSAGE ADDRESS         8B312720
04FE 0  D00A             STO   ERR01+1   IN LOG CALL                 8B312730
                   *                                                 8B312740
04FF 00 74010522         MDX L ERRID,1   SET ERR CALL INDCTOR         8B312750
                   *                                                 8B312760
0501 00 0C00018A         XIO L BSW0      CHECK IF BYPASS             8B312770
0503 00 C4000192         LD  L BSW00     *ERROR PRINT REQSTD         8B312780
0505 0  1802             SRA   2                                     8B312790
0506 0  4804             BSC   E                                     8B312800
0507 0  7002             MDX   ERR02                                 8B312810
                   *                                                 8B312820
                   ********************************************      8B312830
0508 0  401A       ERR01 BSI    LOG       GO PRINT ERROR       SRC    8B312840
0509 0  0000             DC    0                                     8B312850
                   ********************************************      8B312860
                   *                                                 8B312870
050A 0  1010       ERR02 SLA    16        CLEAR ERROR CALL            8B312880
050B 0  D016             STO   ERRID     INDICATOR                   8B312890
                   *                                                 8B312900
050C 00 0C00018A         XIO L BSW0      CHECK IF HALT ON            8B312910
050E 00 C4000192         LD  L BSW00     *ERROR REQUESTED            8B312920
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0510 0  1801             SRA   1                                     8B312930
0511 0  4804             BSC   E                                     8B312940
0512 0  700B             MDX   WT11     HALT ON ERROR BRANCH         8B312950
                   *                                                 8B312960
0513 00 0C00018A   ERR03 XIO L BSW0      HECK IF LOOP ON              8B312970
0515 00 C4000192         LD  L BSW00     *ERROR REQUESTED             8B312980
0517 0  1803             SRA   3                                     8B312990
0518 0  4804             BSC   E                                     8B313000
0519 0  7006             MDX   LPERR     LOOP ERROR                  8B313010
                   *                                                 8B313020
051A 00 740104F5         MDX L ERROR,1   ADD 1 TO RETURN              8B313030
051C 00 4C8004F5         BSC I ERROR     RETURN TO USER         SX    8B313040
                   *                                                 8B313050
                   *               ERROR HALT REQUESTED              8B313060
                   *                                                 8B313070
051E 0  3011       WT11  WAIT    17       HALT ON ERROR REQ.          8B313080
051F 0  70F3             MDX   ERR03                                 8B313090
                   *                                                 8B313100
                   *               LOOP ERROR REQUESTED              8B313110
                   *                                                 8B313120
0520 00 4C000000   LPERR BSC L 0                                     8B313130
                   *                                                 8B313140
0522 0  0000       ERRID DC    0         ERROR CALL INDICATOR        8B313150
                   ********************************************      8B313160
                   *                LOG ROUTINE                *     8B313170
                   ********************************************      8B313180
                   *                                                 8B313190
0523 0  0000       LOG   DC    0                              SE     8B313200
                   *                                                 8B313210
0524 0  6B1D       LOG01 STX   3 LOG06+1   SAVE IX 3                   8B313220
0525 00 0C000320         XIO L MASK0       MASK INTERRUPTS             8B313230
0527 00 0C000322         XIO L MASK1                                   8B313240
                   *                                                 8B313250
0529 00 C400019A         LD  L OPIND       CK OUTPUT DEVICE            8B313260
052B 00 4C180548         BSC L TWRTR,+-    BRANCH IF TYPEWRITER        8B313270
                   *                                                 8B313280
052D 00 C4800523         LD  I LOG         GET MESSAGE ADDRESS         8B313290
052F 0  D058             STO   PRWRT       SET IN IOCC                 8B313300
                   *                                                 8B313310
0530 0  0853       LOG02 XIO     PRSNS     CHECK PRINTER READY         8B313320
0531 00 4C040537         BSC L WT12,E      BRANCH IF NOT READY         8B313330
0533 0  1801             SRA   1                                     8B313340
0534 00 4C040539         BSC L WT13,E      BRANCH IF BUSY              8B313350
0536 0  7004             MDX   LOG05       READY AND NOT BUSY          8B313360
                   *                                                 8B313370
0537 0  3012       WT12  WAIT    18        1443 NOT READY              8B313380
0538 0  70F7             MDX   LOG02       CHECK AGAIN                 8B313390
                   *                                                 8B313400
0539 0  3013       WT13  WAIT    19        1443 BUSY                   8B313410
053A 0  70F5             MDX   LOG02       CHECK AGAIN                 8B313420
                   *                                                 8B313430
053B 0  084C       LOG05 XIO     PRWRT     OUTPUT MESSAGE              8B313440
                   *                                                 8B313450
053C 0  0849             XIO     PRSN      CHECK FOR OP COMPLT         8B313460
053D 0  1002             SLA   2                                     8B313470
053E 0  4810             BSC   -                                     8B313480
053F 0  70FC             MDX   *-4                                   8B313490
0540 0  0843             XIO     PRSNS     RESET DSW                   8B313500
                   *                                                 8B313510
                   *                PRINTING COMPLETE                8B313520
                   *                                                 8B313530
0541 00 67000300   LOG06 LDX   L3 0         RESTORE IX 3                8B313540
0543 00 0C000324         XIO L UMSK0       UNMASK INTERRUPTS           8B313550
0545 00 0C000326         XIO L UMSK1                                   8B313560
0547 00 74010523         MDX L LOG,1       BUMP RETURN                 8B313570
                   *                                                 8B313580
0549 00 4C800523         BSC I LOG         RETURN TO USER         SX    8B313590
                   *                                                 8B313600
```

```
0548 0  1010      TWRTR SLA     16                                  8B313610
054C 0  D032            STO     WRDSW                               8B313620
054D 0  083C            XIO     TWSNS     CHECK IF TYPEWRITER       8B313630
054E 0  1005            SLA     5         READY                     8B313640
054F 0  180F            SRA     15                                  8B313650
0550 00 4C180554        BSC  L  TWR01,+-                            8B313660
                  *                                                 8B313670
0552 0  3014      WT14  WAIT    20        1816/1053 NOT READY       8B313680
0553 0  70F9            MDX     TWRTR+2                             8B313690
                  *                                                 8B313700
0554 0  C028      TWR01 LD      TWRTO     CARRAIGE RETURN AND       8B313710
0555 0  D02A            STO     IOARA     LINE SPACE TO IO ARA      8B313720
                  *                                                 8B313730
0556 0  0835            XIO     TWWRT     CARG RETURN/LINE SP       8B313740
                  *                                                 8B313750
0557 0  0832            XIO     TWSNS     HANG TILL NOT BUSY        8B313760
0558 0  1808            SRA     11                                  8B313770
0559 0  4804            BSC     E                                   8B313780
055A 0  70FC            MDX     *-4                                 8B313790
                  *                                                 8B313800
055B 0  6301            LDX   3 1         BYPASS 1443 WORD COUNT    8B313810
055C 00 C4800520        LD    I LOG       GET MESSAGE ADDRESS       8B313820
055E 0  D001            STO     TWR02+1                             8B313830
                  *                                                 8B313840
055F 00 C7000000  TWR02 LD    L3 0        GET WORD TO PRINT         8B313850
0561 00 D40005BE        STO   L CODWD     SET IN CONVERSION RT      8B313860
0563 0  F01A            EOR     TWRT1     CHECK IF TERMINATOR       8B313870
0564 00 4C180541        BSC   L LOG06,+-  BRANCH IF TERMINATOR      8B313880
                  *                                                 8B313890
                  ********************************************      8B313900
0566 00 4400058E        BSI   L CODCV     GO CONVERT 43 TO TW  SRC  8B313910
                  ********************************************      8B313920
                  *                                                 8B313930
0568 00 C40005BE        LD    L CODWD                               8B313940
056A 0  D015            STO     IOARA                               8B313950
                  *                                                 8B313960
                  *                 OUTPUT A CHARACTER              8B313970
                  *                                                 8B313980
0568 0  0820      XIOWR XIO     TWWRT     WRITE CHARACTER           8B313990
                  *                                                 8B314000
056C 0  081D      XIOSN XIO     TWSNS     HANG ON BUSY              8B314010
056D 0  1808            SRA     11                                  8B314020
056E 0  4804            BSC     E                                   8B314030
056F 0  70FC            MDX     XIOSN     BUSY                      8B314040
                  *                                                 8B314050
                  *                 CHECK IF 1ST 1/2 WORD           8B314060
                  *                                                 8B314070
0570 0  C00E            LD      WRDSW     GET 1/2 WORD SWITCH       8B314080
0571 0  4804            BSC     E                                   8B314090
0572 0  7006            MDX     TWR03     GO SET UP NEXT WORD       8B314100
                  *                                                 8B314110
                  *                 SET UP FOR 2ND 1/2 WORD         8B314120
                  *                                                 8B314130
0573 0  C00C            LD      IOARA                               8B314140
0574 0  1008            SLA     8         POSITION 2ND 1/2 WD       8B314150
0575 0  D00A            STO     IOARA                               8B314160
0576 00 7401057F        MDX   L WRDSW,1   BUMP WORD SWITCH          8B314170
0578 0  70F2            MDX     XIOWR     GO WRITE 2ND 1/2 WD       8B314180
                  *                                                 8B314190
                  *                 SET UP FOR NEXT WORD            8B314200
                  *                                                 8B314210
0579 0  7301      TWR03 MDX     3 1         NEXT WORD INDEX         8B314220
057A 00 7401057F        MDX   L WRDSW,1   BUMP WORD SWITCH          8B314230
057C 0  70E2            MDX     TWR02     GO GET NEXT WORD          8B314240
                  *                                                 8B314250
                  *                 LOG   CONSTANTS                 8B314260
                  *                                                 8B314270
057D 0  8103      TWRTO DC      /8103     LINE SP/CARRAIGE RTN      8B314280
```



```
057E 0  FFFF      TWRT1 DC      /FFFF     TERMINATOR                8B314290
057F 0  0000      WRDSW DC      0         1/2 WORD SWITCH           8B314300
0580 0  0000      IOARA DC      0         OUTPUT AREA               8B314310
                  *                                                 8B314320
0582 00 00000000        DEC     0                                   8B314330
                  *                                                 8B314340
0584 0  0000      PRSNS DC      /0000     PRINTER  SENSE IOCC       8B314350
0585 0  3701            DC      /3701                               8B314360
0586 0  0000      PRSN  DC      0         NON RESET SENSE           8B314370
0587 0  3700            DC      /3700                               8B314380
0588 0  0000      PRWRT DC      /0000     PRINTER  WRITE IOCC       8B314390
0589 0  3500            DC      /3500                               8B314400
058A 0  0000      TWSNS DC      /0000     TYPEWTR  SENSE IOCC       8B314410
058B 0  0F03            DC      /0F03                               8B314420
058C 0  0580      TWWRT DC      IOARA     TYPEWTR  WRITE IOCC       8B314430
058D 0  0902            DC      /0902                               8B314440
                  *                                                 8B314450
                  *************************************************** 8B314460
                  *                  1443 CODE TO 1816/1053       *  8B314470
                  *                  CODE CONVERSION ROUTINE      *  8B314480
                  *************************************************** 8B314490
                  *                                                 8B314500
058E 0  0000      CODCV DC      0                                 SE  8B314510
058F 0  6927            STX   1 CODC4+1   SAVE INDEX REGS           8B314520
0590 0  6A28            STX   2 CODC4+3                             8B314530
0591 0  6B29            STX   3 CODC4+5                             8B314540
                  *                                                 8B314550
0592 0  1010            SLA     16        CLEAR LEFT HALF WORD      8B314560
0593 0  D028            STO     LHIND     *INDICATOR                8B314570
0594 0  6300            LDX   3 0                                   8B314580
                  *                                                 8B314590
0595 0  C028      CODC1 LD      CODWD     GET WORD TO CONVERT       8B314600
0596 0  1890            SRT     16        SET IN Q                  8B314610
0597 0  C027            LD      LHIND                               8B314620
0598 0  4820            BSC     Z         SKIP IF LEFT HALF         8B314630
0599 0  1088            SLT     8         POSITION RIGHT HALF       8B314640
                  *                                                 8B314650
059A 0  1010            SLA     16                                  8B314660
059B 0  1084            SLT     4         ZONE TO ACCUM             8B314670
059C 0  D023            STO     CODOO                               8B314680
059D 00 658005C0        LDX   I1 CODOO    IX 1 = ZONE               8B314690
                  *                                                 8B314700
059F 0  1010            SLA     16                                  8B314710
05A0 0  1084            SLT     4         DIGIT TO ACCUM            8B314720
05A1 0  D01E            STO     CODOO                               8B314730
05A2 00 668005C0        LDX   I2 CODOO    IX 2 = DIGIT              8B314740
                  *                                                 8B314750
05A4 00 C50005C3        LD    L1 ZONE     GET ZONE TABLE ADDRS      8B314760
05A6 0  D001            STO     CODC2+1   SET IN CONVERSION WD      8B314770
                  *                                                 8B314780
05A7 00 C6000000  CODC2 LD    L2 0        GET CONVERTED CODE        8B314790
05A9 00 D70005C1        STO   L3 CODO1                              8B314800
                  *                                                 8B314810
05AB 0  C013            LD      LHIND                               8B314820
05AC 00 4C2005B2        BSC   L CODC3,Z   BRNCH IF RIGHT HALF       8B314830
05AE 00 7401058F        MDX   L LHIND,1                             8B314840
05B0 0  7301            MDX     3 1                                 8B314850
05B1 0  70E3            MDX     CODC1     GO CONVERT RIGHT HLF      8B314860
                  *                                                 8B314870
05B2 0  C00E      CODC3 LD      CODO1     PACK CONVERTED CODES      8B314880
05B3 0  1008            SLA     8                                   8B314890
05B4 0  E80D            OR      CODO2                               8B314900
05B5 0  D008            STO     CODWD                               8B314910
                  *                                                 8B314920
05B6 00 65000000  CODC4 LDX   L1 0        RESTORE INDEX REGS        8B314930
05B8 00 66000000        LDX   L2 0                                  8B314940
05BA 00 67000000        LDX   L3 0                                  8B314950
                  *                                                 8B314960
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05BC 00 4C80058E        BSC  I  CODCV      RETURN TO USER          SX   8B314970
                                                                        8B314980
                        *                                               8B314990
                        *                                               8B315000
                        *                  CONSTANTS                    8B315010
                        *                                               8B315020
05BE 0  0000            CODWD DC     0     WORD LOCATION                8B315030
05BF 0  0000            LHIND DC     0     LEFT HALF INDICATOR          8B315040
05C0 0  0000            COD00 DC     0     WORK AREA                    8B315050
05C1 0  0000            COD01 DC     0     CONVERTED LH CHARACT         8B315060
05C2 0  0000            COD02 DC     0     CONVERTED RH CHARACT         8B315070
                        *                                               8B315080
                        *                                               8B315090
                        *          1443 TO 1816/1053  CODE              8B315100
                        *          CONVERSION TABLES                    8B315110
                        *                                               8B315120
05C3 0  05C7            ZONE  DC     ZONEN     NO ZONE                  8B315130
05C4 0  05D2            DC           ZONE1     0 ZONE                   8B315140
05C5 0  05DD            DC           ZONE2     11 ZONE                  8B315150
05C6 0  05E7            DC           ZONE3     12 ZONE                  8B315160
                        *                                               8B315170
05C7 0  0021            ZONEN DC     /0021     SPACE                    8B315180
05C8 0  00FC            DC           /00FC     1                        8B315190
05C9 0  00D8            DC           /00D8     2                        8B315200
05CA 0  00DC            DC           /00DC     3                        8B315210
05CB 0  00F0            DC           /00F0     4                        8B315220
05CC 0  00F4            DC           /00F4     5                        8B315230
05CD 0  00D0            DC           /00D0     6                        8B315240
05CE 0  00D4            DC           /00D4     7                        8B315250
05CF 0  00E4            DC           /00E4     8                        8B315260
05D0 0  00E0            DC           /00E0     9                        8B315270
05D1 0  00C4            DC           /00C4     0                        8B315280
05D2 0  0000            ZONE1 DC     0                                  8B315290
05D3 0  0000            DC           0                                  8B315300
05D4 0  009A            DC           /009A     S                        8B315310
05D5 0  009E            DC           /009E     T                        8B315320
05D6 0  0082            DC           /0082     U                        8B315330
05D7 0  0086            DC           /0086     V                        8B315340
05D8 0  0092            DC           /0092     W                        8B315350
05D9 0  0096            DC           /0096     X                        8B315360
05DA 0  00A6            DC           /00A6     Y                        8B315370
05DB 0  00A2            DC           /00A2     Z                        8B315380
05DC 0  0021            DC           /0021     SPACE                    8B315390
05DD 0  0000            ZONE2 DC     0                                  8B315400
05DE 0  007E            DC           /007E     J                        8B315410
05DF 0  005A            DC           /005A     K                        8B315420
05E0 0  005E            DC           /005E     L                        8B315430
05E1 0  0072            DC           /0072     M                        8B315440
05E2 0  0076            DC           /0076     N                        8B315450
05E3 0  0052            DC           /0052     O                        8B315460
05E4 0  0056            DC           /0056     P                        8B315470
05E5 0  0066            DC           /0066     Q                        8B315480
05E6 0  0062            DC           /0062     R                        8B315490
05E7 0  0000            ZONE3 DC     0                                  8B315500
05E8 0  003E            DC           /003E     A                        8B315510
05E9 0  001A            DC           /001A     B                        8B315520
05EA 0  001E            DC           /001E     C                        8B315530
05EB 0  0032            DC           /0032     D                        8B315540
05EC 0  0036            DC           /0036     E                        8B315550
05ED 0  0012            DC           /0012     F                        8B315560
05EE 0  0016            DC           /0016     G                        8B315570
05EF 0  0026            DC           /0026     H                        8B315580
05F0 0  0022            DC           /0022     I                        8B315590
05F1 0  0086            DC           /0086     0 ERROR                  8B315600
05F2 0  0000            DC           /0000     PERIOD                   8B315610
                        *                                               8B315620
                        *                                               8B315630
                        *          1 MINUTE DELAY                       8B315640
                        *                                               
```



```
05F3 0  0000            DELAY DC     0                                  SE   8B315650
05F4 00 65000300        LDX  L1 /0300     SET DELAY INDEX                   8B315660
05F6 0  C008            LD       DELY1    PICKUP DELAY CONSTAT              8B315670
05F7 0  D008            STO      DELY2    SET IN DELAY SWITCH               8B315680
05F8 00 74FF0600        MDX  L   DELY2,-1 SKIP WHEN SW = 0                  8B315690
05FA 0  70FD            MDX      DELAY+5  BRN TO DECREMENT SW               8B315700
05FB 0  71FF            MDX   1  -1       SKIP WHEN DLY IX = 0              8B315710
05FC 0  70F9            MDX      DELAY+3  BR TO RELOAD DLY SW               8B315720
05FD 00 4C8005F3        BSC  I   DELAY    EXIT SUBROUTINE           SX      8B315730
                        *                                                   8B315740
05FF 0  8D3F            DELY1 DC     /8D3F                                  8B315750
0600 0  0000            DELY2 DC     0                                      8B315760
                        *                                                   8B315770
                        *          ROUTINE 1 TRAP ROUTINE                   8B315780
                        *                                                   8B315790
0601 0  0000            POLL  DC     0         ENTRY                   IE   8B315800
0602 00 0C0006D4        XIO   L      ILSW      INSURE NO ILSW ON             8B315810
0604 0  C0FC            LD           POLL                                    8B315820
0605 00 D40001F6        STO   L      ICTR      SAVE I COUNT AT INTP          8B315830
0607 00 4C400000        PLEXT BOSC L 0         RETURN TO MAIN LINE     IX    8B315840
                        *                                                   8B315850
                        *                                                   8B315860
                        *          ROUTINE TO SERVICE NON                   8B315870
                        *          PROGRAM GENERATED INTERPT                8B315880
                        *                                                   8B315890
                                                                        IE   8B315900
0609 0  0000            SVINT DC     0                                      8B315910
060A 0  D02D            STO          SVIO      SAVE ACCUMULATOR             8B315920
060B 00 0C0006D4        XIO   L      ILSW      RESET ILSW                   8B315930
060D 00 74020037        MDX   L      SV7,2     SET PASS SWITCH              8B315940
060F 0  1010            SLA          16                                     8B315950
0610 0  D023            STO          SV4       CLEAR AREA CODE CNTR         8B315960
0611 0  C020            LD           SV2                                    8B315970
0612 0  D023            STO          SV6       SET IOCC IN USE SW           8B315980
0613 0  C01D            SVINO LD     SV1                                    8B315990
0614 0  D020            STO          SV5       SET MODIFIER COUNTER         8B316000
0615 0  C01E            SVIN1 LD     SV4       *                            8B316010
0616 0  1008            SLA          11        *                            8B316020
0617 0  E81D            OR           SV5       *BUILD IOCC                  8B316030
0618 0  E81D            OR           SV6       *                            8B316040
0619 0  D01F            STO          SVIO+1    *                            8B316050
061A 0  081D            XIO          SVIO      SENSE DSW AND RESET          8B316060
0618 00 74FF0635        MDX   L      SV5,-1                                 8B316070
061D 0  70F7            MDX          SVIN1     BRANCH IF NOT ALL MD         8B316080
061E 00 74010634        MDX   L      SV4,1     INCREMENT AREA CODE          8B316090
0620 0  C013            LD           SV4                                    8B316100
0621 0  900E            S            SV0       CHECK IF ALL AC USED         8B316110
0622 0  4808            BSC          +         SKIP IF ALL AC USED          8B316120
0623 0  70EF            MDX          SVINO     GO SENSE WITH NXT AC         8B316130
0624 00 74FF0637        MDX   L      SV7,-1    SKIP IF SECOND PASS          8B316140
0626 0  7001            MDX          *+1                                    8B316150
0627 0  7005            MDX          SVEXT-1                                8B316160
0628 0  C00A            LD           SV3                                    8B316170
0629 0  D00C            STO          SV6       SET IOCC FOR PI              8B316180
062A 0  1010            SLA          16                                     8B316190
062B 0  D008            STO          SV4       SET AC FOR NEXT              8B316200
062C 0  70E6            MDX          SVINO     *PASS                        8B316210
062D 0  C00A            LD           SVIO      RESTORE ACCUMULATOR          8B316220
062E 00 4CC00609        SVEXT BOSC I SVINT     EXIT                    IX    8B316230
                        *                                                   8B316240
                        *          **  CONSTANTS  **                        8B316250
                        *                                                   8B316260
0630 0  001F            SV0   DC     /001F     NUMBER OF AREA CODES         8B316270
0631 0  00FF            SV1   DC     /00FF     NUMBER OF MODIFIERS          8B316280
0632 0  0701            SV2   DC     /0701     SENSE/RESET DSW              8B316290
0633 0  0700            SV3   DC     /0700     SENSE/RESET PISW             8B316300
0634 0  0000            SV4   DC     0         AREA CODE INDICATOR          8B316310
0635 0  0000            SV5   DC     0         MODIFIER INDICATOR           8B316320
0636 0  0000            SV6   DC     0         IOCC IN USE                  
```

INTERRUPT FUNCTION TEST

```
                                          PASS SWITCH
0637 0  0000      SV7   DC      0
0638    0000            BSS  E  0
0638 0  0000      SVIO  DC      0         SENSE DSW IOCC
0639 0  0000            DC      0
                  *
                  *                  INTERRUPT TRAP ROUTINES
                  *
                  *
                  *                  INTERRUPT  LEVEL ERROR
                  *                    PRIORITY 1
                  *
063A 0  0000      LVL01 DC      0
063B 0  404F            BSI     CMTRP      GO TO COMN TRAP RTN. SRC
063C 0  3529            DC      /3529      ER
                  *
                  *
                  *                  INTERRUPT  LEVEL TRACE
                  *                    PRIORITY 26
                  *
063D 0  0000      LVL26 DC      0
063E 0  404C            BSI     CMTRP      GO TO COMN TRAP RTN. SRC
063F 0  1329            DC      /1329      TR
                  *
                  *
                  *                  INTERRUPT  LEVEL CE
                  *                    PRIORITY 27
                  *
0640 0  0000      LVL27 DC      0
0641 0  4049            BSI     CMTRP      GO TO COMN TRAP RTN. SRC
0642 0  3335            DC      /3335      CE
                  *
                  *
                  *                  INTERRUPT  LEVEL 0
                  *                    PRIORITY 2
                  *
0643 0  0000      LVL02 DC      0
0644 0  4046            BSI     CMTRP      GO TO COMN TRAP RTN. SRC
0645 0  0A0A            DC      /0A0A      00
                  *
                  *
                  *                  INTERRUPT  LEVEL 1
                  *                    PRIORITY 3
                  *
0646 0  0000      LVL03 DC      0
0647 0  4043            BSI     CMTRP      GO TO COMN TRAP RTN. SRC
0648 0  0A01            DC      /0A01      01
                  *
                  *
                  *                  INTERRUPT  LEVEL 2
                  *                    PRIORITY 4
                  *
0649 0  0000      LVL04 DC      0
064A 0  4040            BSI     CMTRP      GO TO COMN TRAP RTV. SRC
064B 0  0A02            DC      /0A02      02
                  *
                  *
                  *                  INTERRUPT  LEVEL 3
                  *                    PRIORITY 5
                  *
064C 0  0000      LVL05 DC      0
064D 0  403D            BSI     CMTRP      GO TO COMN TRAP RTN. SRC
064E 0  0A03            DC      /0A03      03
                  *
                  *
                  *                  INTERRUPT  LEVEL 4
                  *                    PRIORITY 6
                  *
064F 0  0000      LVL06 DC      0
```


INTERRUPT FUNCTION TEST

```
0650 0  403A            BSI     CMTRP      GO TO COMN TRAP RTN. SRC
0651 0  0A04            DC      /0A04      04
                  *
                  *
                  *                  INTERRUPT  LEVEL 5
                  *                    PRIORITY 7
                  *
0652 0  0000      LVL07 DC      0
0653 0  4037            BSI     CMTRP      GO TO COMN TRAP RTN. SRC
0654 0  0A05            DC      /0A05      05
                  *
                  *
                  *                  INTERRUPT  LEVEL 6
                  *                    PRIORITY 8
                  *
0655 0  0000      LVL08 DC      0
0656 0  4034            BSI     CMTRP      GO TO COMN TRAP RTN. SRC
0657 0  0A06            DC      /0A06      06
                  *
                  *
                  *                  INTERRUPT  LEVEL 7
                  *                    PRIORITY 9
                  *
0658 0  0000      LVL09 DC      0
0659 0  4031            BSI     CMTRP      GO TO COMN TRAP RTN. SRC
065A 0  0A07            DC      /0A07      07
                  *
                  *
                  *                  INTERRUPT  LEVEL 8
                  *                    PRIORITY 10
                  *
065B 0  0000      LVL10 DC      0
065C 0  402E            BSI     CMTRP      GO TO COMN TRAP RTN. SRC
065D 0  0A08            DC      /0A08      08
                  *
                  *
                  *                  INTERRUPT  LEVEL 9
                  *                    PRIORITY 11
                  *
065E 0  0000      LVL11 DC      0
065F 0  402B            BSI     CMTRP      GO TO COMN TRAP RTN. SRC
0660 0  0A09            DC      /0A09      09
                  *
                  *
                  *                  INTERRUPT  LEVEL 10
                  *                    PRIORITY 12
                  *
0661 0  0000      LVL12 DC      0
0662 0  4028            BSI     CMTRP      GO TO COMN TRAP RTN. SRC
0663 0  010A            DC      /010A      10
                  *
                  *
                  *                  INTERRUPT  LEVEL 11
                  *                    PRIORITY 13
                  *
0664 0  0000      LVL13 DC      0
0665 0  4025            BSI     CMTRP      GO TO COMN TRAP RTN. SRC
0666 0  0101            DC      /0101      11
                  *
                  *
                  *                  INTERRUPT  LEVEL 12
                  *                    PRIORITY 14
                  *
0667 0  0000      LVL14 DC      0
0668 0  4022            BSI     CMTRP      GO TO COMN TRAP RTN. SRC
0669 0  0102            DC      /0102      12
                  *
                  *
```

INTERRUPT FUNCTION TEST

```
                   *                INTERRUPT  LEVEL 13                     8B317690
                   *                  PRIORITY 15                           8B317700
                   *                                                        8B317710
066A 0  0000       LVL15 DC      0                                          8B317720
066B 0  401F             BSI     CMTRP       GO TO COMN TRAP RTN. SRC       8B317730
066C 0  0103             DC      /0103       13                             8B317740
                   *                                                        8B317750
                   *                                                        8B317760
                   *                INTERRUPT  LEVEL 14                     8B317770
                   *                  PRIORITY 16                           8B317780
                   *                                                        8B317790
066D 0  0000       LVL16 DC      0                                          8B317800
066E 0  401C             BSI     CMTRP       GO TO COMN TRAP RTN. SRC       8B317810
066F 0  0104             DC      /0104       14                             8B317820
                   *                                                        8B317830
                   *                                                        8B317840
                   *                INTERRUPT  LEVEL 15                     8B317850
                   *                  PRIORITY 17                           8B317860
                   *                                                        8B317870
0670 0  0000       LVL17 DC      0                                          8B317880
0671 0  4019             BSI     CMTRP       GO TO COMN TRAP RTN. SRC       8B317890
0672 0  0105             DC      /0105       15                             8B317900
                   *                                                        8B317910
                   *                                                        8B317920
                   *                INTERRUPT  LEVEL 16                     8B317930
                   *                  PRIORITY 18                           8B317940
                   *                                                        8B317950
0673 0  0000       LVL18 DC      0                                          8B317960
0674 0  4016             BSI     CMTRP       GO TO COMN TRAP RTN. SRC       8B317970
0675 0  0106             DC      /0106       16                             8B317980
                   *                                                        8B317990
                   *                                                        8B318000
                   *                INTERRUPT  LEVEL 17                     8B318010
                   *                  PRIORITY 19                           8B318020
                   *                                                        8B318030
0676 0  0000       LVL19 DC      0                                          8B318040
0677 0  4013             BSI     CMTRP       GO TO COMN TRAP RTN. SRC       8B318050
0678 0  0107             DC      /0107       17                             8B318060
                   *                                                        8B318070
                   *                                                        8B318080
                   *                INTERRUPT  LEVEL 18                     8B318090
                   *                  PRIORITY 20                           8B318100
                   *                                                        8B318110
0679 0  0000       LVL20 DC      0                                          8B318120
067A 0  4010             BSI     CMTRP       GO TO COMN TRAP RTN. SRC       8B318130
067B 0  0108             DC      /0108       18                             8B318140
                   *                                                        8B318150
                   *                                                        8B318160
                   *                INTERRUPT  LEVEL 19                     8B318170
                   *                  PRIORITY 21                           8B318180
                   *                                                        8B318190
067C 0  0000       LVL21 DC      0                                          8B318200
067D 0  400D             BSI     CMTRP       GO TO COMN TRAP RTN. SRC       8B318210
067E 0  0109             DC      /0109       19                             8B318220
                   *                                                        8B318230
                   *                                                        8B318240
                   *                INTERRUPT  LEVEL 20                     8B318250
                   *                  PRIORITY 22                           8B318260
                   *                                                        8B318270
067F 0  0000       LVL22 DC      0                                          8B318280
0680 0  400A             BSI     CMTRP       GO TO COMN TRAP RTN. SRC       8B318290
0681 0  020A             DC      /020A       20                             8B318300
                   *                                                        8B318310
                   *                                                        8B318320
                   *                INTERRUPT LEVEL 21                      8B318330
                   *                  PRIORITY 23                           8B318340
                   *                                                        8B318350
0682 0  0000       LVL23 DC      0                                          8B318360
```


INTEPRUPT FUNCTION TEST

```
0683 0  4007             BSI     CMTRP       GO TO COMN TPAP RTN  SRC     8B318370
0684 0  0201             DC      /0201       21                           8B318380
                   *                                                      8B318390
                   *                                                      8B318400
                   *                INTERRUPT LEVEL 22                    8B318410
                   *                  PRIORITY 24                         8B318420
                   *                                                      8B318430
0685 0  0000       LVL24 DC      0                                        8B318440
0686 0  4004             BSI     CMTRP       GO TO COMN TRAP RTN  SRC     8B318450
0687 0  0202             DC      /0202       22                           8B318460
                   *                                                      8B318470
                   *                                                      8B318480
                   *                INTERRUPT LEVEL 23                    8B318490
                   *                  PRIOTITY 25                         8B318500
                   *                                                      8B318510
0688 0  0000       LVL25 DC      0                                        8B318520
0689 0  4001             BSI     CMTRP       GO TO COMN TRAP RTN  SRC     8B318530
068A 0  0203             DC      /0203       23                           8B318540
                   *                                                      8B318550
                   *                                                      8B318560
                   *                                                      8B318570
                   *                COMMON TRAP ROUTINE                   8B318580
068B 0  0000       CMTRP DC      0                                        8B318590
068C 00 C480068B         LD   I  CMTRP       NO.OF LVL. SERVICED          8B318600
068E 00 D4000995         STO  L  INMJ4+18    SET IN MESSAGE               8B318610
0690 00 9400098E         S    L  INM04+11    SUB REQUEST NUMBER           8B318620
0692 0  D037             STO     CNM00       SAVE                         8B318630
0693 0  0840             XIO     ILSW        SENSE AND SAVE ILSW          8B318640
0694 0  D041             STO     ILSAV                                    8B318650
                   *                                                      8B318660
                   *                EXIT IF ROUTINES 4 OR 5               8B318670
                   *                                                      8B318680
0695 00 C400018F         LD   L  RTNNO                                    8B318690
0697 00 F400042B         EOR  L  CN403                                    8B318700
0699 00 4E180000         BSC  L2 0,+-        ROUTINE 5 EXIT               8B318710
069B 00 C400018F         LD   L  RTNNO                                    8B318720
069D 00 F400031B         EOR  L  CN303                                    8B318730
069F 00 4C180306         BSC  L  RT308,+-    ROUTINE 4 EXIT               8B318740
                   *                                                      8B318750
                   *                CHECK WHICH PASS OF RTN.1             8B318760
                   *                                                      8B318770
06A1 00 C4000281         LD   L  CN102                                    8B318780
06A3 00 4C2006A8         BSC  L  CMT02,Z                                  8B318790
06A5 00 440006D7         BSI  L  SERVC       SERVICE DISABLED     SRC     8B318800
06A7 0  7004             MDX     CMT00       *INTERRUPT                   8B318810
                   *                                                      8B318820
                   *                CHECK IF PROPER LEVEL SRVC            8B318830
                   *                                                      8B318840
06A8 0  C021       CMT02 LD      CNM00                                    8B318850
06A9 00 4C1806B4         BSC  L  CMT03,+-    BRANCH ON PROPR LVL          8B318860
                   *                                                      8B318870
06AB 0  7005             MDX     CMT01       WRONG LEVEL SERVICED         8B318880
                   *                                                      8B318890
                   *                                                      8B318900
                   ***********************************************        8B318910
06AC 00 440004F5   CMT00 BSI  L  ERROR       PRINT REQ INTERRUPTD SRC     8B318920
06AE 0  099A             DC      INM05       WITH DISABLE SW ON           8B318930
                   ***********************************************        8B318940
06AF 00 4C00023B         BSC  L  RT104                                    8B318950
                   ***********************************************        8B318960
06B1 00 440004F5   CMT01 BSI  L  ERROR       PRINT WRONG LEVEL    SRC     8B318970
06B3 0  0983             DC      INM04       SERVICED                     8B318980
                   ***********************************************        8B318990
                   *                                                      8B319000
06B4 00 C4000979   CMT03 LD   L  INM03+11    CK IF LVL INTERNAL           8B319010
06B6 00 9400092E         S    L  INLVT                                    8B319020
06B8 00 4C5806C8         BOSC L  CMT06,+-    BRANCH IF INTERNAL           8B319030
                   *                                                      8B319040
```

INTERRUPT FUNCTION TEST

```
06BA 0  C01B              LD       ILSAV       CHECK ILSW                      8B319050
06BB 00 4C6006BF          BOSC L   CMT05,Z     BRANCH IF ILSW NOT 0            8B319060
                    *                                                          8B319070
06BD 00 4C40023B          BOSC L   RT104       RETURN TO ROUTINE 1             8B319080
                    *                                                          8B319090
                    *******************************************************    8B319100
06BF 00 440004F5    CMT05 BSI  L   ERROR       PRINT ILSW NOT ZERO  SRC        8B319110
06C1 0  0A45              DC       INM14                                       8B319120
                    *******************************************************    8B319130
                    *                                                          8B319140
06C2 00 C4000199    CMT04 LD   L   RUNSW       BYPASS WAIT IF RUN              8B319150
06C4 00 4C2006C8          BSC  L   CNM00-2,Z   MODE WITH OUT STOPS             8B319160
06C6 0  C00F              LD       ILSAV       ILSW TO A                       8B319170
                    *                                                          8B319180
06C7 0  3015        WT15  WAIT     21          ILSW NOT 0  PROG INT            8B319190
                    *                          ERROR ILSW                      8B319200
06C8 00 4C00023B          BSC  L   RT104       CONTINUE                        8B319210
06CA 0  0000        CNM00 DC       0                                           8B319220
                    *                                                          8B319230
06CB 0  C00A        CMT06 LD       ILSAV                                       8B319240
06CC 00 4C2806C8          BSC  L   CNM00-2,+Z                                  8B319250
                    *******************************************************    8B319260
06CE 00 440004F5          BSI  L   ERROR       WRONG ILSW ON OP      SRC       8B319270
06D0 0  0984              DC       INM06       CODE VIOLATE                    8B319280
                    *******************************************************    8B319290
06D1 0  70F0              MDX      CMT04       CONTINUE                        8B319300
06D2 00 00000000          DEC      0                                           8B319310
06D4 0  0000        ILSW  DC       /0000       SENSE ILSW IOCC                 8B319320
06D5 0  0300              DC       /0300                                       8B319330
                    *                                                          8B319340
06D6 0  0000        ILSAV DC       0           SAVE FOR ILSW                   8B319350
                    *                                                          8B319360
                    *                                                          8B319370
06D7 0  0000        SERVC DC       0                                           8B319380
06D8 00 0C000436          XIO  L   CNSNS                                       8B319390
06DA 0  08F9              XIO      ILSW        SENSE ILSW                      8B319400
06DB 00 4CC006D7          BOSC I   SERVC       EXIT          ESET      SX      8B319410
                    *                                                          8B319420
                    *                                                          8B319430
                    *                PRIORITY  TRAP ROUTINES                   8B319440
                    *                                                          8B319450
                    *                INTERRUPT ROUTINE LEVEL ER                8B319460
                    *                                                          8B319470
                    *                                                          8B319480
06DE 00 00000000          DEC      0                                           8B319490
06E0 0  0000        PRI01 DC       0                                           8B319500
06E1 0  C00B              LD       REQER       SET LEVEL ER REQUEST            8B319510
06E2 00 D5000A78          STO  L1  IN16V       NUMBER IN REQ SEQ MG            8B319520
06E4 00 D6000AB8          STO  L2  IN17V       SET ER IN SER SEQ MG            8B319530
06E6 0  7202              MDX    2 2                                           8B319540
06E7 00 0C000436          XIO  L   CNSNS       WRONG BTTN PROTECT              8B319550
06E9 00 0C0006D4          XIO  L   ILSW        SENSE RESET                     8B319560
06EB 00 4CC006E0          BOSC I   PRI01                                       8B319570
06ED 0  3529        REQER DC       /3529       ER                              8B319580
                    *                                                          8B319590
                    *                INTERRUPT ROUTINE LEVEL TR                8B319600
                    *                                                          8B319610
06EE 0  0000        PRI26 DC       0                                           8B319620
06EF 0  C00E              LD       REQTR       LEVEL TR REQUEST TO             8B319630
06F0 00 D5000A78          STO  L1  IN16V       REQUEST SEQUENCE MSG            8B319640
06F2 0  7102              MDX    1 2                                           8B319650
06F3 0  73FF              MDX    3 -1                                          8B319660
06F4 0  7006              MDX      PR260       NOT LAST INTERRUPT              8B319670
                    *                                                          8B319680
                    *                SERVICE THIS LEVEL                        8B319690
                    *                                                          8B319700
06F5 0  C008        PR261 LD       REQTR       LEVEL TR TO LEVEL               8B319710
06F6 00 D6000AB8          STO  L2  IN17V       SRVCD SEQUENCE MSG              8B319720
06F8 0  7202              MDX    2 2
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INTERRUPT FUNCTION TEST

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06F9 00 4C8006EE          BSC  I   PRI26       NON RESET BRANCH                8B319730
                    *                                                          8B319740
06FB 0  0804        PR260 XIO      PR262       ISSUE INTERRUPT                 8B319750
06FC 0  1000              NOP                                                  8B319760
06FD 0  70F7              MDX      PR261                                       8B319770
                    *                                                          8B319780
06FE 0  1329        REQTR DC       /1329       TR                              8B319790
06FF 0  0000              DC       0                                           8B319800
                    *                                                          8B319810
0700 0  0000        PR262 DC       0           LOWEST LEVEL IOCC               8B319820
0701 0  0000              DC       0                                           8B319830
                    *                                                          8B319840
                    *                INTERRUPT ROUTINE LEVEL CE                8B319850
                    *                                                          8B319860
0702 0  0000        PRI27 DC       0                                           8B319870
0703 0  C00E              LD       REQCE       LEVEL CE REQUEST TO             8B319880
0704 00 D5000A78          STO  L1  IN16V       REQUEST SEQUENCE MSG            8B319890
0706 0  7102              MDX    1 2                                           8B319900
0707 0  73FF              MDX    3 -1                                          8B319910
0708 0  7006              MDX      PR270                                       8B319920
                    *                                                          8B319930
                    *                SERVICE THIS LEVEL                        8B319940
                    *                                                          8B319950
0709 0  C008        PR271 LD       REQCE       LEVEL CE TO LEVEL               8B319960
070A 00 D6000AB8          STO  L2  IN17V       SRVCD SEQUENCE MSG              8B319970
070C 0  7202              MDX    2 2                                           8B319980
070D 00 4CC0000A          BOSC I   /000A       BRANCH RESET                    8B319990
                    *                                                          8B320000
070F 0  0804        PR270 XIO      PR272       ISSUE INTERRUPT                 8B320010
0710 0  1000              NOP                                                  8B320020
0711 0  70F7              MDX      PR271                                       8B320030
                    *                                                          8B320040
0712 0  3335        REQCE DC       /3335       CE                              8B320050
0713 0  0000              DC       0                                           8B320060
                    *                                                          8B320070
0714 0  0000        PR272 DC       0           LOWEST LEVEL IOCC               8B320080
0715 0  0000              DC       0                                           8B320090
                    *                                                          8B320100
                    *                INTERRUPT ROUTINE LEVEL 00                8B320110
                    *                                                          8B320120
0716 0  0000        PRI02 DC       0                                           8B320130
0717 0  C00E              LD       REQ00       LEVEL 00 REQUEST TO             8B320140
0718 00 D5000A78          STO  L1  IN16V       REQUEST SEQUENCE MSG            8B320150
071A 0  7102              MDX    1 2                                           8B320160
071B 0  73FF              MDX    3 -1                                          8B320170
071C 0  7006              MDX      PR020       NOT LAST INTERRUPT              8B320180
                    *                                                          8B320190
                    *                SERVICE THIS INTERRUPT                    8B320200
                    *                                                          8B320210
071D 0  C008        PR021 LD       REQ00       LEVEL 00 TO LEVEL               8B320220
071E 00 D6000AB8          STO  L2  IN17V       SRVCD SEQUENCE MSG              8B320230
0720 0  7202              MDX    2 2                                           8B320240
0721 00 4CC00716          BOSC I   PRI02       BRANCH RESET                    8B320250
                    *                                                          8B320260
0723 0  0100        PR020 DC       /0100       ILLEGAL OP INTRP ER             8B320270
0724 0  1000              NOP                                                  8B320280
0725 0  70F7              MDX      PR021                                       8B320290
                    *                                                          8B320300
0726 0  0A0A        REQ00 DC       /0A0A       00                              8B320310
0727 0  0000              DC       0                                           8B320320
                    *                                                          8B320330
0728 0  0000              DC       0                                           8B320340
0729 0  0000              DC       0                                           8B320350
                    *                                                          8B320360
                    *                INTERRUPT ROUTINE LEVEL 01                8B320370
                    *                                                          8B320380
072A 0  0000        PRI03 DC       0                                           8B320390
072B 0  C00E              LD       REQ01       LEVEL 01 REQUEST TO             8B320400
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072C 00 D5000A78          STO  L1 IN16V     REQUEST SEQUENCE MSG      8B320410
072E 0  7102              MDX   1 2                                   8B320420
072F 0  73FF              MDX   3 -1                                  8B320430
0730 0  7006              MDX     PR030     NOT LAST INTERRUPT        8B320440
                     *                                                8B320450
                     *          SERVICE THIS INTERRUPT                8B320460
                     *                                                8B320470
0731 0  C008         PR031 LD      REQ01     LEVEL 01 TO LEVEL         8B320480
0732 00 D6000AB8           STO  L2 IN17V     SRVCD SEQUENCE MSG        8B320490
0734 0  7202               MDX   2 2                                   8B320500
0735 00 4CC0072A           BOSC I  PRI03     BRANCH RESET              8B320510
                     *                                                8B320520
0737 0  0804         PR030 XIO     PR032     INTERRUPT FOR LVL         8B320530
0738 0  1000               NOP                                         8B320540
0739 0  70F7               MDX     PR031                               8B320550
                     *                                                8B320560
073A 0  0A01         REQ01 DC      /0A01     01                        8B320570
073B 0  0000               DC      0                                   8B320580
                     *                                                8B320590
073C 0  8000         PR032 DC      /8000     INTRP 00 IOCC             8B320600
073D 0  04A0               DC      /04A0                               8B320610
                     *                                                8B320620
                     *          INTERRUPT ROUTINE LEVEL 02            8B320630
                     *                                                8B320640
073E 0  0000         PRI04 DC      0                                   8B320650
073F 0  C00E               LD      REQ02     LEVEL 01 REQUEST TO       8B320660
0740 00 D5000A78           STO  L1 IN16V     REQUEST SEQUENCE MSG      8B320670
0742 0  7102               MDX   1 2                                   8B320680
0743 0  73FF               MDX   3 -1                                  8B320690
0744 0  7006               MDX     PR040     NOT LAST INTERRUPT        8B320700
                     *                                                8B320710
                     *          SERVICE THIS INTERRUPT                8B320720
                     *                                                8B320730
0745 0  C008         PR041 LD      REQ02     LEVEL 02 TO LEVEL         8B320740
0746 00 D6000AB8           STO  L2 IN17V     SRVCD SEQUENCE MSG        8B320750
0748 0  7202               MDX   2 2                                   8B320760
0749 00 4CC0073E           BOSC I  PRI04     BRANCH RESET              8B320770
                     *                                                8B320780
074B 0  0804         PR040 XIO     PR042     INTERRUPT FOR LVL 02      8B320790
074C 0  1000               NOP                                         8B320800
074D 0  70F7               MDX     PR041                               8B320810
                     *                                                8B320820
074E 0  0A02         REQ02 DC      /0A02     02                        8B320830
074F 0  0000               DC      0                                   8B320840
                     *                                                8B320850
0750 0  4000         PR042 DC      /4000     INTRP 01 IOCC             8B320860
0751 0  04A0               DC      /04A0                               8B320870
                     *                                                8B320880
                     *          INTERRUPT ROUTINE LEVEL 03            8B320890
                     *                                                8B320900
0752 0  0000         PRI05 DC      0                                   8B320910
0753 0  C00E               LD      REQ03     LEVEL 03 REQUEST TO       8B320920
0754 00 D5000A78           STO  L1 IN16V     REQUEST SEQUENCE MSG      8B320930
0756 0  7102               MDX   1 2                                   8B320940
0757 0  73FF               MDX   3 -1                                  8B320950
0758 0  7006               MDX     PR050     NOT LAST INTERRUPT        8B320960
                     *                                                8B320970
                     *          SERVICE THIS INTERRUPT                8B320980
                     *                                                8B320990
0759 0  C008         PR051 LD      REQ03     LEVEL 03 TO LEVEL         8B321000
075A 00 D6000AB8           STO  L2 IN17V     SRVCD SEQUENCE MSG        8B321010
075C 0  7202               MDX   2 2                                   8B321020
075D 00 4CC00752           BOSC I  PRI05     BRANCH RESET              8B321030
                     *                                                8B321040
075F 0  0804         PR050 XIO     PR052     INTERRUPT FOR LVL 01      8B321050
0760 0  1000               NOP                                         8B321060
0761 0  70F7               MDX     PR051                               8B321070
                     *                                                8B321080
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0762 0  0A03         REQ03 DC      /0A03     03                        8B321090
0763 0  0000               DC      0                                   8B321100
                     *                                                8B321110
0764 0  2000         PR052 DC      /2000     INTRP 01 IOCC             8B321120
0765 0  04A0               DC      /04A0                               8B321130
                     *                                                8B321140
                     *          INTERRUPT ROUTINE LEVEL 04            8B321150
                     *                                                8B321160
0766 0  0000         PRI06 DC      0                                   8B321170
0767 0  C00E               LD      REQ04     LEVEL 04 REQUEST TO       8B321180
0768 00 D5000A78           STO  L1 IN16V     REQUEST SEQUENCE MSG      8B321190
076A 0  7102               MDX   1 2                                   8B321200
076B 0  73FF               MDX   3 -1                                  8B321210
076C 0  7006               MDX     PR060     NOT LAST INTERRUPT        8B321220
                     *                                                8B321230
                     *          SERVICE THIS INTERRUPT                8B321240
                     *                                                8B321250
076D 0  C008         PR061 LD      REQ04     LEVEL 04 TO LEVEL         8B321260
076E 00 D6000AB8           STO  L2 IN17V     SRVCD SEQUENCE MSG        8B321270
0770 0  7202               MDX   2 2                                   8B321280
0771 00 4CC00766           BOSC I  PRI06     BRANCH RESET              8B321290
                     *                                                8B321300
0773 0  0804         PR060 XIO     PR062     INTERRUPT FOR LVL 03      8B321310
0774 0  1000               NOP                                         8B321320
0775 0  70F7               MDX     PR061                               8B321330
                     *                                                8B321340
0776 0  0A04         REQ04 DC      /0A04     04                        8B321350
0777 0  0000               DC      0                                   8B321360
0778 0  1000         PR062 DC      /1000     INTRP 03 IOCC             8B321370
0779 0  04A0               DC      /04A0                               8B321380
                     *                                                8B321390
                     *          INTERRUPT ROUTINE LEVEL 05            8B321400
                     *                                                8B321410
077A 0  0000         PRI07 DC      0                                   8B321420
077B 0  C00E               LD      REQ05     LEVEL 05 REQUEST TO       8B321430
077C 00 D5000A78           STO  L1 IN16V     REQUEST SEQUENCE MSG      8B321440
077E 0  7102               MDX   1 2                                   8B321450
077F 0  73FF               MDX   3 -1                                  8B321460
0780 0  7006               MDX     PR070     NOT LAST INTERRUPT        8B321470
                     *                                                8B321480
                     *          SERVICE THIS INTERRUPT                8B321490
                     *                                                8B321500
0781 0  C008         PR071 LD      REQ05     LEVEL 05 TO LEVEL         8B321510
0782 00 D6000AB8           STO  L2 IN17V     SRVCD SEQUENCE MSG        8B321520
0784 0  7202               MDX   2 2                                   8B321530
0785 00 4CC0077A           BOSC I  PRI07     BRANCH RESET              8B321540
                     *                                                8B321550
0787 0  0804         PR070 XIO     PR072     INTERRUPT FOR LVL 04      8B321560
0788 0  1000               NOP                                         8B321570
0789 0  70F7               MDX     PR071                               8B321580
                     *                                                8B321590
078A 0  0A05         REQ05 DC      /0A05     05                        8B321600
078B 0  0000               DC      0                                   8B321610
                     *                                                8B321620
078C 0  0800         PR072 DC      /0800     INTRP 04 IOCC             8B321630
078D 0  04A0               DC      /04A0                               8B321640
                     *                                                8B321650
                     *          INTERRUPT ROUTINE LEVEL 06            8B321660
                     *                                                8B321670
078E 0  0000         PRI08 DC      0                                   8B321680
078F 0  C00E               LD      REQ06     LEVEL 06 REQUEST TO       8B321690
0790 00 D5000A78           STO  L1 IN16V     REQUEST SEQUENCE MSG      8B321700
0792 0  7102               MDX   1 2                                   8B321710
0793 0  73FF               MDX   3 -1                                  8B321720
0794 0  7006               MDX     PR080                               8B321730
                     *                                                8B321740
                     *          SERVICE THIS INTERRUPT                8B321750
                     *                                                8B321760
```

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0795 0  C008      PR081 LD      REQ06      LEVEL 06 TO LEVEL          8B321770
0796 00 D6000AB8        STO  L2 IN17V      SRVCD SEQUENCE MSG         8B321780
0798 0  7202            MDX   2 2                                    8B321790
0799 00 4CC0078E        BOSC I  PRI08      BRANCH RESET               8B321800
                        *                                            8B321810
079B 0  0804      PR080 XIO     PR082      INTERRUOT FOR LVL 05       8B321820
079C 0  1000            NOP                                          8B321830
079D 0  70F7            MDX     PR081                                8B321840
                        *                                            8B321850
079E 0  0A06      REQ06 DC      /0A06      06                         8B321860
079F 0  0000            DC      0                                    8B321870
                        *                                            8B321880
07A0 0  0400      PR082 DC      /0400      INTRP 05 IOCC              8B321890
07A1 0  04A0            DC      /04A0                                8B321900
                        *                                            8B321910
                        *          INTERRUPT ROUTINE LEVEL 07        8B321920
                        *                                            8B321930
07A2 0  0000      PRI09 DC      0                                    8B321940
07A3 0  C00E            LD      REQ07      LEVEL 07 REQUEST TO        8B321950
07A4 00 D5000A78        STO  L1 IN16V      REQUEST SEQUENCE MSG       8B321960
07A6 0  7102            MDX   1 2                                    8B321970
07A7 0  73FF            MDX   3 -1                                   8B321980
07A8 0  7006            MDX     PR090      NOT LAST INTERRUPT         8B321990
                        *                                            8B322000
                        *          SERVICE THIS INTERRUPT            8B322010
                        *                                            8B322020
07A9 0  C008      PR091 LD      REQ07      LEVEL 07 TO LEVEL          8B322030
07AA 00 D6000AB8        STO  L2 IN17V      SRVCD SEQUENCE MSG         8B322040
07AC 0  7202            MDX   2 2                                    8B322050
07AD 00 4CC007A2        BOSC I  PRI09      BRANCH RESET               8B322060
                        *                                            8B322070
07AF 0  0804      PR090 XIO     PR092      INTERRUPT FOR LV1 06       8B322080
0780 0  1000            NOP                                          8B322090
07B1 0  70F7            MDX     PR091                                8B322100
                        *                                            8B322110
07B2 0  0A07      REQ07 DC      /0A07      07                         8B322120
07B3 0  0000            DC      0                                    8B322130
                        *                                            8B322140
07B4 0  0200      PR092 DC      /0200      INTRP 06 IOCC              8B322150
07B5 0  04A0            DC      /04A0                                8B322160
                        *                                            8B322170
                        *          INTERRUPT ROUTINE LEVEL 08        8B322180
                        *                                            8B322190
07B6 0  0000      PRI10 DC      0                                    8B322200
07B7 0  C00E            LD      REQ08      LEVEL 08 REQUEST TO        8B322210
07B8 00 D5000A78        STO  L1 IN16V      REQUEST SEQUENCE MSG       8B322220
07BA 0  7102            MDX   1 2                                    8B322230
07BB 0  73FF            MDX   3 -1                                   8B322240
07BC 0  7006            MDX     PR100      NOT LAST INTERRUPT         8B322250
                        *                                            8B322260
                        *          SERVICE THIS INTERRUPT            8B322270
                        *                                            8B322280
07BD 0  C008      PR101 LD      REQ08      LEVEL 08 TO LEVEL          8B322290
07BE 00 D6000AB8        STO  L2 IN17V      SRVCD SEQUENCE MSG         8B322300
07C0 0  7202            MDX   2 2                                    8B322310
07C1 00 4CC00786        BOSC I  PRI10      BRANCH RESET               8B322320
                        *                                            8B322330
07C3 0  0804      PR100 XIO     PR102      INTERRUPT FOR LV1 07       8B322340
07C4 0  1000            NOP                                          8B322350
07C5 0  70F7            MDX     PR101                                8B322360
                        *                                            8B322370
07C6 0  0A08      REQ08 DC      /0A08      08                         8B322380
07C7 0  0000            DC      0                                    8B322390
                        *                                            8B322400
07C8 0  0100      PR102 DC      /C100      INTRP 07 IOCC              8B322410
07C9 0  04A0            DC      /04A0                                8B322420
                        *                                            8B322430
                        *          INTERRUPT ROUTINE LEVEL 09        8B322440
```



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                        *                                            8B322450
07CA 0  0000      PPI11 DC      0                                    8B322460
07CB 0  C00E            LD      REQ09      LEVEL 09 REQUEST TO        8B322470
07CC 00 D5000A78        STO  L1 IN16V      REQUEST SEQUENCE MSG       8B322480
07CE 0  7102            MDX   1 2                                    8B322490
07CF 0  73FF            MDX   3 -1                                   8B322500
07D0 0  7006            MDX     PR110      NOT LAST INTERRUPT         8B322510
                        *                                            8B322520
                        *          SERVICE THIS INTERRUPT            8B322530
                        *                                            8B322540
07D1 0  C008      PR111 LD      REQ09      LEVEL 09 TO LEVEL          8B322550
07D2 00 D6000AB8        STO  L2 IN17V      SRVCD SEQUENCE MSG         8B322560
07D4 0  7202            MDX   2 2                                    8B322570
07D5 00 4CC007C4        BOSC I  PRI11      BRANCH RESET               8B322580
                        *                                            8B322590
07D7 0  0804      PR110 XIO     PR112      INTERRUPT FOR LVL 08       8B322600
07D8 0  1000            NOP                                          8B322610
07D9 0  70F7            MDX     PR111                                8B322620
                        *                                            8B322630
07DA 0  0A09      REQ09 DC      /0A09      09                         8B322640
07DB 0  0000            DC      0                                    8B322650
                        *                                            8B322660
07DC 0  0080      PR112 DC      /0080      INTRP 08 IOCC              8B322670
07DD 0  04A0            DC      /04A0                                8B322680
                        *                                            8B322690
                        *          INTERRUPT ROUTINE LEVEL 10        8B322700
                        *                                            8B322710
07DE 0  0000      PRI12 DC      0                                    8B322720
07DF 0  C00E            LD      REQ10      LEVEL 10 REQUEST TO        8B322730
07E0 00 D5000A78        STO  L1 IN16V      REQUEST SEQUENCE MSG       8B322740
07E2 0  7102            MDX   1 2                                    8B322750
07E3 0  73FF            MDX   3 -1                                   8B322760
07E4 0  7006            MDX     PR120      NOT LAST INTERRUPT         8B322770
                        *                                            8B322780
                        *          SERVICE THIS INTERRUPT            8B322790
                        *                                            8B322800
07E5 0  C008      PR121 LD      REQ10      LEVEL    TO LEVEL          8B322810
07E6 00 D6000AB8        STO  L2 IN17V      SRVCD SEQUENCE MSG         8B322820
07E8 0  7202            MDX   2 2                                    8B322830
07E9 00 4CC007DE        BOSC I  PRI12      BRANCH RESET               8B322840
                        *                                            8B322850
07EB 0  0804      PR120 XIO     PR122      INTERRUPT FOR LVL 09       8B322860
07EC 0  1000            NOP                                          8B322870
07ED 0  70F7            MDX     PR121                                8B322880
                        *                                            8B322890
07EE 0  010A      REQ10 DC      /010A      10                         8B322900
07EF 0  0000            DC      0                                    8B322910
                        *                                            8B322920
07F0 0  0040      PR122 DC      /0040      INTRP 09 IOCC              8B322930
07F1 0  04A0            DC      /04A0                                8B322940
                        *                                            8B322950
                        *          INTERRUPT ROUTINE LEVEL 11        8B322960
                        *                                            8B322970
07F2 0  0000      PRI13 DC      0                                    8B322980
07F3 0  C00E            LD      REQ11      LEVEL 11 REQUEST TO        8B322990
07F4 00 D5000A78        STO  L1 IN16V      REQUEST SEQUENCE MSG       8B323000
07F6 0  7102            MDX   1 2                                    8B323010
07F7 0  73FF            MDX   3 -1                                   8B323020
07F8 0  7006            MDX     PR130      NOT LAST INTERRUPT         8B323030
                        *                                            8B323040
                        *          SERVICE THIS INTERRUPT            8B323050
                        *                                            8B323060
07F9 0  C008      PR131 LD      REQ11      LEVEL 11 TO LEVEL          8B323070
07FA 00 D6000AB8        STO  L2 IN17V      SRVCD SEQUENCE MSG         8B323080
07FC 0  7202            MDX   2 2                                    8B323090
07FD 00 4CC007F2        BOSC I  PRI13      BRANCH RESET               8B323100
                        *                                            8B323110
07FF 0  0804      PR130 XIO     PR132      INTERRUPT FOR LVL 10       8B323120
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0800 0  1000          NOP
0801 0  70F7          MDX     PR131
                *
0802 0  0101  REQ11   DC      /0101       11
0803 0  0000          DC      0
                *
0804 0  0020  PR132   DC      /0020       INTRP 10 IOCC
0805 0  04A0          DC      /04A0
                *
                *                   INTERRUPT ROUTINE LEVEL 12
                *
                *
0806 0  0000  PRI14   DC      0
0807 0  C00E          LD      REQ12       LEVEL 12 REQUEST TO
0808 00 D5000A78      STO  L1 IN16V       REQUEST SEQUENCE MSG
080A 0  7102          MDX  1 2
080B 0  73FF          MDX  3 -1
080C 0  7006          MDX     PR140       NOT LAST INTERRUPT
                *
                *                   SERVICE THIS INTERRUPT
                *
080D 0  C008  PR141   LD      REQ12       LEVEL 12 TO LEVEL
080E 00 D6000AB8      STO  L2 IN17V       SRVCD SEQUENCE MSG
0810 0  7202          MDX  2 2
0811 00 4CC00806      BOSC I  PRI14       BRANCH RESET
                *
0813 0  0804  PR140   XIO      PR142       INTERRUPT FOR LVL 11
0814 0  1000          NOP
0815 0  70F7          MDX     PR141
                *
0816 0  0102  REQ12   DC      /0102       12
0817 0  0000          DC      0
                *
0818 0  0010  PR142   DC      /0010       INTRP 11 IOCC
0819 0  04A0          DC      /04A0
                *
                *                   INTERRUPT ROUTINE LEVEL 13
                *
                *
081A 0  0000  PRI15   DC      0
081B 0  C00E          LD      REQ13       LEVEL 13 REQUEST TO
081C 00 D5000A78      STO  L1 IN16V       REQUEST SEQUENCE MSG
081E 0  7102          MDX  1 2
081F 0  73FF          MDX  3 -1
0820 0  7006          MDX     PR150       NOT LAST INTERRUPT
                *
                *                   SERVICE THIS INTERRUPT
                *
                *
0821 0  C008  PR151   LD      REQ13       LEVEL 13 TO LEVEL
0822 00 D6000AB8      STO  L2 IN17V       SRVCD SEQUENCE MSG
0824 0  7202          MDX  2 2
0825 00 4CC0081A      BOSC I  PRI15       BRANCH RESET
                *
0827 0  0804  PR150   XIO      PR152       INTERRUPT FOR LVL 12
0828 0  1000          NOP
0829 0  70F7          MDX     PR151
                *
082A 0  0103  REQ13   DC      /0103       13
082B 0  0000          DC      0
                *
082C 0  C008  PR152   DC      /0008       INTRP 12 IOCC
082D 0  04A0          DC      /04A0
                *
                *                   INTERRUPT ROUTINE LEVEL 14
                *
                *
082E 0  0000  PRI16   DC      0
082F 0  C00E          LD      REQ14       LEVEL 14 REQUEST TO
0830 00 D5000A78      STO  L1 IN16V       REQUEST SEQUENCE MSG
0832 0  7102          MDX  1 2
0833 0  73FF          MDX  3 -1
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8B323130 8B323140 8B323150 8B323160 8B323170 8B323180 8B323190 8B323200 8B323210 8B323220 8B323230 8B323240 8B323250 8B323260 8B323270 8B323280 8B323290 8B323300 8B323310 8B323320 8B323330 8B323340 8B323350 8B323360 8B323370 8B323380 8B323390 8B323400 8B323410 8B323420 8B323430 8B323440 8B323450 8B323460 8B323470 8B323480 8B323490 8B323500 8B323510 8B323520 8B323530 8B323540 8B323550 8B323560 8B323570 8B323580 8B323590 8B323600 8B323610 8B323620 8B323630 8B323640 8B323650 8B323660 8B323670 8B323680 8B323690 8B323700 8B323710 8B323720 8B323730 8B323740 8B323750 8B323760 8B323770 8B323780 8B323790 8B323800


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0834 0  7006          MDX     PR160       NOT LAST INTERRUPT
                *
                *                   SERVICE THIS INTERRUPT
                *
                *
0835 0  C008  PR161   LD      REQ14       LEVEL 14 TO LEVEL
0836 00 D6000AB8      STO  L2 IN17V       SRVCD SEQUENCE MSG
0838 0  7202          MDX  2 2
0839 00 4CC0082E      BOSC I  PRI16       BRANCH RESET
                *
083B 0  0804  PR160   XIO      PR162       INTERRUPT FOR LVL 13
083C 0  1000          NOP
083D 0  70F7          MDX     PR161
                *
083E 0  0104  REQ14   DC      /0104       14
083F 0  0000          DC      0
                *
0840 0  0004  PR162   DC      /0004       INTRP 13 IOCC
0841 0  04A0          DC      /04A0
                *
                *                   INTERRUPT ROUTINE LEVEL 15
                *
                *
0842 0  0000  PRI17   DC      0
0843 0  C00E          LD      REQ15       LEVEL 15 REQUEST TO
0844 00 D5000A78      STO  L1 IN16V       REQUEST SEQUENCE MSG
0846 0  7102          MDX  1 2
0847 0  73FF          MDX  3 -1
0848 0  7006          MDX     PR170       NOT LAST INTERRUPT
                *
                *                   SERVICE THIS INTERRUPT
                *
                *
0849 0  C008  PR171   LD      REQ15       LEVEL 15 TO LEVEL
084A 00 D6000AB8      STO  L2 IN17V       SRVCD SEQUENCE MSG
084C 0  7202          MDX  2 2
084D 00 4CC00842      BOSC I  PRI17       BRANCH RESET
                *
084F 0  0804  PR170   XIO      PR172       INTERRUPT FOR LVL 14
0850 0  1000          NOP
0851 0  70F7          MDX     PR171
                *
0852 0  0105  REQ15   DC      /0105       15
0853 0  0000          DC      0
                *
0854 0  8000  PR172   DC      /8000       INTERP 14 IOCC
0855 0  04A1          DC      /04A1
                *
                *                   INTERRUPT ROUTINE LEVEL 16
                *
                *
0856 0  0000  PRI18   DC      0
0857 0  C00E          LD      REQ16       LEVEL 16 REQUEST TO
0858 00 D5000A78      STO  L1 IN16V       REQUEST SEQUENCE MSG
085A 0  7102          MDX  1 2
085B 0  73FF          MDX  3 -1
085C 0  7006          MDX     PR180       NOT LAST INTERRUPT
                *
                *                   SERVICE THIS INTERRUPT
                *
                *
085D 0  C008  PR181   LD      REQ16       LEVEL 16 TO LEVEL
085E 00 D6000AB8      STO  L2 IN17V       SRVCD SEQUENCE MSG
0860 0  7202          MDX  2 2
0861 00 4CC00856      BOSC I  PRI18       BRANCH RESET
                *
0863 0  0804  PR180   XIO      PR182       INTERRUPT FOR LVL 15
0864 0  1000          NOP
0865 0  70F7          MDX     PR181
                *
0866 0  0106  REQ16   DC      /0106       16
0867 0  0000          DC      0
                *
```

8B323810 8B323820 8B323830 8B323840 8B323850 8B323860 8B323870 8B323880 8B323890 8B323900 8B323910 8B323920 8B323930 8B323940 8B323950 8B323960 8B323970 8B323980 8B323990 8B324000 8B324010 8B324020 8B324030 8B324040 8B324050 8B324060 8B324070 8B324080 8B324090 8B324100 8B324110 8B324120 8B324130 8B324140 8B324150 8B324160 8B324170 8B324180 8B324190 8B324200 8B324210 8B324220 8B324230 8B324240 8B324250 8B324260 8B324270 8B324280 8B324290 8B324300 8B324310 8B324320 8B324330 8B324340 8B324350 8B324360 8B324370 8B324380 8B324390 8B324400 8B324410 8B324420 8B324430 8B324440 8B324450 8B324460 8B324470 8B324480

INTERRUPT FUNCTION TEST

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0868 0  4000        PR182 DC      /4000      INTRP 15 IOCC              8B324490
0869 0  04A1              DC      /04A1                                 8B324500
                    *                                                   8B324510
                    *                  INTERRUPT ROUTINE LEVEL 17       8B324520
                    *                                                   8B324530
086A 0  0000        PRI19 DC      0                                     8B324540
086B 0  C00E              LD      REQ17      LEVEL 17 REQUEST TO        8B324550
086C 00 D5000A78          STO  L1 IN16V      REQUEST SEQUENCE MSG       8B324560
086E 0  7102              MDX   1 2                                     8B324570
086F 0  73FF              MDX   3 -1                                    8B324580
0870 0  7006              MDX     PR190      NOT LAST INTERRUPT         8B324590
                    *                                                   8B324600
                    *                  SERVICE THIS INTERRUPT           8B324610
                    *                                                   8B324620
0871 0  C008        PR191 LD      REQ17      LEVEL 17 TO LEVEL          8B324630
0872 00 D6000AB8          STO  L2 IN17V      SRVCD SEQUENCE MSG         8B324640
0874 0  7202              MDX   2 2                                     8B324650
0875 00 4CC0086A          BOSC I  PRI19      BRANCH RESET               8B324660
                    *                                                   8B324670
0877 0  0804        PR190 XIO     PR192      INTERRUPT FOR LVL 16       8B324680
0878 0  1000              NOP                                           8B324690
0879 0  70F7              MDX     PR191                                 8B324700
                    *                                                   8B324710
087A 0  0107        REQ17 DC      /0107      17                         8B324720
087B 0  0000              DC      0                                     8B324730
                    *                                                   8B324740
087C 0  2000        PR192 DC      /2000      INTRP 16 IOCC              8B324750
087D 0  04A1              DC      /04A1                                 8B324760
                    *                                                   8B324770
                    *                  INTERRUPT ROUTINE LEVEL 18       8B324780
                    *                                                   8B324790
087E 0  0000        PRI20 DC      0                                     8B324800
087F 0  C00E              LD      REQ18      LEVEL 18 REQUEST TO        8B324810
0880 00 D5000A78          STO  L1 IN16V      REQUEST SEQUENCE MSG       8B324820
0882 0  7102              MDX   1 2                                     8B324830
0883 0  73FF              MDX   3 -1                                    8B324840
0884 0  7006              MDX     PR200      NOT LAST INTERRUPT         8B324850
                    *                                                   8B324860
                    *                  SERVICE THIS INTERRUPT           8B324870
                    *                                                   8B324880
0885 0  C008        PR201 LD      REQ18      LEVEL 18 TO LEVEL          8B324890
0886 00 D6000AB8          STO  L2 IN17V      SRVCD SEQUENCE MSG         8B324900
0888 0  7202              MDX   2 2                                     8B324910
0889 00 4CC0087E          BOSC I  PRI20      BRANCH RESET               8B324920
                    *                                                   8B324930
088B 0  0804        PR200 XIO     PP202      INTERRUPT FOR LVL 17       8B324940
088C 0  1000              NOP                                           8B324950
088D 0  70F7              MDX     PR201                                 8B324960
                    *                                                   8B324970
088E 0  0108        REQ18 DC      /0108      18                         8B324980
088F 0  0000              DC      0                                     8B324990
                    *                                                   8B325000
0890 0  1000        PR202 DC      /1000      INTRP 17 IOCC              8B325010
0891 0  04A1              DC      /04A1                                 8B325020
                    *                                                   8B325030
                    *                  INTERRUPT ROUTINE LEVEL 19       8B325040
                    *                                                   8B325050
0892 0  0000        PRI21 DC      0                                     8B325060
0893 0  C00E              LD      REQ19      LEVEL 19 REQUEST TO        8B325070
0894 00 D5000A78          STO  L1 IN16V      REQUEST SEQUENCE MSG       8B325080
0896 0  7102              MDX   1 2                                     8B325090
0897 0  73FF              MDX   3 -1                                    8B325100
0898 0  7006              MDX     PR210      NOT LAST INTERRUPT         8B325110
                    *                                                   8B325120
                    *                  SERVICE THIS INTERRUPT           8B325130
                    *                                                   8B325140
0899 0  C008        PR211 LD      REQ19      LEVEL 19 TO LEVEL          8B325150
089A 00 D6000AB8          STO  L2 IN17V      SRVCD SEQUENCE MSG         8B325160
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INTERRUPT FUNCTION TEST

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089C 0  7202              MDX   2 2                                     8B325170
089D 00 4CC00892          BOSC I  PRI21      BRANCH RESET               8B325180
                    *                                                   8B325190
089F 0  0804        PR210 XIO     PR212      INTERRUPT FOR LVL 18       8B325200
08A0 0  1000              NOP                                           8B325210
08A1 0  70F7              MDX     PR211                                 8B325220
                    *                                                   8B325230
08A2 0  0109        REQ19 DC      /0109      19                         8B325240
08A3 0  0000              DC      0                                     8B325250
                    *                                                   8B325260
08A4 0  0800        PR212 DC      /0800      INTRP 18 IOCC              8B325270
08A5 0  04A1              DC      /04A1                                 8B325280
                    *                                                   8B325290
                    *                  INTERRUPT ROUTINE LEVEL 20       8B325300
                    *                                                   8B325310
08A6 0  0000        PRI22 DC      0                                     8B325320
08A7 0  C00E              LD      REQ20      LEVEL 20 REQUEST TO        8B325330
08A8 00 D5000A78          STO  L1 IN16V      REQUEST SEQUENCE MSG       8B325340
08AA 0  7102              MDX   1 2                                     8B325350
08AB 0  73FF              MDX   3 -1                                    8B325360
08AC 0  7006              MDX     PR220      NOT LAST INTERRUPT         8B325370
                    *                                                   8B325380
                    *                  SERVICE THIS INTERRUPT           8B325390
                    *                                                   8B325400
08AD 0  C008        PR221 LD      REQ20      LEVEL 20 TO LEVEL          8B325410
08AE 00 D6000AB8          STO  L2 IN17V      SRVCD SEQUENCE MSG         8B325420
08B0 0  7202              MDX   2 2                                     8B325430
08B1 00 4CC008A6          BOSC I  PRI22      BRANCH RESET               8B325440
                    *                                                   8B325450
08B3 0  0804        PR220 XIO     PR222      INTERRUPT FOR LVL 19       8B325460
08B4 0  1000              NOP                                           8B325470
08B5 0  70F7              MDX     PR221                                 8B325480
                    *                                                   8B325490
08B6 0  020A        REQ20 DC      /020A      20                         8B325500
08B7 0  0000              DC      0                                     8B325510
                    *                                                   8B325520
08B8 0  0400        PR222 DC      /0400      INTRP 19 IOCC              8B325530
08B9 0  04A1              DC      /04A1                                 8B325540
                    *                                                   8B325550
                    *                  INTERRUPT ROUTINE LEVEL 21       8B325560
                    *                                                   8B325570
08BA 0  0000        PRI23 DC      0                                     8B325580
08BB 0  C00E              LD      REQ21      LEVEL 21 REQUEST TO        8B325590
08BC 00 D5000A78          STO  L1 IN16V      REQUEST SEQUENCE MSG       8B325600
08BE 0  7102              MDX   1 2                                     8B325610
08BF 0  73FF              MDX   3 -1                                    8B325620
08C0 0  7006              MDX     PR230      NOT LAST INTERRUPT         8B325630
                    *                                                   8B325640
                    *                  SERVICE THIS INTERRUPT           8B325650
                    *                                                   8B325660
08C1 0  C008        PR231 LD      REQ21      LEVEL 21 TO LEVEL          8B325670
08C2 00 D6000AB8          STO  L2 IN17V      SRVCD SEQUENCE MSG         8B325680
08C4 0  7202              MDX   2 2                                     8B325690
08C5 00 4CC008BA          BOSC I  PRI23      BRANCH RESET               8B325700
                    *                                                   8B325710
08C7 0  0804        PR230 XIO     PR232      INTERRUPT FOR LVL 20       8B325720
08C8 0  1000              NOP                                           8B325730
08C9 0  70F7              MDX     PR231                                 8B325740
                    *                                                   8B325750
08CA 0  0201        REQ21 DC      /0201      21                         8B325760
08CB 0  0000              DC      0                                     8B325770
                    *                                                   8B325780
08CC 0  0200        PR232 DC      /0200      INTRP 20 IOCC              8B325790
08CD 0  04A1              DC      /04A1                                 8B325800
                    *                                                   8B325810
                    *                  INTERRUPT ROUTINE LEVEL 22       8B325820
                    *                                                   8B325830
08CE 0  0000        PRI24 DC      0                                     8B325840
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08CF 0  C00E          LD     REQ22      LEVEL 22 REQUEST TO       88325850
08D0 00 D5000A78      STO  L1 IN16V      REQUEST SEQUENCE MSG      88325860
08D2 0  7102          MDX    1 2                                  88325870
08D3 0  73FF          MDX    3 -1                                 88325880
08D4 0  7006          MDX    PR240      NOT LAST INTERRUPT        88325890
                      *                                           88325900
                      *          SERVICE THIS INTERRUPT           88325910
                      *                                           88325920
08D5 0  C008    PR241 LD     REQ22      LEVEL 22 TO LEVEL         88325930
08D6 00 D6000AB8      STO  L2 IN17V      SRVCD SEQUENCE MSG        88325940
08D8 0  7202          MDX    2 2                                  88325950
08D9 00 4CC008CE      BOSC I PR124      BRANCH RESET              88325960
                      *                                           88325970
08DB 0  0804    PR240 XIO    PR242      INTERRUPT FOR LVL 21      88325980
08DC 0  1000          NOP                                         88325990
08DD 0  70F7          MDX    PR241                                88326000
                      *                                           88326010
08DE 0  0202    REQ22 DC     /0202      22                        88326020
08DF 0  0000          DC     0                                    88326030
                      *                                           88326040
08E0 0  0100    PR242 DC     /01C0      INTRP 21 IOCC             88326050
08E1 0  04A1          DC     /04A1                                88326060
                      *                                           88326070
                      *          INTERRUPT ROUTINE LEVEL 23       88326080
                      *                                           88326090
08E2 0  0000    PR125 DC     0                                    88326100
08E3 0  C00E          LD     REQ23      LEVEL 23 REQUEST TO       88326110
08E4 00 D5000A78      STO  L1 IN16V      REQUEST SEQUENCE MSG      88326120
08E6 0  7102          MDX    1 2                                  88326130
08E7 0  73FF          MDX    3 -1                                 88326140
08E8 0  7006          MDX    PR250      NOT LAST INTERRUPT        88326150
                      *                                           88326160
                      *          SERVICE THIS INTERRUPT           88326170
                      *                                           88326180
08E9 0  C008    PR251 LD     REQ23      LEVEL 23 TO LEVEL         88326190
08EA 00 D6000A88      STO  L2 IN17V      SRVCD SEQUENCE MSG        88326200
08EC 0  7202          MDX    2 2                                  88326210
08ED 00 4CC008E2      BOSC I PR125      BRANCH RESET              88326220
                      *                                           88326230
08EF 0  0804    PR250 XIO    PR252      INTERRUPT FOR LVL 22      88326240
08F0 0  1000          NOP                                         88326250
08F1 0  70F7          MDX    PR251                                88326260
                      *                                           88326270
08F2 0  0203    REQ23 DC     /0203      23                        88326280
08F3 0  0000          DC     0                                    88326290
                      *                                           88326300
08F4 0  0080    PR252 DC     /0080      INTRP 22 IOCC             88326310
08F5 0  04A1          DC     /04A1                                88326320
                      *                                           88326330
                      *                                           88326340
                      *          ROUTINE SIX TRACE INTRPT         88326350
                      *                                           88326360
08F6 0  0000    TRACE DC     0                              SE    88326370
08F7 0  D028          STO    TRCN2      SAVE ACCUMULATOR          88326380
08F8 00 74FF08F6      MDX  L TRACE,-1                             88326390
08FA 0  C0FB          LD     TRACE      GET INTERP I COUNT        88326400
08FB 0  9025          S      TRCN0      CK IF INSTR TO TRACE      88326410
08FC 00 4C280903      BSC  L TRACO,+Z   BRANCH IF TRACING          88326420
08FE 00 740108F6      MDX  L TRACE,1    RESTORE RETURN            88326430
0900 0  C022          LD     TRCN2      RESTORE ACCUMULATOR       88326440
0901 00 4C8008F6      BSC  I TRACE      GO COMPLETE CNTRL OP      88326450
                      *                                           88326460
0903 00 C6000930      TRACO LD   L2 INLVT+2    SET EXPECTED INSTRN 88326470
0905 00 D4000B1C      STO  L INM19+23   NO. IN ERROR MESSAGE      88326480
                      *                                           88326490
0907 0  C0EE          LD     TRACE      GET INTERP I COUNT        88326500
0908 00 96000924      S    L2 *NSAD     COMPR WITH EXPECTED       88326510
090A 00 4C200914      BSC  L TRAC1,Z    BRANCH IF WRONG ISTR      88326520
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                      *                                           88326530
090C 0  7201          MDX    2 1                                  88326540
090D 00 7401048D      MDX  L TRIND,1    STEP TRACE INDICATOR      88326550
090F 00 740108F6      MDX  L TRACE,1    RESTORE RETURN            88326560
0911 0  C011          LD     TRCN2      RESTORE ACCUMULATOR       88326570
0912 00 4CC008F6  TRAC2 BOSC I TRACE     EXIT                SX    88326580
                      *                                           88326590
0914 0  6A0D    TRAC1 STX    2 TRCN1                              88326600
0915 0  800C          A      TRCN1                                88326610
0916 0  D00B          STO    TRCN1                                88326620
0917 00 65800922      LDX  I1 TRCN1     SET INDEX TO DIFRNCE      88326630
0919 00 C5000930      LD   L1 INLVT+2   SET INTERRUPTING          88326640
091B 00 D4000B20      STO  L INM19+27   INSTR TO ERROR MSG        88326650
                      *                                           88326660
                      *********************************************88326670
091D 00 440004F9      BSI  L ERALT      LOG FAILING TRACE     SRC 88326680
091F 0  0805          DC     INM19      INSTRUCTION               88326690
                      *********************************************88326700
                      *                                           88326710
0920 0  70EB          MDX    TRAC1-8                              88326720
                      *                                           88326730
0921 0  0467    TRCN0 DC     RT501                                88326740
0922 0  0000    TRCN1 DC     0                                    88326750
0923 0  0000    TRCN2 DC     0                                    88326760
                      *                                           88326770
                      *          TRACE INSTRUCTION ADDRESS        88326780
                      *                                           88326790
0924 0  0450    INSAD DC     RT500                                88326800
0925 0  045E          DC     RT500+1                              88326810
0926 0  045F          DC     RT500+2                              88326820
0927 0  0460          DC     RT500+3                              88326830
0928 0  0461          DC     RT500+4                              88326840
0929 0  0462          DC     RT500+5                              88326850
092A 0  0463          DC     RT500+6                              88326860
092B 0  0464          DC     RT500+7                              88326870
092C 0  0465          DC     RT500+8                              88326880
092D 0  0466          DC     RT500+9                              88326890
                      *          HEX INTERRUPT LEVEL TABLE        88326900
                      *                                           88326910
092E 0  3529    INLVT DC     /3529      ER                        88326920
092F 0  0A0A          DC     /0A0A      00                        88326930
0930 0  0A01          DC     /0A01      01                        88326940
0931 0  0A02          DC     /0A02      02                        88326950
0932 0  0A03          DC     /0A03      03                        88326960
0933 0  0A04          DC     /0A04      04                        88326970
0934 0  0A05          DC     /0A05      05                        88326980
0935 0  0A06          DC     /0A06      06                        88326990
0936 0  0A07          DC     /0A07      07                        88327000
0937 0  0A08          DC     /0A08      08                        88327010
0938 0  0A09          DC     /0A09      09                        88327020
0939 0  010A          DC     /010A      10                        88327030
093A 0  0101          DC     /0101      11                        88327040
093B 0  0102          DC     /0102      12                        88327050
093C 0  0103          DC     /0103      13                        88327060
093D 0  0104          DC     /0104      14                        88327070
093E 0  0105          DC     /0105      15                        88327080
093F 0  0106          DC     /0106      16                        88327090
0940 0  0107          DC     /0107      17                        88327100
0941 0  0108          DC     /0108      18                        88327110
0942 0  0109          DC     /0109      19                        88327120
0943 0  020A          DC     /020A      20                        88327130
0944 0  0201          DC     /0201      21                        88327140
0945 0  0202          DC     /0202      22                        88327150
0946 0  0203          DC     /0203      23                        88327160
0947 0  1329          DC     /1329      TR                        88327170
0948 0  3335          DC     /3335      CE                        88327180
                      *                                           88327190
                      *          PRINT MESSAGES  1443 CODED       88327200
```

INTERRUPT FUNCTION TEST

```
                      *                                            8B327210
0949 0  0013      INM01 DC     /0013     WORD COUNT                8B327220
094A 0  330A            DC     /330A     CO                        8B327230
094B 0  0A01            DC     /0A01     01                        8B327240
094C 0  0000            DC     /0000     SPACE                     8B327250
094D 0  0000            DC     /0000     SPACE                     8B327260
094E 0  1314            DC     /1314     TU                        8B327270
094F 0  2925            DC     /2925     RN                        8B327260
0950 0  0034            DC     /0034     D                         8B327290
0951 0  3912            DC     /3912     IS                        8B327300
0952 0  3132            DC     /3132     AB                        8B327310
0953 0  2335            DC     /2335     LE                        8B327320
0954 0  0012            DC     /0012      S                        8B327330
0955 0  1600            DC     /1600     W                         8B327340
0956 0  2625            DC     /2625     ON                        8B327350
0957 0  0027            DC     /0027      P                        8B327360
0958 0  1412            DC     /1412     US                        8B327370
0959 0  3800            DC     /3800     H                         8B327380
095A 0  1213            DC     /1213     ST                        8B327390
095B 0  3129            DC     /3129     AR                        8B327400
095C 0  1300            DC     /1300     T                         8B327410
095D 0  FFFF            DC     /FFFF     TERM                      8B327420
                      *                                            8B327430
095E 0  000E      INM02 DC     /000E     WORD COUNT                8B327440
095F 0  330A            DC     /330A     CO                        8B327450
0960 0  0A02            DC     /0A02     02                        8B327460
0961 0  0000            DC     /0000     SPACE                     8B327470
0962 0  0000            DC     /0000     SPACE                     8B327480
0963 0  1314            DC     /1314     TU                        8B327490
0964 0  2925            DC     /2925     RN                        8B327500
0965 0  0034            DC     /0034      D                        8B327510
0966 0  3912            DC     /3912     IS                        8B327520
0967 0  3132            DC     /3132     AB                        8B327530
0968 0  2335            DC     /2335     LE                        8B327540
0969 0  0012            DC     /0012      S                        8B327550
096A 0  1600            DC     /1600     W                         8B327560
096B 0  2636            DC     /2636     OF                        8B327570
096C 0  3600            DC     /3600     F                         8B327580
096D 0  FFFF            DC     /FFFF     TERM                      8B327590
                      *                                            8B327600
096E 0  0013      INM03 DC     /0013     WORD COUNT                8B327610
096F 0  350A            DC     /350A     EO                        8B327620
0970 0  0A01            DC     /0A01     01                        8B327630
0971 0  0000            DC     /0000     SPACE                     8B327640
0972 0  0000            DC     /0000     SPACE                     8B327650
0973 0  2913            DC     /2913     RT                        8B327660
0974 0  2500            DC     /2500     N                         8B327670
0975 0  0000            DC     /0000     ROUTINE NUMBER            8B327680
0976 0  0023            DC     /0023      L                        8B327690
0977 0  3515            DC     /3515     EV                        8B327700
0978 0  2300            DC     /2300     L                         8B327710
0979 0  0000            DC     /0000     LEVEL NUMBER              8B327720
097A 0  0036            DC     /0036      F                        8B327730
097B 0  3139            DC     /3139     AI                        8B327740
097C 0  2335            DC     /2335     LE                        8B327750
097D 0  3400            DC     /3400     D                         8B327760
097E 0  1326            DC     /1326     TO                        8B327770
097F 0  0039            DC     /0039      I                        8B327780
0980 0  2513            DC     /2513     NT                        8B327790
0981 0  2927            DC     /2927     RP                        8B327800
0982 0  FFFF            DC     /FFFF     TERM                      8B327810
                      *                                            8B327820
0983 0  0015      INM04 DC     /0015     WORD COUNT                8B327830
0984 0  350A            DC     /350A     EO                        8B327840
0985 0  0A02            DC     /0A02     02                        8B327850
0986 0  0000            DC     /0000     SPACE                     8B327860
0987 0  0000            DC     /0000     SPACE                     8B327870
0988 0  2913            DC     /2913     RT                        8B327880
```


INTERRUPT FUNCTION TEST

```
0989 0  2500            DC     /2500     N                         8B327890
098A 0  0000            DC     /0000     ROUTINE NUMBER            8B327900
098B 0  0029            DC     /0029      R                        8B327910
098C 0  3528            DC     /3528     EQ                        8B327920
098D 0  0000            DC     /0000     BLANK                     8B327930
098E 0  0000            DC     /0000     REQUEST NUMBER            8B327940
098F 0  0037            DC     /0037      G                        8B327950
0990 0  3915            DC     /3915     IV                        8B327960
0991 0  3525            DC     /3525     EN                        8B327970
0992 0  0023            DC     /0023      L                        8B327980
0993 0  3515            DC     /3515     EV                        8B327990
0994 0  2300            DC     /2300     L                         8B328000
0995 0  0000            DC     /0000     LEVEL NUMBER              8B328010
0996 0  0012            DC     /0012      S                        8B328020
0997 0  2915            DC     /2915     RV                        8B328030
0998 0  3334            DC     /3334     CD                        8B328040
0999 0  FFFF            DC     /FFFF     TERM                      8B328050
                      *                                            8B328060
099A 0  0018      INM05 DC     /0018     WORD COUNT                8B328070
099B 0  350A            DC     /350A     EO                        8B328080
099C 0  0A03            DC     /0A03     03                        8B328090
099D 0  0000            DC     /0000     SPACE                     8B328100
099E 0  0000            DC     /0000     SPACE                     8B328110
099F 0  2913            DC     /2913     RT                        8B328120
09A0 0  2500            DC     /2500     N                         8B328130
09A1 0  0000            DC     /0000     ROUTINE NUMBER            8B328140
09A2 0  0029            DC     /0029      R                        8B328150
09A3 0  3528            DC     /3528     EQ                        8B328160
09A4 0  0000            DC     /0000     BLANK                     8B328170
09A5 0  0000            DC     /0000     REQUEST NUMBER            8B328180
09A6 0  0039            DC     /0039      I                        8B328190
09A7 0  2513            DC     /2513     NT                        8B328200
09A8 0  2927            DC     /2927     RP                        8B328210
09A9 0  3400            DC     /3400     D                         8B328220
09AA 0  1639            DC     /1639     WI                        8B328230
09AB 0  1338            DC     /1338     TH                        8B328240
09AC 0  0034            DC     /0034      D                        8B328250
09AD 0  3912            DC     /3912     IS                        8B328260
09AE 0  3132            DC     /3132     AB                        8B328270
09AF 0  2335            DC     /2335     LE                        8B328280
09B0 0  0012            DC     /0012      S                        8B328290
09B1 0  1600            DC     /1600     W                         8B328300
09B2 0  2625            DC     /2625     ON                        8B328310
09B3 0  FFFF            DC     /FFFF     TERM                      8B328320
                      *                                            8B328330
09B4 0  0013      INM06 DC     /0013     WORD COUNT                8B328340
09B5 0  350A            DC     /350A     EO                        8B328350
09B6 0  0A04            DC     /0A04     04                        8B328360
09B7 0  0000            DC     /0000     SPACE                     8B328370
09B8 0  0000            DC     /0000     SPACE                     8B328380
09B9 0  2913            DC     /2913     RT                        8B328390
09BA 0  2500            DC     /2500     N                         8B328400
09BB 0  0000            DC     /0000     ROUTINE NUMBER            8B328410
09BC 0  0016            DC     /0016      W                        8B328420
09BD 0  2926            DC     /2926     RO                        8B328430
09BE 0  2537            DC     /2537     NG                        8B328440
09BF 0  0039            DC     /0039      I                        8B328450
09C0 0  2312            DC     /2312     LS                        8B328460
09C1 0  1600            DC     /1600     W                         8B328470
09C2 0  2625            DC     /2625     ON                        8B328480
09C3 0  0035            DC     /0035      E                        8B328490
09C4 0  2929            DC     /2929     RR                        8B328500
09C5 0  0039            DC     /0039      I                        8B328510
09C6 0  2513            DC     /2513     NT                        8B328520
09C7 0  2927            DC     /2927     RP                        8B328530
09C8 0  FFFF            DC     /FFFF     TERM                      8B328540
                      *                                            8B328550
09C9 0  000C      INM07 DC     /000C     WORD COUNT                8B328560
```

INTERRUPT FUNCTION TEST

```
09CA 0  310A          DC      /310A     AO                  8B328570
09CB 0  0A01          DC      /0A01     01                  8B328580
09CC 0  0000          DC      /0000     SPACE               8B328590
09CD 0  0000          DC      /0000     SPACE               8B328600
09CE 0  2729          DC      /2729     PR                  8B328610
09CF 0  2637          DC      /2637     OG                  8B328620
09D0 0  2931          DC      /2931     RA                  8B328630
09D1 0  2400          DC      /2400     M                   8B328640
09D2 0  3326          DC      /3326     CO                  8B328650
09D3 0  2427          DC      /2427     MP                  8B328660
09D4 0  2335          DC      /2335     LE                  8B328670
09D5 0  1335          DC      /1335     TE                  8B328680
09D6 0  FFFF          DC      /FFFF     TERM                8B328690
              *                                             8B328700
09D7 0  000E    INM08 DC      /000E     WORD COUNT          8B328710
09D8 0  330A          DC      /330A     CO                  8B328720
09D9 0  0A03          DC      /0A03     03                  8B328730
09DA 0  0000          DC      /0000     SPACE               8B328740
09DB 0  0000          DC      /0000     SPACE               8B328750
09DC 0  2714          DC      /2714     PU                  8B328760
09DD 0  1238          DC      /1238     SH                  8B328770
09DE 0  0033          DC      /0033      C                  8B328780
09DF 0  3500          DC      /3500     E                   8B328790
09E0 0  3925          DC      /3925     IN                  8B328800
09E1 0  1329          DC      /1329     TR                  8B328810
09E2 0  2700          DC      /2700     P                   8B328820
09E3 0  3214          DC      /3214     BU                  8B328830
09E4 0  1313          DC      /1313     TT                  8B328840
09E5 0  2625          DC      /2625     ON                  8B328850
09E6 0  FFFF          DC      /FFFF     TERM                8B328860
              *                                             8B328870
09E7 0  000F    INM09 DC      /000F     WORD COUNT          8B328880
09E8 0  330A          DC      /330A     CO                  8B328890
09E9 0  0A04          DC      /0A04     04                  8B328900
09EA 0  0000          DC      /0000     SPACE               8B328910
09EB 0  0000          DC      /0000     SPACE               8B328920
09EC 0  2714          DC      /2714     PU                  8B328930
09ED 0  1238          DC      /1238     SH                  8B328940
09EE 0  0033          DC      /0033      C                  8B328950
09EF 0  2625          DC      /2625     ON                  8B328960
09F0 0  1200          DC      /1200     S                   8B328970
09F1 0  3925          DC      /3925     IN                  8B328980
09F2 0  1329          DC      /1329     TR                  8B328990
09F3 0  2700          DC      /2700     P                   8B329000
09F4 0  3214          DC      /3214     BU                  8B329010
09F5 0  1313          DC      /1313     TT                  8B329020
09F6 0  2625          DC      /2625     ON                  8B329030
09F7 0  FFFF          DC      /FFFF     TERM                8B329040
              *                                             8B329050
09F8 0  0011    INM10 DC      /0011     WORD COUNT          8B329060
09F9 0  330A          DC      /330A     CO                  8B329070
09FA 0  0A05          DC      /0A05     05                  8B329080
09FB 0  0000          DC      /0000     SPACE               8B329090
09FC 0  0000          DC      /0000     SPACE               8B329100
09FD 0  1235          DC      /1235     SE                  8B329110
09FE 0  1300          DC      /1300     T                   8B329120
09FF 0  1329          DC      /1329     TR                  8B329130
0A00 0  3133          DC      /3133     AC                  8B329140
0A01 0  3500          DC      /3500     E                   8B329150
0A02 0  2426          DC      /2426     MO                  8B329160
0A03 0  3435          DC      /3435     DE                  8B329170
0A04 0  0000          DC      /0000     BLANK               8B329180
0A05 0  2714          DC      /2714     PU                  8B329190
0A06 0  1238          DC      /1238     SH                  8B329200
0A07 0  0012          DC      /0012      S                  8B329210
0A08 0  1331          DC      /1331     TA                  8B329220
0A09 0  2913          DC      /2913     RT                  8B329230
0A0A 0  FFFF          DC      /FFFF     TERM                8B329240
```


INTERRUPT FUNCTION TEST

```
                                                            8B329250
              *                                             8B329260
0A0B 0  0010    INM11 DC      /0010     WORD COUNT          8B329270
0A0C 0  330A          DC      /330A     CO                  8B329280
0A0D 0  0A06          DC      /0A06     06                  8B329290
0A0E 0  0000          DC      /0000     SPACE               8B329300
0A0F 0  0000          DC      /0000     SPACE               8B329310
0A10 0  1235          DC      /1235     SE                  8B329320
0A11 0  1300          DC      /1300     T                   8B329330
0A12 0  2914          DC      /2914     RU                  8B329340
0A13 0  2500          DC      /2500     N                   8B329350
0A14 0  2426          DC      /2426     MO                  8B329360
0A15 0  3435          DC      /3435     DE                  8B329370
0A16 0  0000          DC      /0000     BLANK               8B329380
0A17 0  2714          DC      /2714     PU                  8B329390
0A18 0  1238          DC      /1238     SH                  8B329400
0A19 0  0012          DC      /0012      S                  8B329410
0A1A 0  1331          DC      /1331     TA                  8B329420
0A1B 0  2913          DC      /2913     RT                  8B329430
0A1C 0  FFFF          DC      /FFFF     TERM                8B329440
              *                                             8B329450
0A1D 0  000F    INM12 DC      /000F     WORD COUNT          8B329460
0A1E 0  350A          DC      /350A     EO                  8B329470
0A1F 0  0A05          DC      /0A05     05                  8B329480
0A20 0  0000          DC      /0000     SPACE               8B329490
0A21 0  0000          DC      /0000     SPACE               8B329500
0A22 0  1235          DC      /1235     SE                  8B329510
0A23 0  2814          DC      /2814     QU                  8B329520
0A24 0  3525          DC      /3525     EN                  8B329530
0A25 0  3335          DC      /3335     CE                  8B329540
0A26 0  0035          DC      /0035      E                  8B329550
0A27 0  2929          DC      /2929     RR                  8B329560
0A28 0  2629          DC      /2629     OR                  8B329570
0A29 0  0029          DC      /0029      R                  8B329580
0A2A 0  1325          DC      /1325     TN                  8B329590
0A2B 0  0000          DC      /0000     BLANK               8B329600
0A2C 0  0000          DC      /0000     ROUTINE NUMBER      8B329610
0A2D 0  FFFF          DC      /FFFF     TERM                8B329620
              *                                             8B329630
0A2E 0  0015    INM13 DC      /0015     WORD COUNT          8B329640
0A2F 0  350A          DC      /350A     EO                  8B329650
0A30 0  0A06          DC      /0A06     06                  8B329660
0A31 0  0000          DC      /0000     SPACE               8B329670
0A32 0  0000          DC      /0000     SPACE               8B329680
0A33 0  2913          DC      /2913     RT                  8B329690
0A34 0  2500          DC      /2500     N                   8B329700
0A35 0  0400          DC      /0400     4                   8B329710
0A36 0  2335          DC      /2335     LE                  8B329720
0A37 0  1535          DC      /1535     VE                  8B329730
0A38 0  2300          DC      /2300     L                   8B329740
0A39 0  0000          DC      /0000     REQUEST NUMBER      8B329750
0A3A 0  0039          DC      /0039      I                  8B329760
0A3B 0  2513          DC      /2513     NT                  8B329770
0A3C 0  2927          DC      /2927     RP                  8B329780
0A3D 0  3400          DC      /3400     D                   8B329790
0A3E 0  1638          DC      /1638     WH                  8B329800
0A3F 0  3923          DC      /3923     IL                  8B329810
0A40 0  3500          DC      /3500     E                   8B329820
0A41 0  2431          DC      /2431     MA                  8B329830
0A42 0  1222          DC      /1222     SK                  8B329840
0A43 0  3534          DC      /3534     ED                  8B329850
0A44 0  FFFF          DC      /FFFF     TERM                8B329860
              *                                             8B329870
0A45 0  0011    INM1[illegible]       /0011     WORD COUNT          8B329880
0A46 0  350A                  /350A     EO                  8B329890
0A47 0  0A07                  /0A07     07                  8B329900
0A48 0  0000                  /0000     SPACE               8B329910
0A49 0  0000                  /0000     SPACE               8B329920
0A4A 0  2913          DC      /2913     RT
```

INTERRUPT FUNCTION TEST

```
0A4B 0  2500              DC      /2500      N                          8B329930
0A4C 0  0200              DC      /0200      2                          8B329940
0A4D 0  3925              DC      /3925      IN                         8B329950
0A4E 0  1300              DC      /1300      T                          8B329960
0A4F 0  0000              DC      /0000      LEVEL NUMBER               8B329970
0A50 0  0039              DC      /0039       I                         8B329980
0A51 0  2312              DC      /2312      LS                         8B329990
0A52 0  1600              DC      /1600      W                          8B330000
0A53 0  2526              DC      /2526      NO                         8B330010
0A54 0  1300              DC      /1300      T                          8B330020
0A55 0  1935              DC      /1935      ZE                         8B330030
0A56 0  2926              DC      /2926      RO                         8B330040
0A57 0  FFFF              DC      /FFFF      TERM                       8B330050
                    *                                                   8B330060
0A58 0  000F        INM15 DC      /000F      WORD COUNT                 8B330070
0A59 0  340A              DC      /340A      DO                         8B330080
0A5A 0  0A01              DC      /0A01      01                         8B330090
0A5B 0  0000              DC      /0000      SPACE                      8B330100
0A5C 0  0000              DC      /0000      SPACE                      8B330110
0A5D 0  2913              DC      /2913      RT                         8B330120
0A5E 0  2500              DC      /2500      N                          8B330130
0A5F 0  0000              DC      /0000      ROUTINE NUMBER             8B330140
0A60 0  0000              DC      /0000      BLANK                      8B330150
0A61 0  2729              DC      /2729      PR                         8B330160
0A62 0  3926              DC      /3926      IO                         8B330170
0A63 0  2939              DC      /2939      RI                         8B330180
0A64 0  1318              DC      /1318      TY                         8B330190
0A65 0  0033              DC      /0033       C                         8B330200
0A66 0  3835              DC      /3835      HE                         8B330210
0A67 0  3322              DC      /3322      CK                         8B330220
0A68 0  FFFF              DC      /FFFF      TERM                       8B330230
                    *                                                   8B330240
0A6A 00 00000000          DEC     0                                     8B330250
0A6C 0  003E        INM16 DC      /003E      WORD COUNT                 8B330260
0A6D 0  0000              DC      /0000      SPACE                      8B330270
0A6E 0  0000              DC      /0000      SPACE                      8B330280
0A6F 0  0000              DC      /0000      SPACE                      8B330290
0A70 0  0000              DC      /0000      SPACE                      8B330300
0A71 0  2935              DC      /2935      RE                         8B330310
0A72 0  2800              DC      /2800      Q                          8B330320
0A73 0  1235              DC      /1235      SE                         8B330330
0A74 0  2814              DC      /2814      QU                         8B330340
0A75 0  3525              DC      /3525      EN                         8B330350
0A76 0  3335              DC      /3335      CE                         8B330360
0A77 0  0000              DC      /0000      BLANK                      8B330370
0A78    0034        IN16V BSS     52                                    8B330380
                    *                                                   8B330390
0AAC 0  003E        INM17 DC      /003E      WORD COUNT                 8B330400
0AAD 0  0000              DC      /0000      SPACE                      8B330410
0AAE 0  0000              DC      /0000      SPACE                      8B330420
0AAF 0  0000              DC      /0000      SPACE                      8B330430
0AB0 0  0000              DC      /0000      SPACE                      8B330440
0AB1 0  1229              DC      /1229      SR                         8B330450
0AB2 0  1533              DC      /1533      VC                         8B330460
0AB3 0  0012              DC      /0012       S                         8B330470
0AB4 0  3528              DC      /3528      EQ                         8B330480
0AB5 0  1435              DC      /1435      UE                         8B330490
0AB6 0  2533              DC      /2533      NC                         8B330500
0AB7 0  3500              DC      /3500      E                          8B330510
0AB8    0034        IN17V BSS     52                                    8B330520
                    *                                                   8B330530
0AEC 0  0017        INM18 DC      /0017      WORD COUNT                 8B330540
0AED 0  350A              DC      /350A      EO                         8B330550
0AEE 0  0A08              DC      /0A08      08                         8B330560
0AEF 0  0000              DC      /0000      SPACE                      8B330570
0AF0 0  0000              DC      /0000      SPACE                      8B330580
0AF1 0  2913              DC      /2913      RT                         8B330590
0AF2 0  2500              DC      /2500      N                          8B330600
```


INTERRUPT FUNCTION TEST

```
0AF3 0  0600              DC      /0600      6                          8B330610
0AF4 0  1329              DC      /1329      TR                         8B330620
0AF5 0  3133              DC      /3133      AC                         8B330630
0AF6 0  3500              DC      /3500      E                          8B330640
0AF7 0  3439              DC      /3439      DI                         8B330650
0AF8 0  3400              DC      /3400      D                          8B330660
0AF9 0  2526              DC      /2526      NO                         8B330670
0AFA 0  1300              DC      /1300      T                          8B330680
0AFB 0  3925              DC      /3925      IN                         8B330690
0AFC 0  1329              DC      /1329      TR                         8B330700
0AFD 0  2713              DC      /2713      PT                         8B330710
0AFE 0  0026              DC      /0026       O                         8B330720
0AFF 0  2500              DC      /2500      N                          8B330730
0B00 0  2731              DC      /2731      PA                         8B330740
0B01 0  1212              DC      /1212      SS                         8B330750
0B02 0  0000              DC      /0000      BLANK                      8B330760
0B03 0  000C              DC      /0000      PASS NUMBER                8B330770
0B04 0  FFFF              DC      /FFFF      TERM                       8B330780
                    *                                                   8B330790
0B05 0  001B        INM19 DC      /001B      WORD COUNT                 8B330800
0B06 0  350A              DC      /350A      EO                         8B330810
0B07 0  0A09              DC      /0A09      09                         8B330820
0B08 0  0000              DC      /0000      SPACE                      8B330830
0B09 0  0000              DC      /0000      SPACE                      8B330840
0B0A 0  2913              DC      /2913      RT                         8B330850
0B0B 0  2500              DC      /2500      N                          8B330860
0B0C 0  0600              DC      /0600      6                          8B330870
0B0D 0  3517              DC      /3517      EX                         8B330880
0B0E 0  2735              DC      /2735      PE                         8B330890
0B0F 0  3313              DC      /3313      CT                         8B330900
0B10 0  3534              DC      /3534      ED                         8B330910
0B11 0  0039              DC      /0039       I                         8B330920
0B12 0  2513              DC      /2513      NT                         8B330930
0B13 0  2927              DC      /2927      RP                         8B330940
0B14 0  1300              DC      /1300      T                          8B330950
0B15 0  3629              DC      /3629      FR                         8B330960
0B16 0  2624              DC      /2624      OM                         8B330970
0B17 0  0039              DC      /0039       I                         8B330980
0B18 0  2512              DC      /2512      NS                         8B330990
0B19 0  1329              DC      /1329      TR                         8B331000
0B1A 0  2500              DC      /2500      N                          8B331010
0B1B 0  0000              DC      /0000      BLANK                      8B331020
0B1C 0  0000              DC      /0000      EXPECTED NUMBER            8B331030
0B1D 0  0000              DC      /0000      BLANK                      8B331040
0B1E 0  3726              DC      /3726      GO                         8B331050
0B1F 0  1300              DC      /1300      T                          8B331060
0B20 0  0000              DC      /0000      ACTUAL NUMBER              8B331070
0B21 0  FFFF              DC      /FFFF      TERM                       8B331080
                    *                                                   8B331090
0B22 0  000F        INM20 DC      /000F      WORD COUNT                 8B331100
0B23 0  350A              DC      /350A      EO                         8B331110
0B24 0  0A31              DC      /0A31      OA                         8B331120
0B25 0  0000              DC      /0000      SPACE                      8B331130
0B26 0  0000              DC      /0000      SPACE                      8B331140
0B27 0  3326              DC      /3326      CO                         8B331150
0B28 0  2512              DC      /2512      NS                         8B331160
0B29 0  2623              DC      /2623      OL                         8B331170
0B2A 0  3500              DC      /3500      E                          8B331180
0B2B 0  3214              DC      /3214      BU                         8B331190
0B2C 0  1313              DC      /1313      TT                         8B331200
0B2D 0  2625              DC      /2625      ON                         8B331210
0B2E 0  0036              DC      /0036       F                         8B331220
0B2F 0  3139              DC      /3139      AI                         8B331230
0B30 0  2335              DC      /2335      LE                         8B331240
0B31 0  3400              DC      /3400      D                          8B331250
0B32 0  FFFF              DC      /FFFF      TERM                       8B331260
                    *                                                   8B331270
0B33 0  0017        INM21 DC      /0017      WORD COUNT                 8B331280
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```
0834 0  340A          DC    /340A     DO                8B331290
0835 0  0A02          DC    /0A02     02                8B331300
0836 0  0000          DC    /0000     SPACE             8B331310
0837 0  0000          DC    /0000     SPACE             8B331320
0838 0  3326          DC    /3326     CO                8B331330
0839 0  2512          DC    /2512     NS                8B331340
083A 0  2623          DC    /2623     OL                8B331350
083B 0  3500          DC    /3500     E                 8B331360
083C 0  3214          DC    /3214     BU                8B331370
083D 0  1313          DC    /1313     TT                8B331380
083E 0  2625          DC    /2625     ON                8B331390
083F 0  0026          DC    /0026      O                8B331400
0840 0  2500          DC    /2500     N                 8B331410
0841 0  2335          DC    /2335     LE                8B331420
0842 0  1535          DC    /1535     VE                8B331430
0843 0  2300          DC    /2300     L                 8B331440
0844 0  0000          DC    /0000     LEVEL NUMBER      8B331450
0845 0  0039          DC    /0039      I                8B331460
0846 0  2312          DC    /2312     LS                8B331470
0847 0  1600          DC    /1600     W                 8B331480
0848 0  3239          DC    /3239     BI                8B331490
0849 0  1300          DC    /1300     T                 8B331500
084A 0  C000          DC    0         ILSW BIT          8B331510
084B 0  FFFF          DC    /FFFF     TERM              8B331520
                      *                                 8B331530
084C 0  0021  INM22   DC    /0021     WORD COUNT        8B331540
084D 0  330A          DC    /330A     CO                8B331550
084E 0  0A07          DC    /0A07     07                8B331560
084F C  0000          DC    /0000     SPACE             8B331570
0850 0  0000          DC    /0000     SPACE             8B331580
0851 0  1235          DC    /1235     SE                8B331590
0852 0  1300          DC    /1300     T                 8B331600
0853 0  3439          DC    /3439     DI                8B331610
0854 0  1231          DC    /1231     SA                8B331620
0855 0  3223          DC    /3223     BL                8B331630
0856 0  3500          DC    /3500     E                 8B331640
0857 0  2625          DC    /2625     ON                8B331650
0858 0  0038          DC    /0038      H                8B331660
0859 0  3913          DC    /3913     IT                8B331670
085A 0  0033          DC    /0033      C                8B331680
085B C  3500          DC    /3500     E                 8B331690
085C 0  3125          DC    /3125     AN                8B331700
085D 0  3400          DC    /3400     D                 8B331710
085E 0  3326          DC    /3326     CO                8B331720
085F 0  2512          DC    /2512     NS                8B331730
0860 0  0032          DC    /0032      B                8B331740
0861 0  1325          DC    /1325     TH                8B331750
0862 0  1200          DC    /1200     S                 8B331760
0863 0  0000          DC    /0000     BLANK             8B331770
0864 0  1235          DC    /1235     SE                8B331780
0865 0  1300          DC    /1300     T                 8B331790
0866 0  1329          DC    /1329     TR                8B331800
0867 0  3133          DC    /3133     AC                8B331810
0868 0  3500          DC    /3500     E                 8B331820
0869 0  3125          DC    /3125     AN                8B331830
086A 0  3400          DC    /3400     D                 8B331840
086B 0  1213          DC    /1213     ST                8B331850
086C 0  3129          DC    /3129     AR                8B331860
086D 0  1300          DC    /1300     T                 8B331870
086E 0  FFFF          DC    /FFFF     TERM              8B331680
                      *                                 8B331890
0870    0000          BSS   E  0                        8B331900
0870 0  0017  INM23   DC    /0017     WORD COUNT        8B331910
0871 0  350A          DC    /350A     EO                8B331920
0872 0  CA32          DC    /0A32     OB                8B331930
0873 0  0000          DC    /0000     SPACE             8B331940
0874 0  0000          DC    /0000     SPACE             8B331950
0875 0  2913          DC    /2913     RT                8B331960
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0876 0  2500          DC    /2500     N                 8B331970
0877 0  0100          DC    /0100     1                 8B331980
0878 0  3925          DC    /3925     IN                8B331990
0879 0  1329          DC    /1329     TR                8B332000
087A 0  2713          DC    /2713     PT                8B332010
087B 0  0025          DC    /0025      N                8B332020
087C 0  2613          DC    /2613     OT                8B332030
087D 0  0039          DC    /0039      I                8B332040
087E 0  2538          DC    /2538     NH                8B332050
087F 0  3932          DC    /3932     IB                8B332060
0880 0  3913          DC    /3913     IT                8B332070
0881 0  3534          DC    /3534     ED                8B332080
0882 0  0031          DC    /0031      A                8B332090
0883 0  3613          DC    /3613     FT                8B332100
0884 0  3529          DC    /3529     ER                8B332110
0885 0  0000          DC    0         SPACE             8B332120
0886 0  0000          DC    /0000                       8B332130
0887 0  0000          DC    /0000                       8B332140
0888 0  FFFF          DC    /FFFF     TERM              8B332150
                      *                                 8B332160
0889 0  0014  INM24   DC    /0014     WORD COUNT        8B332170
088A 0  330A          DC    /330A     CO                8B332180
088B 0  0A08          DC    /0A08     08                8B332190
088C 0  0000          DC    0         SPACE             8B332200
088D 0  0000          DC    0         SPACE             8B332210
088E 0  2935          DC    /2935     RE                8B332220
088F 0  2731          DC    /2731     PA                8B332230
0890 0  3929          DC    /3929     IR                8B332240
0891 0  0036          DC    /0036      F                8B332250
0892 0  3139          DC    /3139     AI                8B332260
0893 0  2314          DC    /2314     LV                8B332270
0894 0  2935          DC    /2935     RE                8B332280
0895 0  0032          DC    /0032      B                8B332290
0896 0  3536          DC    /3536     EF                8B332300
0897 0  2629          DC    /2629     OR                8B332310
0898 0  3500          DC    /3500     E                 8B332320
0899 0  3326          DC    /3326     CO                8B332330
089A 0  2513          DC    /2513     NT                8B332340
089B 0  3925          DC    /3925     IN                8B332350
089C 0  1439          DC    /1439     UI                8B332360
089D 0  2537          DC    /2537     NG                8B332370
089E 0  FFFF          DC    /FFFF     TERM              8B332380
                      *                                 8B332390
089F 0  000D  INM25   DC    /000D     WORD COUNT        8B332400
08A0 0  350A          DC    /350A     EO                8B332410
08A1 0  0A33          DC    /0A33     OC                8B332420
08A2 0  0000          DC    0         SPACE             8B332430
08A3 0  0000          DC    0         SPACE             8B332440
08A4 0  3923          DC    /3923     IL                8B332450
08A5 0  2335          DC    /2335     LE                8B332460
08A6 0  3731          DC    /3731     GA                8B332470
08A7 0  2300          DC    /2300     L                 8B332480
08A8 0  2913          DC    /2913     RT                8B332490
08A9 0  2500          DC    /2500     N                 8B332500
08AA 0  3525          DC    /3525     EN                8B332510
08AB 0  1329          DC    /1329     TR                8B332520
08AC 0  1800          DC    /1800     Y                 8B332530
08AD 0  FFFF          DC    /FFFF     TERM              8B332540
08AE    012D          END   START                       8B33254 8B332550
```

INTERRUPT FUNCTION TEST

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
BSI	01FC	01C9
BSICK	01F8	01D7
BSW0	018A	013D,016C,04E3,0501,050C,0513
BSW00	0192	0136,013F,0147,016D,018A,04E5,0503,050E,0515
BSW01	0193	018C
BSW1	018C	
CMTRP	068B	03A6,0419,063B,063E,0641,0644,0647,064A,064D,0650,0653,0656,0659,065C,065F,0662,0665,0668,066B,066E,0671,0674,0677,067A,067D,0680,0683,0686,0689,068C
CMT00	06AC	06A7
CMT01	06B1	06AB
CMT02	06A8	06A3
CMT03	06B4	06A9
CMT04	06C2	06D1
CMT05	06BF	06BB
CMT06	06CB	06B8
CNC02	0194	012F
CNC03	0196	0132
CNM00	06CA	0309,0430,0692,06A8,06C4,06CC
CNSNS	0436	039E,0417,06D8,06E7
CNST0	04DC	04BB
CNST1	04DD	04BF
CNST2	04E0	04C7
CNTRL	015B	0179
CN001	01F9	01DB
CN101	0280	020A,0261,0263,028F,0300
CN102	0281	020C,0234,0247,027A,06A1
CN103	0282	0212,0252
CN104	0283	
CN105	0284	020E,028D
CN200	02B2	029C,02A2
CN201	0284	02AA
CN300	0319	02C1,02DA,02DF,02F5,0306
CN301	031E	02CC,02D8,02F9,02FD,02FF,0302,0304
CN302	031A	0303
CN303	031B	02E9,069D
CN400	0428	0138,0380,0391,0438
CN401	0429	0138,0349,034A,0405
CN402	042A	0352
CN403	042B	0410,0697
CN404	042C	0368,03EA
CN405	042D	03DA
CN406	042E	03FB
CN407	042F	03FE
CN408	0430	0401
CN409	0431	03BD
CN500	048A	045D,0460,0463
CN501	048B	045F,0461,0462
CN502	048C	0483
CODCV	058E	0566,058C
CODC1	0595	05B1
CODC2	05A7	05A6
CODC3	05B2	05AC
CODC4	05B6	058F,0590,0591
CODWD	058E	0561,0568,0595,05B5
COD00	05C0	059C,059D,05A1,05A2
COD01	05C1	05A9,05B2
COD02	05C2	05B4
COMP	0433	0387
CON01	013E	
CON03	016C	0165
CON05	0166	0161
CON06	0159	0170
CTRL1	014E	0149
CTRL2	0155	0150

INTERRUPT FUNCTION TEST

CTRL3	0158	014D,0154
DELAY	05F3	036F,039C,05FA,05FC,05FD
DCLY1	05FF	05F6
DELY2	0600	05F7,05F8
ECKSW	0286	0214,023D
ERALT	04F9	041D,04F8,04FA,091D
ERRID	0522	04FF,0508
ERROR	04F5	01ED,0238,02EE,030F,0315,034C,0371,0387,03A0,0441,047B,04F8,04FC,051A,051C,06AC,0681,06BF,06CE
ERR01	0508	04FE
ERR02	050A	0507
ERR03	0513	051F
FAIL	01E1	01C4
HOLD	0432	03B5,03B6,03B8,03B9
ICTR	01F6	01C5,01D6,0605
ILSAV	06D6	0350,0359,03AA,0694,06BA,06C6,06CB
ILSW	06D4	0602,060B,0693,06DA,06E9
INCN	049F	0494
INLVT	092E	017C,01FE,0226,0269,0292,02B5,02D0,032C,0342,035C,0374,03BB,044E,06B6,0903,0919
INM01	0949	027D
INM02	095E	024E,040C
INM03	096E	0200,0228,023A,026B,02B7,02D2,02F0,032E,0344,034E,0360,0373,0378,0389,06B4
INM04	0983	0202,022A,026D,02B9,02D4,0317,0330,0346,035E,0376,0443,068E,0690,06B3
INM05	099A	0204,022C,026F,0332,041B,041F,0420,06AE
INM06	09B4	0206,0336,0358,06D0
INM07	09C9	0173
INM08	09D7	036E,03E4
INM09	09E7	039B
INM10	09F8	0384,03CD,045B
INM11	0A0B	038C,03D4,0408,0473
INM12	0A1D	017E,0182
INM13	0A2E	02D6,0311
INM14	0A45	022E,0271,06C1
INM15	0A58	0294,0334,04EC
INM16	0A6C	04EF
INM17	0AAC	04F2
INM18	0AEC	0479,047D
INM19	0B05	0905,091B,091F
INM20	0B22	03A2
INM21	0B33	03A8,03B0,03BF,03C3
INM22	0B4C	03F5
INM23	0B70	01B2,01CA,01EF
INM24	0B89	01F2
INM25	0B9F	01A4
INSAD	0924	0908
INTER	01A2	01A1
INTST	048E	012D,01DD,0255,02A6,02E5,0413,0486,049D
INT00	01A6	019B,01E9
INT01	01FE	019C
INT02	0292	019D
INT03	02B5	019E
INT04	0328	019F
INT05	0446	01A0
IN001	01C1	01E7
IN002	01DA	01E8
IN16V	0A78	04C8,04CE,06E2,06F0,0704,0718,072C,0740,0754,0768,077C,0790,07A4,07B8,07CC,07E0,07F4,0808,081C,0830,0844,0858,086C,0880,0894,08A8,08BC,08D0,08E4
IN17V	0AB8	04CA,04D0,06E4,06F6,070A,071E,0732,0746,075A,076E,0782,0796,07AA,07BE,0702,07E6,07FA,080E,0822,0836,084A,085E,0872,0886,089A,08AE,08C2,08D6,08EA
IOARA	0580	0555,056A,0573,0575,058C
ISINT	028A	01B6,01C1,01D0,01E1,01E4,0224,0230,0259,025D,0260,0262,0265
LHIND	05BF	0593,0597,05AB,05AE

INTERRUPT FUNCTION TEST

LOG	0523	0171,0180,01A2,01F0,024C,027B,0356,036C,0382,038A,0399,03C1,03CB,03D2,03E2,03F3,0406,040A,0459,0471,04EA,04ED,04F0,0508,052D,0547,0549,055C
LOG01	0524	
LOG02	0530	0538,053A
LOG05	053B	0536
LOG06	0541	0524,0564
LPERR	0520	01EB,021E,0275,02C4,033E,0364,037C,0395,03F1,0453,0519
LVLIX	018E	0158,0220,0298,02C8,04D2
LVLST	04AA	0208,028B,0338,03E8,04B4
LVLS1	04B6	04AD
LVLS2	04B7	04B0
LVL01	063A	04B6
LVL02	0643	
LVL03	0646	
LVL04	0649	
LVL05	064C	
LVL06	064F	
LVL07	0652	
LVL08	0655	
LVL09	0658	
LVL10	065B	
LVL11	065E	
LVL12	0661	
LVL13	0664	
LVL14	0667	
LVL15	066A	
LVL16	066D	
LVL17	0670	
LVL18	0673	
LVL19	0676	
LVL20	0679	
LVL21	067C	
LVL22	067F	
LVL23	0682	
LVL24	0685	
LVL25	0688	
LVL26	063D	
LVL27	0640	042C
LVSAV	0198	014B,0152,0156,0216,0219,029D,02CD,03C6,03DD
LVSTI	04AE	04B3
MASK0	0320	01A6,02C6,0312,048F,0525
MASK1	0322	01A8,02C7,0313,0491,0527
NEST1	04A0	024A,03F9,04A7
NSTCN	04A9	04A2
OPIND	019A	0146,0529
PLEXT	0607	01BB,01CE
PL1	01C4	01B9,01F7
PL2	01D5	01CC,01F8
POLER	01E9	01C7,01D8
POLL	0601	01F5,0604
PRIPT	04E2	02A4,03D0,03E6,04F3
PRIST	04B8	0296,03C4,03D8,04DA
PRIXT	04F3	04E9
PRI01	06E0	04C2,06EB
PRI02	0716	0721
PRI03	072A	0735
PRI04	073E	0749
PRI05	0752	075D
PRI06	0766	0771
PRI07	077A	0785
PRI08	078E	0799
PRI09	07A2	07AD
PRI10	07B6	07C1
PRI11	07CA	07D5
PRI12	07DE	07E9
PRI13	07F2	07FD

INTERRUPT FUNCTION TEST

PRI14	0806	0811
PRI15	081A	0825
PRI16	082E	0839
PRI17	0842	084D
PRI18	0856	0861
PRI19	086A	0875
PRI20	087E	0889
PRI21	0892	089D
PRI22	08A6	08B1
PRI23	08BA	08C5
PRI24	08CE	08D9
PRI25	08E2	08ED
PRI26	06EE	04DC,06F9
PRI27	0702	042D
PRSN	0586	053C
PRSNS	0584	0530,0540
PRWRT	0588	052F,053B
PR020	0723	071C
PR021	071D	0725
PR030	0737	0730
PR031	0731	0739
PR032	073C	0737
PR040	074B	0744
PR041	0745	074D
PR042	0750	074B
PR050	075F	0758
PR051	0759	0761
PR052	0764	075F
PR060	0773	076C
PR061	076D	0775
PR062	0778	0773
PR070	0787	0780
PR071	0781	0789
PR072	078C	0787
PR080	079B	0794
PR081	0795	079D
PR082	07A0	079B
PR090	07AF	07A8
PR091	07A9	07B1
PR092	07B4	07AF
PR100	07C3	07BC
PR101	07BD	07C5
PR102	07C8	07C3
PR110	07D7	07D0
PR111	07D1	07D9
PR112	07DC	07D7
PR120	07EB	07E4
PR121	07E5	07ED
PR122	07F0	07EB
PR130	07FF	07F8
PR131	07F9	0801
PR132	0804	07FF
PR140	0813	080C
PR141	080D	0815
PR142	0818	0813
PR150	0827	0820
PR151	0821	0829
PR152	082C	0827
PR160	083B	0834
PR161	0835	083D
PR162	0840	083B
PR170	084F	0848
PR171	0849	0851
PR172	0854	084F
PR180	0863	085C
PR181	085D	0865
PR182	0868	0863
PR190	0877	0870

PR191	0871	0879
PR192	087C	0877
PR200	088B	0884
PR201	0885	088D
PR202	0890	088B
PR210	089F	0898
PR211	0899	08A1
PR212	08A4	089F
PR220	08B3	08AC
PR221	08AD	08B5
PR222	08B8	08B3
PR230	08C7	08C0
PR231	08C1	08C9
PR232	08CC	08C7
PR240	08DB	08D4
PR241	08D5	08DD
PR242	08E0	08DB
PR250	08EF	08E8
PR251	08E9	08F1
PR252	08F4	08EF
PR260	06FB	06F4
PR261	06F5	06FD
PR262	0700	04D6,06FB
PR270	070F	0708
PR271	0709	0711
PR272	0714	04D8,070F
PSSW	0285	0210,0240,02BE,02E2
REQCE	0712	0703,0709
REQER	06ED	06E1
REQTR	06FE	0422,06EF,06F5
REQ00	0726	0717,071D
REQ01	073A	0728,0731
REQ02	074E	073F,0745
REQ03	0762	0753,0759
REQ04	0776	0767,076D
REQ05	078A	077B,0781
REQ06	079E	078F,0795
REQ07	07B2	07A3,07A9
REQ08	07C6	07B7,07BD
REQ09	07DA	07C8,07D1
REQ10	07EE	07DF,07E5
REQ11	0802	07F3,07F9
REQ12	0816	0807,0800
REQ13	082A	081B,0821
REQ14	083E	082F,0835
REQ15	0852	0843,0849
REQ16	0866	0857,085D
REQ17	087A	086B,0871
REQ18	088E	087F,0885
REQ19	08A2	0893,0899
REQ20	08B6	08A7,08AD
REQ21	08CA	08BB,08C1
REQ22	08DE	08CF,08D5
REQ23	08F2	08E3,08E9
RTN	019B	016A
RTNNO	018F	015A,0160,0162,0166,0168,017A,01DA,0250,02A8,02E7,040E,0481,0695,0698
RTNRT	0177	01DF,0257,02AD,02EC,0415,0488
RT100	0212	0242,027F
RT101	0226	021C,025F
RT104	0238	0237,06AF,068D,06C8
RT105	0259	023C,0266
RT106	0267	023F,0273
RT107	0279	0249
RT108	0260	0258
RT109	0234	0278
RT110	0250	0245
RT300	02BF	02E4

RT301	02D0	02C2,02FE,0305
RT302	02D8	
RT303	02EE	02DC
RT304	02F9	02DE
RT305	02DD	02F3,030D,0314,0318
RT306	02C8	02F8
RT307	02FF	02FB
RT308	0306	069F
RT309	030F	0308
RT310	0315	030C
RT311	02F4	02E1
RT400	034A	033C
RT401	0438	033A,0445
RT402	0350	0340
RT403	0374	0366
RT404	036C	0362
RT405	038A	037E
RT406	03A4	0397
RT407	03D0	
RT408	03E6	
RT409	03E2	
RT410	0417	03ED
RT411	0420	03EF
RT412	0382	037A
RT413	035C	034F,0355
RT414	040E	032A
RT415	03C4	03A3
RT500	045D	047F,0924,0925,0926,0927,0928,0929,092A,0928,092C,092D
RT501	0467	0466,047E,0921
RT502	047F	0451,0470
RT504	0481	0448,0475
RUNSW	0199	0137,0143,0243,0328,0446,06C2
SEQCK	0191	0177,01DC,0253,02AB,02E4,0411,0484
SERVC	06D7	0232,0283,042E,04A9,06A5,06DB
SET01	048C	04C1
SET02	04C8	04CD
SIX	0190	0163
SNSWS	0188	015B
START	012D	0175,0184,0195,08AE
SVEXT	062E	0627
SVINT	0609	02F1,038E,03A4,03D6,0438,049F,04F6,062E
SVIN0	0613	0623,062C
SVIN1	0615	061D
SVIO	0638	060A,0619,061A,062D
SV0	0630	0621
SV1	0631	0613
SV2	0632	0611
SV3	0633	0628
SV4	0634	0610,0615,061E,0620,0628
SV5	0635	0614,0617,0618
SV6	0636	0612,0618,0629
SV7	0637	060D,0624
TRACE	08F6	044A,08F8,08FA,08FE,0901,0907,090F,0912
TRAC0	0903	08FC
TRAC1	0914	090A,0920
TRAC2	0912	
TRAER	0477	0450,0468,046A
TRCN0	0921	08FB
TRCN1	0922	0914,0915,0916,0917
TRCN2	0923	08F7,0900,0911
TRIND	048D	0457,0467,046E,0900
TWRTR	0548	0528,0553
TWRT0	057D	0554
TWRT1	057E	0563
TWR01	0554	0550
TWR02	055F	055E,057C
TWR03	0579	0572

INTERRUPT FUNCTION TEST

TWSNS	058A	054D,0557,056C
TWWRT	058C	0556,056B
UMSK0	0324	01BD,02F6,0499,0543
UMSK1	0326	01BF,02F7,049B,0545
VCTOR	01F5	01AB
WRDSR	057F	054C,0570,0576,057A
WTA	03D5	300A
WTB	03E5	300B
WTC	03F6	300C,0424,0426
WTD	0409	300D
WTE	0400	300E
WTF	045C	300F
WT1	013C	3001,01A5,01F3
WT10	0474	3010
WT11	051E	3011,0512
WT12	0537	3012,0531
WT13	0539	3013,0534
WT14	0552	3014
WT15	06C7	3015
WT2	0174	3002
WT3	0183	3003
WT4	027E	3004
WT5	024F	3005
WT6	0358	3006
WT7	0385	3007
WT8	038D	3008,0393
WT9	03CE	3009
XIO	01FA	01B1
XIOCC	028C	01B4,0222,029A,02CA,04D4
XIOCK	01F7	01C6
XIOSN	056C	056F
XIOWR	0568	0578
ZONE	05C3	05A4
ZONEN	05C7	05C3
ZONE1	05D2	05C4
ZONE2	05DD	05C5
ZONE3	05E7	05C6

TABLE OF CONTENTS

1. PURPOSE

THE PURPOSE OF THE 1800 PROCESSOR CONTROL (PC) FUNCTION TEST IS TO LOCATE FAILING INSTRUCTIONS. EACH SEPARATE PC INSTRUCTION IS TESTED AND CHECKED FOR COMPLIANCE WITH THE PRODUCT SPECIFICATIONS. FEATURES THAT ARE NOT UNIQUE TO AN OPERATION CODE (INDEXING, INDIRECT ADDRESSING, ETC.) ARE ALSO TESTED. I/O RELATED FEATURES (INTERRUPT, CYCLE STEAL, ETC.) ARE NOT TESTED.

PROGRAM RUNNING TIME

2 USEC MACHINE - APPROXIMATELY 1 MINUTE

4 USEC MACHINE - APPROXIMATELY 2 MINUTES

2. PREREQUISITES

2.1 PROGRAM PREREQUISITES

THE PROGRAM CAN BE OPERATED BY ITSELF BUT MUST BE LOADED BY THE 1800 BASIC DIAGNOSTIC LOADER.

2.2 EQUIPMENT PREREQUISITES

A. 1800 PC HAVING 4096-WORD STORAGE.
B. 1442 CARD READ/PUNCH OR 1054 PAPER TAPE READER.

3. USE PROCEDURE

3.1 PROGRAM LOADING

THE 1800 P C FUNCTION TEST (0884) IS LOADED BY THE 1800 BASIC LOADER. SEE THE 1800 BASIC LOADER DOCUMENTATION FOR THE DESCRIPTION OF THE LOADING PROCEDURE.

3.2 PROGRAM OPERATION

AFTER THE PROGRAM IS LOADED THE FOLLOWING NORMAL WAITS OCCUR,

LOCATION B REG	SYMBOLIC	DESCRIPTION AND ACTION
3000	(X000)	START OF PROGRAM. SET ALL BIT SWITCHES ON. PRESS START.
3001	(X001)	TESTING OF BIT SWITCHES ON COMPLETE, TURN OFF, PRESS START.
3002	(X003)	TESTING OF BIT SWITCHES OFF COMPLETE SET IN OPTION, PRESS START.
3003	(X007)	PROGRAM COMPLETED. PUSH START TO RERUN PROGRAM. IF OTHER WAITS OCCUR, REFER TO SECTION 3.5 FOR ERROR ISOLATION.

ANY WAITS OTHER THAN THOSE ABOVE ARE ERROR WAITS.

WHEN AN ERROR WAIT IS OBTAINED,

1. SEE THE PROGRAM LISTING TO DETERMINE THE PROBLEM. ERROR WAITS ARE DOCUMENTED AT THE FRONT OF THE PROGRAM LISTING BY THE CONTENTS OF THE B REGISTER.
2. IF THE ERROR WAIT HAS B REGISTER LESS THAN 3069, THE OPERATOR CANNOT LOOP ON THAT ERROR. INSTEAD, THE OPERATOR SHOULD SINGLE INSTRUCTION STARTING AT THE BEGINNING OF THE FAILING ROUTINE TO DETERMINE THE EXACT FAILURE. (SECTION 3.5)
3. IF THE ERROR WAIT HAS B REGISTER GREATER THAN 3068, THE OPERATOR SHOULD, (SECTION 3.5)
   A. LOOP INSTRUCTION BEING TESTED (BIT SW 8 ON)
      OR IF A LARGER LOOP IS DESIRED
      LOCK ON ERROR (BIT SW 12 ON)
      OR
      LOOP ON ROUTINE (BIT SW 10 ON)
   B. SINGLE STEP TO LOCATE THE EXACT FAILURE.
   C. IF NO ERROR OCCURS, BYPASS THE ERROR WAIT (BIT SW 14 ON) AND USE A SCOPE TO DETERMINE THE FAILURE.

TABLE 1

DATA ENTRY SWITCHES 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	DESCRIPTION
. . . . . 1 .	BYPASS ERROR WAIT (SEE NOTE)
. . . . . 1	LOCK ON ERROR
. . . . . 1	LOOP PROGRAM
. . . . . 1	LOOP ON ROUTINE
. . . . . 1	LOOP ON INSTRUCTION BEING TESTED
. . . . . 1	BYPASS MPL/DIV TEST

NOTE- IF ERROR OCCURS, BITS 12 OR 8 MUST BE ON TO MAKE BIT 14 EFFECTIVE.

3.3 TERMINATION

NORMAL TERMINATION OCCURS WITH PROGRAM STOPPING AT WAIT WITH B REG = 3003.

3.4 RESTART PROCEDURE

PRESS STOP, RESET, AND START BUTTONS.

3.5 ERROR WAITS

THERE ARE TWO TYPES OF ERROR CONDITIONS WHICH CAUSE ERROR WAITS.

1. ERRORS WHICH USE THE COMMON ERROR CONTROL ROUTINE (F000).
2. ERRORS WHICH OCCUR BEFORE SUFFICIENT PORTIONS OF THE HARDWARE HAVE BEEN CHECKED OUT TO ALLOW USE OF THE COMMON ERROR CONTROL ROUTINE.

ERRORS WHICH USE THE COMMON ERROR CONTROL ROUTINE HAVE B REG NUMBERS OF /3069 AND UP. WHEN A NUMBERED WAIT OCCURS, BITS 5-15 OF THE STORAGE (B REG = 3XXX). WHEN A NUMBERED WAIT OCCURS, BITS 5-15 OF THE STORAGE BUFFER REGISTER GIVE THE ERROR IDENTIFICATION NUMBER. TO FIND THE FAILING ROUTINE, LOOK IN THE ERROR IDENTIFICATION TABLE (IN FRONT OF THE LISTING) . THIS WILL GIVE YOU THE SYMBOLIC AND ACTUAL STARTING ADDRESS OF THE ROUTINE THAT FAILED.

ERRORS WHICH DO NOT USE THE COMMON ERROR CONTROL ROUTINE HAVE B REG NUMBERS FROM /3003 THRU /3068. THE INSTRUCTION REG WILL POINT DIRECTLY TO THE FAILING ROUTINE. TO FACILITATE FINDING THE START OF A TEST ROUTINE EACH TEST ROUTINE BEGINS WITH A LABEL HAVING AN A OR B AS ITS FIRST LETTER. IN THE LISTING EACH ROUTINE IS FURTHER BRACKETED BY A SOLID LINE OF ASTRISKS. TO FIND THE FAILING ROUTINE OF ERRORS WHICH DO NOT USE THE COMMON ERROR CONTROL START AT THE LOCATION SPECIFIED BY THE ERROR WAIT AND WORK UP THE LISTING (BACKWARDS) UNTIL THE FIRST SYMBOLIC LOCATION WHICH HAS A LABEL BEGINNING WITH A AND B. THIS IS THE START OF THE FAILING ROUTINE.

TWO WAYS OF LOCATING A FAILURE ARE AS FOLLOWS-

A. DETERMINE WHAT FAILURE CAUSED THE ERROR WAIT. TO LOCATE THE FAILURE, IT IS RECOMMENDED THAT THE PROGRAM BE MANUALLY ENTERED AT THE START OF THE FAILING ROUTINE AND SINGLE INSTRUCTION, FOLLOWING THE LISTING TO DETERMINE THE EXACT FAILURE.

B. USE AN OSCILLOSCOPE TO HELP LOCATE THE FAILURE. IF THE FAILURE IS IN THE COMMON-ERROR ROUTINE, SIMPLY TURN ON CONSOLE ENTRY SWITCH 8 AND DEPRESS START PUSHBUTTON TO LOOP ON THE INSTRUCTION BEING TESTED. IF THE FAILURE IS IN THE FIRST PART OF THE PROGRAM (BEFORE THE COMMON ERROR ROUTINE INSTRUCTIONS HAVE BEEN CHECKED OUT), A BRANCH (MDX) TO THE BEGINNING OF THE ROUTINE MAY BE MANUALLY INSERTED IN PLACE OF THE WAIT INSTRUCTION. THEN, THE ROUTINE MAY BE LOOPED.

4. PRINTOUTS (NONE)

5. COMMENTS

THE 1800 P-C FUNCTION TEST STARTS WITH VERY SIMPLE INSTRUCTIONS AND DETERMINES IF EACH INSTRUCTION PERFORMS TO SPECIFICATIONS. EACH SUCCESSIVE ROUTINE ATTEMPTS TO UTILIZE ONLY AN INSTRUCTION THAT HAS NOT BEEN PREVIOUSLY TESTED. THE PROGRAM OPTIONS PROVIDE A MEANS FOR CONTINOUSLY LOOPING THE ENTIRE PROGRAM AND ALSO ALLOW FAILING ROUTINES TO BE LOOPED.

AN ATTEMPT IS MADE DURING THE EARLY STAGES OF THE PROGRAM TO DEVELOP THOSE INSTRUCTIONS WHICH ALLOW THE USAGE OF THE COMMON CONTROL (F00E AND F005) AND ERROR (F000) ROUTINES. AFTER THESE INSTRUCTIONS HAVE BEEN TESTED THE USER THEN HAS THE ABILITY TO REQUEST VARIOUS CONTROL OPTIONS BY MEANS OF THE DATA ENTRY SWITCHES.

5.1 OPERATING MODES

THE NORMAL MODE OF OPERATION IS WITH THE DATA ENTRY SWITCHES SET TO /0000. THIS CAUSES A SINGLE PASS THROUGH THE PROGRAM WITH AN ERROR WAIT OCCURING IF AN ERROR IS DETECTED.

IF AN ERROR IS DETECTED AND THE COMMON ERROR WAIT OCCURS, THE USER SHOULD TURN ON THE ** LOOP ON ROUTINE ** (DATA ENTRY SWITCHES SET TO /0020) AND SINGLE INSTRUCTION THROUGH THE FAILING ROUTINE TO ISOLATE THE FAILING INSTRUCTION.

IF THE FAILING ROUTINE DOES NOT FAIL WHEN EXECUTED IN SINGLE INSTRUCTION MODE, THE USER CAN TURN ON THE ** BYPASS ERROR WAIT** SWITCH AND THE **LOOP ROUTINE** SWITCH (DATA ENTRY SWITCHES SET TO /0022) AND PROCEED TO USE SCOPING TECHNIQUES TO ISOLATE THE FAILURE.

5.2 PROGRAM LABELS

LABELS OCCURING IN THE PROGRAM LISTING CAN BE QUICKLY IDENTIFIED AS FOLLOWS-

A. LABELS STARTING WITH A OR B INDICATE THE BEGINNING OF A TEST ROUTINE.
B. LABELS STARTING WITH G, H, J, OR K INDICATE COMMUNICATION LABELS WITH A ROUTINE.
C. LABELS STARTING WITH V OR X ARE RESERVED FOR WAITS.
D. LABELS STARTING WITH N, R, OR S INDICATE A CONSTANT OR WORK AREA.
E. LABELS STARTING WITH F, W, Z OR U ARE USED IN COMMON OR SPECIAL ROUTINES THAT ARE NOT A REGULAR TEST ROUTINE.

6. APPENDIX (NONE)

```
                 ABS
02BC             ORG     /3000
********************************************************************
                * THIS ENGINEERING CHANGE REFLECTS MINOR BUT
                * SIGNIFICANT MODIFICATIONS TO THE PROGRAM AND
                * PROGRAM DESCRIPTION.
                *
                * THE CHANGES ARE--
                *
                *  1.  THE PROGRAM IDENTIFICATION HAS BEEN ADDED
                *      JUST AFTER THE ORG 300 INSTRUCTION TO ENABLE
                *      THIS PROGRAM TO BE CALLED OFF THE DISK.
                *
                *  2.  WAIT /3000 AT LABEL X000 HAS BEEN INSERTED
                *      AT THE FRONT OF THE PROGRAM SO THAT THE
                *      INITIAL BIT SWITCH SETTINGS CAN BE MADE.
                *
                *
                *
********************************************************************
                *
                *          OPERATING INSTRUCTIONS
                *
                *            BIT SWITCH SETTINGS
                *
                *             BIT 14 ON BYPASS ERROR WAIT
                *
                *                 BIT 12 OR 8 MUST BE ON TO
                *                 MAKE BIT 14 EFFECTIVE.
                *
                *             BIT 13 NOT USED
                *
                *             BIT 12 LOCK ON ERROR
                *
                *             BIT 11 ON LOOP PROGRAM
                *
                *             BIT 10 ON LOOP ROUTINE
                *
                *             BIT  9 NOT USED
                *
                *             BIT  8 LOOP ON INSTRUCTION BEING
                *                    TESTED
                *             BIT  7 ON BYPASS MPL/DIV TEST
                *
                *
                *
                *
                *
                *
                *
                *
                *
                *
********************************************************************
B-REG  I-REG    *             A HALT AT
********************************************************************
                *
3000 0  012E    *     DC      X0C0+1     1130 AND 1800
                *                        SET DATA ENTRY SWITCHES
                *                        TO /FFFF + PRESS START
                *
                *                        (1800) ALSO SET S/P SWS TO
                *                        /FF00 AND PPESS START
                *
3001 0  0287    *     DC      X001+1     SET SENSE/PROG AND
                *                        DATA ENTRY SWITCHES
                *                        TO ZEROS AND PRESS
                *                        START
```



```
3002 0  02C8             DC      X003+1      SET SWITCHES FOR OPTIONS
                    *                        AND PRESS START
                    *
3003 0  0F7D             DC      X007+1      PROGRAM COMPLETED
                    *
                    ********************************************
                    *
                    * ERROR IDENTIFICATION LISTING
                    *
                    *
                    *
                    *
********************************************************************
         ADDRESS    *
           OF       *
B-REG    ROUTINE    * A REG Q REG  XR-1  XR-2  XR-3  STATUS
********************************************************************
3004 0   012E            DC     A080       MDX
                    * SHORT FORM MDX FAILED TO MODIFY I CTR +1
                    *
                    *
3005 0   012E            DC     A080       MDX            MOD+0
3006 0   012E            DC     A080                         +1
                    * SHORT FORM MDX-SHOULD HAVE MODIFIED I CTR
                    * +2 BUT MODIFIED BY 0 OR +1
                    *
                    *
3007 0   012E            DC     A080       MDX            MOD+0
3008 0   012E            DC     A080                         +1
3009 0   012E            DC     A080                         +2
300A 0   012E            DC     A080                         +3
                    * SHORT FORM MDX SHOULD HAVE MODIFIED I CTR
                    * +4 BUT MODIFIED BY 0, +1, +2 OR +3
                    *
                    *
300B 0   012E            DC     A080       MDX
                    * MDX SHORT FORM FAILED TO MODIFY I CTR
                    *
                    *
300C 0   012E            DC     A080       MDX            MOD+0
300D 0   012E            DC     A080                         +1
300E 0   012E            DC     A080                         +2
                    * MDX SHORT FORM-SHOULD HAVE MODIFIED I CTR
                    * -2, DID MODIFY BY 0, +1 OR +2
                    *
                    *
300F 0   013F            DC     A0C0       BSC,C
                    * N/A    N/A    N/A   N/A   N/A    C+0
                    * BSC SKIPPED-SHOULD NOT HAVE
                    *
                    *
3010 0   013F            DC     A0C0       BSC,O
3011 0   013F            DC     A0C0
                    * N/A    N/A    N/A   N/A   N/A    C+O AFTER LDS
                    * N/A    N/A    N/A   N/A   N/A     C  AFTER 1ST BSC
                    * FIRST BSC SKIPPED-SHOULD NOT HAVE
                    * SECOND BSC FAILED TO SKIP-INDICATING 1ST BSC
                    * FAILED TO TURN OFF OVERFLOW
                    *
                    *
3012 0   013F            DC     A0C0       BSC,C
                    * N/A    N/A    N/A   N/A   N/A    OFF
                    * BSC DID NOT SKIP WITH OVERFLOW OFF
                    *
                    *
3013 0   014C            DC     A100       LD
                    * 0000   N/A    N/A   N/A   N/A    N/A
                    * ACCUM NOT EQUAL TO 0000
```

PROCESSOR-CONTROLLER FUNCTION TEST

```
                         *                                             8B401390
********************************************************************** 8B401400
        ADDRESS          *                                             8B401410
          OF             *                                             8B401420
B-REG   ROUTINE          * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS       8B401430
********************************************************************** 8B401440
3014 0  014C                  DC      A100        LD                   8B401450
                         * 0000   N/A    N/A   N/A   N/A   N/A 1ST LD  8B401460
                         * 0000   N/A    N/A   N/A   N/A   N/A 2ND LD  8B401470
                         * A LOAD 0000 FOLLOWED BY LOAD 0000 DID NOT   8B401480
                         * LEAVE ACCUM EQUAL TO 0000                   8B401490
                         *                                             8B401500
                         *                                             8B401510
3015 0  014C                  DC      A100        BSC,E                8B401520
                         * 0000   N/A    N/A   N/A   N/A   N/A         8B401530
                         * BSC FAILED TO SKIP                          8B401540
                         *                                             8B401550
                         *                                             8B401560
                         *                                             8B401570
                         *                                             8B401580
3016 0  0154                  DC      A140        LD                   8B401590
                         * 0000   N/A    N/A   N/A   N/A   N/A 1ST VALVE 8B401600
                         * FFFF   N/A    N/A   N/A   N/A   N/A AFTER LD  8B401610
                         * LOAD FFFF ON TOP OF 0000 DID NOT LEAVE ACC  8B401620
                         * NEGATIVE                                    8B401630
                         *                                             8B401640
                         *                                             8B401650
3017 0  0154                  DC      A140        BSC,+                8B401660
                         * FFFF   N/A    N/A   N/A   N/A   N/A         8B401670
                         *                                             8B401680
                         *                                             8B401690
3018 0  0154                  DC      A140        BSC,E                8B401700
                         * FFFF   N/A    N/A   N/A   N/A   N/A         8B401710
                         * BSC SKIPPED SHOULD NOT HAVE                 8B401720
                         *                                             8B401730
                         *                                             8B401740
3019 0  0154                  DC      A140        ACCUM NOT EQUAL 7FFF 8B401750
301A 0  0154                  DC      A140        ACCUM NOT EQUAL 3FFF 8B401760
301B 0  0154                  DC      A140        ACCUM NOT EQUAL 1FFF 8B401770
301C 0  0154                  DC      A140        ACCUM NOT EQUAL 0FFF 8B401780
301D 0  0154                  DC      A140        ACCUM NOT EQUAL 07FF 8B401790
301E 0  0154                  DC      A140        ACCUM NOT EQUAL 03FF 8B401800
301F 0  0154                  DC      A140        ACCUM NOT EQUAL 01FF 8B401810
3020 0  0154                  DC      A140        ACCUM NOT EQUAL 00FF 8B401820
3021 0  0154                  DC      A140        ACCUM NOT EQUAL 007F 8B401830
3022 0  0154                  DC      A140        ACCUM NOT EQUAL 003F 8B401840
3023 0  0154                  DC      A140        ACCUM NOT EQUAL 001F 8B401850
3024 0  0154                  DC      A140        ACCUM NOT EQUAL 000F 8B401860
3025 0  0154                  DC      A140        ACCUM NOT EQUAL 0007 8B401870
3026 0  0154                  DC      A140        ACCUM NOT EQUAL 0003 8B401880
3027 0  0154                  DC      A140        ACCUM NOT EQUAL 0001 8B401890
3028 0  0154                  DC      A140        ACCUM NOT EQUAL 0000 8B401900
3029 0  0154                  DC      A140        ACCUM NOT EQUAL 0000 8B401910
                         * FFFF   N/A    N/A   N/A   N/A   N/A LOADED  8B401920
                         * 0000   N/A    N/A   N/A   N/A   N/A AFTER SRA'S 8B401930
                         * THE ABOVE WAITS OCCUR AS A RESULT OF A      8B401940
                         * FAILURE ON A ROUTINE THAT LOADS FFFF ON     8B401950
                         * 0000 AND CHECKS USING SRA 1 AND BSC  E.     8B401960
                         *                                             8B401970
                         *                                             8B401980
302A 0  01A0                  DC      A180        ACCUM NOT EQUAL FFFF 8B401990
302B 0  01A0                  DC      A180        ACCUM NOT EQUAL FFFF 8B402000
302C 0  01A0                  DC      A180        ACCUM NOT EQUAL 7FFF 8B402010
302D 0  01A0                  DC      A180        ACCUM NOT EQUAL 3FFF 8B402020
302E 0  0154                  DC      A140        ACCUM NOT EQUAL 1FFF 8B402030
302F 0  01A0                  DC      A180        ACCUM NOT EQUAL 0FFF 8B402040
3030 0  01A0                  DC      A180        ACCUM NOT EQUAL 07FF 8B402050
3031 0  01A0                  DC      A180        ACCUM NOT EQUAL 03FF 8B402060
```


PROCESSOR-CONTROLLER FUNCTION TEST

```
********************************************************************** 8B402070
        ADDRESS          *                                             8B402080
          OF             *                                             8B402090
B-REG   ROUTINE          * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS       8B402100
********************************************************************** 8B402110
3032 0  01A0                  DC      A180        ACCUM NOT EQUAL 01FF 8B402120
3033 0  01A0                  DC      A180        ACCUM NOT EQUAL 00FF 8B402130
3034 0  01A0                  DC      A180        ACCUM NOT EQUAL 007F 8B402140
3035 0  01A0                  DC      A180        ACCUM NOT EQUAL 003F 8B402150
3036 0  01A0                  DC      A180        ACCUM NOT EQUAL 001F 8B402160
3037 0  01A0                  DC      A180        ACCUM NOT EQUAL 000F 8B402170
3038 0  01A0                  DC      A180        ACCUM NOT EQUAL 0007 8B402180
3039 0  01A0                  DC      A180        ACCUM NOT EQUAL 0003 8B402190
303A 0  01A0                  DC      A180        ACCUM NOT EQUAL 0001 8B402200
303B 0  01A0                  DC      A180        ACCUM NOT EQUAL 0000 8B402210
303C 0  01A0                  DC      A180        ACCUM NOT EQUAL 0000 8B402220
                         * FFFF   N/A    N/A   N/A   N/A   N/A LOADED  8B402230
                         * 0000   N/A    N/A   N/A   N/A   N/A AFTER SRA'S 8B402240
                         * THE ABOVE WAITS OCCUR AS A RESULT OF A      8B402250
                         * FAILURE ON A ROUTINE THAT LOADS FFFF ON     8B402260
                         * FFFF AND CHECKS USING SRA 1 AND BSC  E.     8B402270
                         *                                             8B402280
                         *                                             8B402290
303D 0  01EB                  DC      A1C0        LD 0000 ON 0000      8B402300
                         * 0000   N/A    N/A   N/A   N/A   N/A         8B402310
                         * ACCUM NOT EQUAL 0000                        8B402320
                         *                                             8B402330
                         *                                             8B402340
303E 0  01EB                  DC      A1C0        LD FFFF ON 0000      8B402350
                         * 0000   N/A    N/A   N/A   N/A   N/A BEFORE LD 8B402360
                         * FFFF   N/A    N/A   N/A   N/A   N/A AFTER LD  8B402370
                         * ACCUM NOT EQUAL FFFF                        8B402380
                         *                                             8B402390
                         *                                             8B402400
303F 0  01F5                  DC      A1D0        LD                   8B402410
                         * 0000   N/A    N/A   N/A   N/A   N/A         8B402420
                         * ACCUM NOT EQUAL 0000                        8B402430
                         *                                             8B402440
                         *                                             8B402450
3040 0  01F5                  DC      A1D0        EOR                  8B402460
                         * 0000   N/A    N/A   N/A   N/A   N/A         8B402470
                         * 0000   N/A    N/A   N/A   N/A   N/A         8B402480
                         * WITH ACCUM EQUAL 0000 AN EOR USING 0000 DID 8B402490
                         * NOT RESULT IN ACCUM EQUAL 0000              8B402500
                         *                                             8B402510
                         *                                             8B402520
3041 0  01F5                  DC      A1D0        EOR                  8B402530
                         * FFFF   N/A    N/A   N/A   N/A   N/A LOADED + EOR 8B402540
                         * 0000   N/A    N/A   N/A   N/A   N/A SHOULD BE 8B402550
                         * WITH ACCUM EQUAL FFFF AN EOR USING FFFF DID 8B402560
                         * NOT RESULT IN ACCUM EQUAL 0000              8B402570
                         *                                             8B402580
                         *                                             8B402590
3042 0  01F5                  DC      A1D0        EOR                  8B402600
3043 0  01F5                  DC      A1D0                             8B402610
                         * 0000   N/A    N/A   N/A   N/A   N/A BEFORE  8B402620
                         * FFFF   N/A    N/A   N/A   N/A   N/A S/B AFTER 8B402630
                         * WITH ACCUM EQUAL 0000 AN EOR USING FFFF DID 8B402640
                         * NOT RESULT IN ACCUM EQUAL FFFF              8B402650
                         *                                             8B402660
                         *                                             8B402670
3044 0  01F5                  DC      A1D0        EOR                  8B402680
                         * FFFF   N/A    N/A   N/A   N/A   N/A BEFORE EOR 8B402690
                         * FFFF   N/A    N/A   N/A   N/A   N/A S/B AFTER 8B402700
                         * WITH ACCUM EQUAL FFFF AN EOR USING 0000 DID 8B402710
                         * NOT RESULT IN ACCUM EQUAL FFFF              8B402720
                         *                                             8B402730
                         *                                             8B402740
```

PROCESSOR-CONTROLLER FUNCTION TEST

```
**************************************************************************** 8B402750
       ADDRESS      *                                                        8B402760
         OF         *                                                        8B402770
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                  8B402780
**************************************************************************** 8B402790
3045 0  01F5             DC      A100        SRA + EOR                       8B402800
                    * 7FFF   N/A   N/A    N/A    N/A  N/A S/B AFTER SRA      8B402810
                    * 0000   N/A   N/A    N/A    N/A  N/A S/B AFTER EOR      8B402820
                    * WITH ACCM EQUAL 7FFF AN EOR USING 7FFF DID NOT         8B402830
                    * BESULT IN ACCUM EQUAL TO 0000                          8B402840
                    * RESULT IN ACCM EQUAL TO 0000                           8B402850
                    *                                                        8B402860
3046 0  0214             DC      A1E0        LD LONG FORM                    8B402870
                    * 0000   N/A    N/A   N/A   N/A   N/A S/B AFTER LD       8B402880
                    * ACCUM NOT EQUAL 0000-INDICATING WRONG                  8B402890
                    * LOCATION WAS LOADED                                    8B402900
                    *                                                        8B402910
                    *                                                        8B402920
3047 0  0214             DC      A1E0        LD LONG FORM                    8B402930
                    * C,N1E0. N/A  N/A    N/A    N/A  N/A S/B AFTER LD       8B402940
                    * 0000    N/A  N/A    N/A    N/A  N/A S/B AFTER EOR      8B402950
                    * ACCUM NET EQUAL 0000 INDICATING WRONG LOCATION         8B402960
                    * WAS LOADED                                             8B402970
                    *                                                        8B402980
                    *                                                        8B402990
3048 0  0220             DC      A1F0        LD IND                          8B403000
3049 0  0220             DC      A1F0        LD IND                          8B403010
                    * 0000   N/A    N/A   N/A   N/A   N/A S/B FOR BSC        8B403020
                    * ACCUM NOT EQUAL 0000 INDICATING WRONG                  8B403030
                    * LOCATION WAS LOADED                                    8B403040
                    *                                                        8B403050
                    *                                                        8B403060
304A 0  022D             DC      A200        BSC LONG FORM                   8B403070
                    * UNCONDITIONAL BSC DID NOT BRANCH                       8B403080
                    *                                                        8B403090
                    *                                                        8B403100
304B 0  022D             DC      A200        BSC LONG FORM                   8B403110
                    * UNCONDITIONAL BSC SKIPPED-SHOULD BRANCH                8B403120
                    *                                                        8B403130
                    *                                                        8B403140
304C 0  022D             DC      A200        BSC,E LONG FORM                 8B403150
304D 0  022D             DC      A200                                        8B403160
                    * FFFF   N/A    N/A   N/A   N/A   N/A                    8B403170
                    * BSC FELL THRU OR SKIPPED-SHOULD BRANCH                 8B403180
                    * DID NOT SKIP OR SKIPPED - SHOULD BR.                   8B403190
                    *                                                        8B403200
304E 0  022D             DC      A200        BSC,+ LONG FORM                 8B403210
304F 0  022D             DC      A200                                        8B403220
                    * FFFF   N/A    N'A   N/A   N/A   N/A S/B AT TEST        8B403230
                    * DID NOT SKIP OR SKIPPED - SHOULD BR.                   8B403240
                    *                                                        8B403250
                    *                                                        8B403260
3050 0  022D             DC      A200        BSC,Z LONG FORM                 8B403270
3051 0  022D             DC      A200                                        8B403280
                    * FFFF   N/A    N/A   N/A   N/A   N/A S/B AT TEST        8B403290
                    * BSC DID NOT SKIP OR SKIPPED - SHOULD BR.               8B403300
                    *                                                        8B403310
                    *                                                        8B403320
3052 0  022D             DC      A200        BSC,- LONG FORM                 8B403330
                    * FFFF   N/A    N/A   N/A   N/A   N/A S/B AT TEST        8B403340
                    * BSC BRANCHED-SHOULD NOT                                8B403350
                    *                                                        8B403360
                    *                                                        8B403370
3053 0  022D             DC      A200        BSC,C LONG FORM                 8B403380
3054 0  022D             DC      A200                                        8B403390
                    * N/A    N/A    N/A   N/A   N/A   C+O S/B AT TEST        8B403400
                    * BSC DID NOT SKIF OR SKIPPED-SHOULD BRANCH              8B403410
                    *                                                        8B403420
```


PROCESSOR-CONTROLLER FUNCTION TEST

```
**************************************************************************** 8B403430
       ADDRESS      *                                                        8B403440
         OF         *                                                        8B403450
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                  8B403460
**************************************************************************** 8B403470
3055 0  022D             DC      A200        BSC,O LONG FORM                 8B403480
3056 0  022D             DC      A200                                        8B403490
                    * N/A    N/A    N/A   N/A   N/A   C+O S/B AT TEST        8B403500
                    * BSC DID NOT SKIP OR SKIPPED-SHOULD BRANCH              8B403510
                    *                                                        8B403520
                    *                                                        8B403530
3057 0  022D             DC      A200        BSC,O LONG FORM                 8B403540
                    * N/A    N/A    N/A   N/A   N/A    C  S/B AT TEST        8B403550
                    * BSC FAILED TO TURN OFF OVERFLOW                        8B403560
                    *                                                        8B403570
                    *                                                        8B403580
3058 0  022D             DC      A200        BSC,C LONG FORM                 8B403590
                    * N/A    N/A    N/A   N/A   N/A   OFF S/B AT TEST        8B403600
                    * BSC BRANCHED-SHOULD  NOT                               8B403610
                    *                                                        8B403620
                    *                                                        8B403630
3059 0  022D             DC      A200        BSC,O LONG FORM                 8B403640
                    * N/A    N/A    N/A   N/A   N/A   OFF S/B AT TEST        8B403650
                    * BSC BRANCHED-SHOULD NOT                                8B403660
                    *                                                        8B403670
                    *                                                        8B403680
305A 0  022D             DC      A200        BSC,+- LONG FORM                8B403690
305B 0  022D             DC      A200                                        8B403700
                    * 0000   N/A    N/A   N/A   N/A   N/A                    8B403710
                    * BSC DID NOT SKIP OR SKIPPED-SHOULD BRANCH              8B403720
                    *                                                        8B403730
                    *                                                        8B403740
305C 0  022D             DC      A200        BSC,+- LONG FORM                8B403750
                    * FFFF   N/A    N/A   N/A   N/A   N/A S/B AT TEST        8B403760
                    * BSC BRANCHED-SHOULD NOT                                8B403770
                    *                                                        8B403780
                    *                                                        8B403790
305D 0  022D             DC      A200        BSC,+- LONG FORM                8B403800
                    * 0001   N/A    N/A   N/A   N/A   N/A S/B AT TEST        8B403810
                    * BSC BRANCHED SHOULD NOT                                8B403820
                    *                                                        8B403830
                    *                                                        8B403840
305E 0  022D             DC      A200        BSC INDIRECT                    8B403850
305F 0  022D             DC      A200                                        8B403860
                    * BSC DID NOT SKIP OR SKIPPED-SHOULD BRANCH              8B403870
                    *                                                        8B403880
                    *                                                        8B403890
3060 0  0270             DC      A240        BSI                             8B403900
                    * UNCONDITIONAL BSI DID NOT BRANCH                       8B403910
                    *                                                        8B403920
                    *                                                        8B403930
3061 0  0270             DC      A240        BSI                             8B403940
                    * UNCONDITIONAL BSI DID NOT STORE I CTR                  8B403950
                    * CORRECTLY                                              8B403960
                    *                                                        8B403970
                    *                                                        8B403980
3062 0  0270             DC      A240        BSI,+ LONG FORM                 8B403990
3063 0  0270             DC      A240                                        8B404000
                    * 0000   N/A    N/A   N/A   N/A   N/A S/B AT TEST        8B404010
                    * BSI DID NOT SKIP OR SKIPPED-SHOULD BRANCH              8B404020
                    *                                                        8B404030
                    *                                                        8B404040
3064 0  0270             DC      A240        BSI,+ LONG FORM                 8B404050
                    * BSI DID NOT STORE THE I CTR CORRECTLY                  8B404060
                    *                                                        8B404070
                    *                                                        8B404080
3065 0  0282             DC      A900        STORE                           8B404090
                    * STORE INSTRUCTION FAILED                               8B404100
```

```
*****************************************************************
         ADDRESS     *
            OF       *
B-REG   ROUTINE      * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS
*****************************************************************
3066 0  0282
                        DC       A900        XIO  SENSE/PROG SWS
                     * FF00   N/A   N/A   N/A   N/A   N/A S/B AT TEST
                     * ACCUM NOT EQUAL TO FF00-- SENSE/PROG SWS
                     * WERE INCORRECTLY SENSED
                     *
3067 0  0282
                        DC       A900        XIO  DATA ENTRY SWS
                     * FF00   N/A   N/A   N/A   N/A   N/A S/B AT TEST
                     * ACCUM NOT EQUAL TO FFFF-- DATA ENTRY SWS
                     * WERE INCORRECTLY READ
                     *
                     *
3068 0  0282
                        DC       A900        XIO  SENSE/PROG SWS
                     * FF00   N/A   N/A   N/A   N/A   N/A S/B AT TEST
                     * ACCUM NOT EQUAL TO 0000-- SENSE/PROG SWS
                     * WERE INCORRECTLY SENSED
                     *
                     *
3069 0  0282
                        DC       A900        XIO
                     * 0000   N/A   N/A         N/A   N/A   NT/B AT TEST
                     * ACCUM NOT EQUAL TO 0000--DATA ENTRY SWS
                     * WERE INCORRECTLY READ
                     *
                     *
                     *
                     *
                     **************************************************
                     *
                     * THE FOLLOWING ERRORS ARE HANDLED BY THE
                     * COMMON ERROR CONTROL ROUTINE.  THE ID NUMBER
                     * SHOWN FOR EACH ERROR WILL APPEAR IN BITS
                     * 5 THRU 15 OF THE WAIT INSTRUCTION.
                     *
                     **************************************************
                     *
306A 0  02D9
                        DC       A280        SRA 16
                     * FFFF   N/A   N/A   N/A   N/A   N/A S/B AFTER LD
                     * 0000   N/A   N/A   N/A   N/A   N/A S/B AFTER SRA
                     * ACCUM NOT ZERO
                     *
                     *
306B 0  02E3
                        DC       A281        SRA 15
                     * 8000   N/A   N/A   N/A   N/A   N/A S/B AFTER LD
                     * 0001   N/A   N/A   N/A   N/A   N/A S/B AFTER SRA
                     * ACCUM NOT EQUAL 0001
                     *
                     *
306C 0  02EE
                        DC       A282        SRA 1
                     * AAAA   N/A   N/A   N/A   N/A   N/A S/B AFTER LD
                     * 5555   N/A   N/A   N/A   N/A   N/A S/B AFTER SRA
                     * ACCUM NOT EQUAL 5555
                     *
                     *
306D 0  02F9
                        DC       A283        SRA 1
                     * 5555   N/A   N/A   N/A   N/A   N/A S/B AFTER LD
                     * 2AAA   N/A   N/A   N/A   N/A   N/A S/B AFTER SRA
                     * ACCUM NOT EQUAL 2AAA
                     *
                     *
306E 0  0304
                        DC       A284        SERIES OF SRAS-15
                     *                       *TOTAL SHIFTS
                     * 8000   N/A   N/A   N/A   N/A   N/A S/B AFTER LD
                     * 0001   N/A   N/A   N/A   N/A   N/A S/B AFTER SRA
                     * ACCUM NOT EQUAL 0001
```



```
*****************************************************************
         ADDRESS     *
            OF       *
B-REG   ROUTINE      * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS
*****************************************************************
                     *
                     *
306F 0  0319
                        DC       A2C0        AND-MEMORY=0000
                     * 0000   N/A   N/A   N/A   N/A   N/A S/B AFTER LD
                     * 0000   N/A   N/A   N/A   N/A   N/A AFTER AND
                     * ACCUM NOT EQUAL 0000
                     *
                     *
3070 0  0323
                        DC       A2C4        AND-MEMORY=FFFF
                     * 0000   N/A   N/A   N/A   N/A   N/A
                     * 0000   N/A   N/A   N/A   N/A   N/A
                     * ACCUM NOT EQUAL 0000
                     *
                     *
3071 0  032D
                        DC       A2C8        AND-MEMORY=0000
                     * FFFF   N/A   N/A   N/A   N/A   N/A
                     * 0000   N/A   N/A   N/A   N/A   N/A
                     * ACCUM NOT EQUAL 0000
                     *
                     *
3072 0  0337
                        DC       A2CC        AND-MEMORY=FFFF
                     * FFFF   N/A   N/A   N/A   N/A   N/A
                     * FFFF   N/A   N/A   N/A   N/A   N/A
                     * ACCUM NOT EQUAL FFFF
                     *
                     *
3073 0  0345
                        DC       A300        OR-MEMORY = 0000
                     * 0000   N/A   N/A   N/A   N/A   N/A AFTER LD+OR
                     * 0000   N/A   N/A   N/A   N/A   N/A AFTER EOR
                     * ACCUM NOT EQUAL 0000
                     *
                     *
3074 0  034F
                        DC       A302        OR-MEMORY=FFFF
                     * 0000   N/A   N/A   N/A   N/A   N/A AFTER LD + OR
                     * FFFF   N/A   N/A   N/A   N/A   N/A AFTER EOR
                     * ACCUM NOT EQUAL FFFF
                     *
                     *
3075 0  035A
                        DC       A304        OR-MEMORY=FFFF
                     * FFFF   N/A   N/A   N/A   N/A   N/A AFTER LD+OR
                     * FFFF   N/A   N/A   N/A   N/A   N/A AFTER EOR
                     * ACCUM NOT EQUAL FFFF
                     *
                     *
3076 0  0368
                        DC       A340        RTE 16
                     * FFFF   0000  N/A   N/A   N/A   N/A BEFORE RTE
                     * 0000   FFFF  N/A   N/A   N/A   N/A AFTER RTE
                     * ACCUM NOT EQUAL 0000
                     *
                     *
3077 0  0368
                        DC       A340        RTE 16
                     * 0000   FFFF  N/A   N/A   N/A   N/A BEFORE RTE
                     * FFFF   0000  N/A   N/A   N/A   N/A AFTER RTE
                     * ACCUM NOT EQUAL FFFF
                     *
                     *
3078 0  0381
                        DC       A380        SRT 32
                     * 8000   N/A   N/A   N/A   N/A   N/A BEFORE SRT
                     * FFFF   FFFF  N/A   N/A   N/A   N/A AFTER SRT
                     * ACCUM NOT EQUAL FFFF
                     *
                     *
                     *
```

```
*********************************************************************
          ADDRESS      *
            OF         *
B-REG     ROUTINE      * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS
*********************************************************************
                       *
3079 0  0381                 DC       A380        SRT 32 + RTE 16
                       * 8000   N/A    N/A   N/A   N/A    N/A  BEFORE SRT
                       * FFFF   FFFF   N/A   N/A   N/A    N/A AFTER SRT+RTE
                       * ACCUM NOT EQUAL FFFF-INDICATING Q REG FAILED
                       *
                       *
307A 0  0396                 DC       A384        SRT 32
                       * 4000   N/A    N/A   N/A   N/A    N/A AFTER LD
                       * 0000   0000   N/A   N/A   N/A    N/A AFTER SRT
                       * ACCUM NOT EQUAL 0000
                       *
                       *
307B 0  0396                 DC       A384        SRT 32 + RTE 16
                       * 4000   N/A    N/A   N/A   N/A    N/A AFTER LD
                       * 0000   0000   N/A   N/A   N/A    N/A AFTER SRT
                       * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED
                       *
                       *
307C 0  03A9                 DC       A388        SRT 15
                       * 5555   N/A    N/A   N/A   N/A    N/A AFTER LD
                       * 0000   AAAA   N/A   N/A   N/A    N/A AFTER SRT
                       * ACCUM NOT EQUAL 0000
                       *
                       *
307D 0  03A9                 DC       A388        SRT 15 + RTE 16
                       * 5555   N/A    N/A   N/A   N/A    N/A AFTER LD
                       * 0000   AAAA   N/A   N/A   N/A    N/A AFTER SRT 15
                       * AAAA   0000   N/A   N/A   N/A    N/A AFTER RTE 16
                       * ACCUM NOT EQUAL AAAA-INDICATING Q REG FAILED
                       *
                       *
307E 0  038D                 DC       A38C        SERIES OF SRTS-30
                       *                          *TOTAL SHIFTS
                       * 5555   N/A    N/A   N/A   N/A    N/A AFTER LD
                       * 0000   0001   N/A   N/A   N/A    N/A AFTER SRT'S
                       * ACCUM NOT EQUAL 0000
                       *
                       *
307F 0  038D                 DC       A38C        SERIES OF SRTS-30
                       *                          *TOTAL SHIFTS +
                       *                          *RTE 16
                       * 5555   N/A    N/A   N/A   N/A    N/A AFTER LD
                       * 0000   0001   N/A   N/A   N/A    N/A AFTER SRT'S
                       * 0001   0000   N/A   N/A   N/A    N/A AFTER RTE 16
                       * ACCUM NOT EQUAL 0001-INDICATING Q REG FAILED
                       *
                       *
3080 0  03DD                 DC       A3C0        RTE 15
                       * 5555   AAAA   N/A   N/A   N/A    N/A AFTER LD'S
                       * 5554   AAAB   N/A   N/A   N/A    N/A AFTER RTE 15
                       * ACCUM NOT EQUAL 5554 - RTE 15 Q TO A FAILED
                       *
                       *
3081 0  03DD                 DC       A3C0        RTE 15 + RTE 16
                       * 5555   AAAA   N/A   N/A   N/A    N/A AFTER LD'S
                       * 5554   AAAB   N/A   N/A   N/A    N/A AFTER RTE 15
                       * AAAB   5554   N/A   N/A   N/A    N/A AFTER RTE 16
                       * ACCUM NOT EQUAL AAAB-INDICATING Q REG FAILED
                       *
                       *
                       *
                       *
```



```
*********************************************************************
          ADDRESS      *
            OF         *
B-REG     ROUTINE      * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS
*********************************************************************
3082 0  03F4                 DC       A3C4        SERIES OF RTES-31
                       *                          *TOTAL SHIFTS
                       * 0000   8000   N/A   N/A   N/A    N/A AFTER LD
                       * 0001   0000   N/A   N/A   N/A    N/A AFTER RTE'S
                       * ACCUM NOT EQUAL 0001
                       *
                       *
3083 0  03F4                 DC       A3C4        SERIES OF RTES-31
                       *                          *TOTAL SHIFTS
                       *                          *FOLLOWED BY RTE 16
                       * 0000   8000   N/A   N/A   N/A    N/A AFTER LD
                       * 0001   0000   N/A   N/A   N/A    N/A AFTER RTE'S
                       * 0000   0001   N/A   N/A   N/A    N/A AFTER RTE 16
                       * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED
                       *
                       *
3084 0  0419                 DC       A400        SLA 16
                       * FFFF   FFFF   N/A   N/A   N/A    N/A AFTER LD
                       * 0000   FFFF   N/A   N/A   N/A    N/A AFTER SLA
                       * ACCUM NOT EQUAL 0000
                       *
                       *
3085 0  0419                 DC       A400        SLA 16
                       * FFFF   FFFF   N/A   N/A   N/A    OFF AFTER LD
                       * 0000   FFFF   N/A   N/A   N/A     C  AFTER SLA
                       * CARRY NOT SET
                       *
                       *
3086 0  0419                 DC       A400        SLA 16 + RTE 16
                       * FFFF   FFFF   N/A   N/A   N/A    N/A AFTER LD
                       * 0000   FFFF   N/A   N/A   N/A    N/A AFTER SLA
                       * FFFF   0000   N/A   N/A   N/A    N/A AFTER RTE 16
                       * ACCUM NOT EQUAL FFFF-INDICATING Q REG FAILED
                       *
                       *
3087 0  043A                 DC       A408        SLA 16
                       * 0001   0000   N/A   N/A   N/A    N/A AFTER LD
                       * 0000   0000   N/A   N/A   N/A    N/A AFTERSLA
                       * ACCUM NOT EQUAL 0000
                       *
                       *
3088 0  043A                 DC       A408        SLA 16
                       * 0001   0000   N/A   N/A   N/A     C  AFTER LD
                       * 0000   0000   N/A   N/A   N/A     C  AFTER SLA
                       * CARRY NOT SET
                       *
                       *
3089 0  043A                 DC       A408        SLA 16 + RTE 16
                       * 0001   0000   N/A   N/A   N/A    N/A AFTER LD
                       * 0000   0000   N/A   N/A   N/A    N/A AFTER SLA
                       * 0000   0000   N/A   N/A   N/A    N/A AFTER RTE 16
                       * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED
                       *
                       *
308A 0  045A                 DC       B400        SLA 1
                       * AAAA   0000   N/A   N/A   N/A    N/A AFTER LD
                       * 5554   0000   N/A   N/A   N/A    N/A AFTER SLA
                       * ACCUM NOT EQUAL 5554
                       *
                       *
                       *
                       *
                       *
```

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************************************************************************* 8B406830
       ADDRESS          *                                                 8B406840
          OF            *                                                 8B406850
B-REG   ROUTINE         * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS           8B406860
************************************************************************* 8B406870
308B 0  045A                DC       B400        SLA 1                    8B406880
                        * AAAA   0000  N/A   N/A   N/A     C              8B406890
                        * 5554   0000  N/A   N/A   N/A     C              8B406900
                        * CARRY NOT SET                                   8B406910
                        *                                                 8B406920
                        *                                                 8B406930
308C 0  045A                DC       B400        SLA 1 + RTE 16           8B406940
                        * AAAA   0000  N/A   N/A   N/A   N/A              8B406950
                        * 5554   0000  N/A   N/A   N/A   N/A              8B406960
                        * 0000   5554  N/A   N/A   N/A   N/A AFTER RTE    8B406970
                        * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED    8B406980
                        *                                                 8B406990
                        *                                                 8B407000
308D 0  0478                DC       B406        SLA 1                    8B407010
                        * 5555   0000  N/A   N/A   N/A   N/A AFTER LD     8B407020
                        * AAAA   0000  N/A   N/A   N/A   N/A AFTER SLA    8B407030
                        * ACCUM NOT EQUAL AAAA                            8B407040
                        *                                                 8B407050
                        *                                                 8B407060
308E 0  0478                DC       B406        SLA 1                    8B407070
                        * 5555   0000  N/A   N/A   N/A     C  AFTER LD    8B407080
                        * AAAA   0000  N/A   N/A   N/A   OFF AFTER SLA    8B407090
                        * CARRY SET-SHOULD BE CLEAR                       8B407100
                        *                                                 8B407110
                        *                                                 8B407120
308F 0  0478                DC       B406        SLA 1 + RTE 16           8B407130
                        * 5555   0000  N/A   N/A   N/A   N/A AFTER LD     8B407140
                        * AAAA   0000  N/A   N/A   N/A   N/A AFTER SLA    8B407150
                        * 0000   AAAA  N/A   N/A   N/A   N/A AFTER RTE    8B407160
                        * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED    8B407170
                        *                                                 8B407180
                        *                                                 8B407190
3090 0  0497                DC       B40A        SERIES OF SLAS-16        8B407200
                        *                        *TOTAL SHIFTS            8B407210
                        * 0001   0000  N/A   N/A   N/A   N/A AFTER SLA 0  8B407220
                        * 0000   0000  N/A   N/A   N/A   N/A AFTER SLA'S  8B407230
                        * ACCUM NOT EQUAL 0000                            8B407240
                        *                                                 8B407250
                        *                                                 8B407260
3091 0  0497                DC       B40A        SERIES OF SLAS-16        8B407270
                        *                        *TOTAL SHIFTS            8B407280
                        * 0001   0000  N/A   N/A   N/A     C  AFTER SLA 0 8B407290
                        * 0000   0000  N/A   N/A   N/A     C  AFTER SLA'S 8B407300
                        * CARRY NOT SET                                   8B407310
                        *                                                 8B407320
                        *                                                 8B407330
3092 0  0497                DC       B40A        SERIES OF SLAS-16        8B407340
                        *                        *TOTAL SHIFTS +          8B407350
                        *                        *RTE 16                  8B407360
                        * 0001   0000  N/A   N/A   N/A   N/A AFTER SLA 0  8B407370
                        * 0000   0000  N/A   N/A   N/A   N/A AFTER SLA'S  8B407380
                        * 0000   0000  N/A   N/A   N/A   N/A AFTER RTE 16 8B407390
                        * ACC NOT EQUAL 0000-INDICATING Q REG FAILED      8B407400
                        *                                                 8B407410
                        *                                                 8B407420
3093 0  04C4                DC       A440        SLT 32                   8B407430
                        * 0000   0001  N/A   N/A   N/A   N/A AFTER LD     8B407440
                        * 0000   0000  N/A   N/A   N/A   N/A AFTER SLT 32 8B407450
                        * ACCUM NOT EQUAL 0000                            8B407460
                        *                                                 8B407470
                        *                                                 8B407480
                        *                                                 8B407490
                        *                                                 8B407500
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************************************************************************* 8B407510
       ADDRESS          *                                                 8B407520
          OF            *                                                 8B407530
B-REG   ROUTINE         * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS           8B407540
************************************************************************* 8B407550
3094 0  04C4                DC       A440        SLT 32                   8B407560
                        * 0000   0001  N/A   N/A   N/A   N/A AFTER LD     8B407570
                        * 0000   0000  N/A   N/A   N/A     C  AFTER SLT 32 8B407580
                        * CARRY NOT SET                                   8B407590
                        *                                                 8B407600
                        *                                                 8B407610
3095 0  04C4                DC       A440        SLT 32 + RTE 16          8B407620
                        * 0000   0001                        AFTER LD     8B407630
                        * 0000   0000                        AFTER SLT 32 8B407640
                        * 0000   0000                        AFTER RTE 16 8B407650
                        * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED    8B407660
                        *                                                 8B407670
                        *                                                 8B407680
3096 0  04E1                DC       A444        SLT 16                   8B407690
                        * 0000   FFFF  N/A   N/A   N/A   N/A AFTER LD     8B407700
                        * FFFF   0000  N/A   N/A   N/A   N/A AFTER SLT 16 8B407710
                        * ACCUM NOT EQUAL FFFF                            8B407720
                        *                                                 8B407730
                        *                                                 8B407740
3097 0  04E1                DC       A444        SLT 16                   8B407750
                        * 0000   FFFF  N/A   N/A   N/A   N/A AFTER LD     8B407760
                        * FFFF   0000  N/A   N/A   N/A   OFF AFTER SLT 16 8B407770
                        * CARRY ON SHOULD NOT BE                          8B407780
                        *                                                 8B407790
                        *                                                 8B407800
3098 0  04E1                DC       A444        SLT 16 + RTE 16          8B407810
                        * 0000   FFFF  N/A   N/A   N/A   N/A AFTER LD     8B407820
                        * FFFF   0000  N/A   N/A   N/A   N/A AFTER SLT 16 8B407830
                        * 0000   FFFF  N/A   N/A   N/A   N/A AFTER RTE 16 8B407840
                        * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED    8B407850
                        *                                                 8B407860
                        *                                                 8B407870
3099 0  0500                DC       A44A        SLT 15                   8B407880
                        * 0000   5555  N/A   N/A   N/A   N/A AFTER LD     8B407890
                        * 2AAA   8000  N/A   N/A   N/A   N/A AFTER SLT 15 8B407900
                        * ACCUM NOT EQUAL 2AAA                            8B407910
                        *                                                 8B407920
                        *                                                 8B407930
309A 0  0500                DC       A44A        SLT 15                   8B407940
                        * 0000   5555  N/A   N/A   N/A   N/A AFTER LD     8B407950
                        * 2AAA   8000  N/A   N/A   N/A   OFF AFTER SLT 15 8B407960
                        * CARRY SET-SHOULD NOT BE                         8B407970
                        *                                                 8B407980
                        *                                                 8B407990
309B 0  0500                DC       A44A        SLT 15 + RTE 16          8B408000
                        * 0000   5555  N/A   N/A   N/A   N/A AFTER LD     8B408010
                        * 2AAA   8000  N/A   N/A   N/A   N/A AFTER SLT 15 8B408020
                        * 8000   2AAA  N/A   N/A   N/A   N/A AFTER RTE 16 8B408030
                        * ACCUM NOT EQUAL 8000-INDICATING Q REG FAILED    8B408040
                        *                                                 8B408050
                        *                                                 8B408060
309C 0  0520                DC       B440        SERIES OF SLTS-32        8B408070
                        *                        *TOTAL SHIFTS            8B408080
                        * 0000   0001  N/A   N/A   N/A   N/A AFTER LD     8B408090
                        * 0000   0000  N/A   N/A   N/A   N/A AFTER SLT'S  8B408100
                        * ACCUM NOT EQUAL 0000                            8B408110
                        *                                                 8B408120
                        *                                                 8B408130
309D 0  0520                DC       B440        SERIES OF SLTS-32        8B408140
                        *                        *TOTAL SHIFTS            8B408150
                        * 0000   0001  N/A   N/A   N/A   N/A AFTER LD     8B408160
                        * 0000   0000  N/A   N/A   N/A     C  AFTER SLT'S 8B408170
                        * CARRY NOT ON                                    8B408180
```

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******************* *****************************************************
        ADDRESS      *
          OF         *
B-REG   ROUTINE      * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS
*************************************************************************
309E 0  0520              DC      B440        SERIES OF SLTS-32
                     *                        *TOTAL SHIFTS +
                     *                        *RTE 16
                     * 0000   0001   N/A   N/A   N/A   N/A AFTER LD
                     * 0000   0000   N/A   N/A   N/A   N/A AFTER SLT*S
                     * 0000   0000   N/A   N/A   N/A   N/A AFTER RTE 16
                     * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED
                     *
                     *
309F 0  0549              DC      A480        STO
                     * 0000   N/A    N/A   N/A   N/A   N/A
                     * STORING 0000 INTO A STORAGE LOCATION
                     * CONTAINING FFFF DID NOT RETURN 0000 WHEN
                     * RELOADED IN THE ACCUM
                     *
                     *
30A0 0  0555              DC      A482        STO
                     * FFFF   N/A    N/A   N/A   N/A   N/A
                     * STORING FFFF INTO A STORAGE LOCATION
                     * CONTAINING 0000 DID NOT RETURN FFFF WHEN
                     * RELOADED IN THE ACCUM
                     *
                     *
30A1 0  0566              DC      A4C0        STS
                     * N/A    N/A    N/A   N/A   N/A   OFF BEFORE STS
                     * 0000   N/A    N/A   N/A   N/A   OFF AFTER LD
                     * STS OF 0000 INTO STORAGE LOCATION
                     * CONTAINING 0003 DID NOT RETURN 0000 WHEN
                     * RELOADED IN THE ACCUM
                     *
                     *
30A2 0  0571              DC      A4C2        STS
                     * N/A    N/A    N/A   N/A   N/A   C+O AFTER LDS
                     * N/A    N/A    N/A   N/A   N/A   OFF ATER STS
                     * STS DID NOT CLEAR CARRY
                     *
                     *
30A3 0  0571              DC      A4C2        STS  CK ACC
                     * INITIALLY ACC HAS CORE LOCATION OF
                     *   SYMBOLIC LABEL A4C2
                     * ACC DISTROYED AFTER STS
                     *
                     *
30A4 0  0571              DC      A4C2        STS
                     * N/A    N/A    N/A   N/A   N/A   C+O AFTER LDS
                     * N/A    N/A    N/A   N/A   N/A   OFF AFTER STS
                     * STS DID NOT CLEAR OVERFLOW          AFTER STS
                     *
                     *
30A5 0  0571              DC      A4C2        STS
                     * N/A                                 BEFORE LD
                     * 0003                                AFTER LD
                     * STS OF 0003 INTO A STORAGE LOCATION
                     * CONTAINING 0000 DID NOT RETURN 0003 WHEN
                     * RELOADED IN THE ACCUM
                     *
                     *
30A6 0  0596              DC      A4C8        STS
                     * N/A    N/A    N/A   N/A   N/A    C  AFTER LDS
                     * 0002   N/A    N/A   N/A   N/A   OFF AFTER LD
                     * STS OF 0002 INTO A STORAGE LOCATION
                     * CONTAINING 0003 DID NOT RETURN 0002 WHEN
                     * RELOADED IN THE ACCUM
```



```
*************************************************************************
        ADDRESS      *
          OF         *
B-REC   ROUTINE      * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS
*************************************************************************
30A7 0  0596              DC      A4C8        STS
                     * N/A    N/A    N/A   N/A   N/A    C  AFTER LDS
                     * 0000   N/A    N/A   N/A   N/A   OFF AFTER STS
                     * STS DID NOT CLEAR CARRY
                     *
                     *
30A8 0  05AC              DC      A4CC        STS
                     * N/A    N/A    N/A   N/A   N/A    O  AFTER LDS
                     * 0001   N/A    N/A   N/A   N/A   OFF AFTER STS
                     * STS OF 0001 INTO A STORAGE LOCATION
                     * CONTAINING 0002 DID NOT RETURN 0001 WHEN
                     * RELOADED IN THE ACCUM
                     *
                     *
30A9 0  05AC              DC      A4CC        STS
                     * N/A    N/A    N/A   N/A   N/A    O  AFTER LDS
                     * 0000   N/A    N/A   N/A   N/A   OFF AFTER LDA
                     * STS DID NOT CLEAR OVERFLOW
                     *
                     *
30AA 0  05C8              DC      A500        BSC,O+EZC
                     * 8001   N/A    N/A   N/A   N/A   C+O
                     * BSC SKIPPED-SHOULD NOT HAVE
                     *
                     *
30AB 0  05D3              DC      A502        BSC,-OC+
                     * 0000   N/A    N/A   N/A   N/A   C+O
                     * BSC SKIPPED-SHOULD NOT HAVE
                     *
                     *
30AC 0  05DE              DC      A504        BSC,O-E
                     * 8000   N/A    N/A   N/A   N/A   C+O
                     * BSC FAILED TO SKIP
                     *
                     *
30AD 0  05DE              DC      A504        BSC,O
                     * 8000   N/A    N/A   N/A   N/A    C
                     * BSC FAILED TO CLEAR OVERFLOW
                     *
                     *
30AE 0  05F5              DC      A508        BSC,C+Z
                     * 0001   N/A    N/A   N/A   N/A   OFF
                     * BSC FAILED TO SKIP
                     *
                     *
30AF 0  0600              DC      A50A        BSC,+OCE LONG FORM
                     * 8001   N/A    N/A   N/A   N/A   C+O
                     * BSC DID NOT BRANCH - SHOULD HAVE
                     *
                     *
30B0 0  0600              DC      A50A        BSC,+OCE LONG FORM
                     * 8001   N/A    N/A   N/A   N/A   C+O
                     * BSC SKIPPED-SHOULD BRANCH
                     *
                     *
30B1 0  061D              DC      A50C        BSC,-Z LONG FORM
                     * 0004   N/A    N/A   N/A   N/A   C+O
                     * BSC DID NOT BRANCH - SHOULD HAVE
                     *
                     *
30B2 0  061D              DC      A50C        BSC,-Z LONG FORM
                     * 0004   N/A    N/A   N/A   N/A   C+O
                     * BSC SKIPPED-SHOULD BRANCH
```

```
******************************************************************************
         ADDRESS      *
            OF        *
B-REG    ROUTINE      * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS
******************************************************************************
                      *
                      *
30B3 0   0631               DC       A50E         BSC,+EOCZ LONG
                      *                            *FORM
                      * 8001   N/A    N/A   N/A   N/A    C+O
                      * BSC BRANCHED-SHOULD NOT
                      *
                      *
30B4 0   0631               DC       A50E         BSC,+EOCZ LONG
                      *                            *FORM
                      * 8001   N/A    N/A   N/A   N/A    C+O
                      * BSC SKIPPED-SHOULD NOT
                      *
                      *
30B5 0   0645               DC       B500         BSC,+
                      * 0001   N/A    N/A   N/A   N/A    C+O
                      * BSC ON PLUS CLEARED THE OVERFLOW F-F
                      *
                      *
30B6 0   0645               DC       B500         BSC,+
                      * 0001   N/A    N/A   N/A   N/A    N/A
                      * BSC FAILED TO SKIP
                      *
                      *
30B7 0   0663               DC       A540         BSI,ECO+Z LONG
                      *                            *FORM
                      * 8001   N/A    N/A   N/A   N/A    C+O
                      * BSI DID NOT BRANCH - SHOULD HAVE
                      *
                      *
30B8 0   0663               DC       A540         BSI,ECO+Z LONG
                      *                            *FORM
                      * 8001   N/A    N/A   N/A   N/A    C+O
                      * BSI SKIPPED-SHOULD BRANCH
                      *
                      *
30B9 0   0663               DC       A540         BSI,ECO+Z LONG
                      *                            *FORM
                      * 8001   N/A    N/A   N/A   N/A    C+O AFTER LDS
                      * 8001   N/A    N/A   N/A   N/A     C  AFTER BSI
                      * BSI DID NOT CLEAR OVERFLOW
                      *
                      *
30BA 0   0687               DC       A544         BSI,Z- LONG FORM
                      * 0002   N/A    N/A   N/A   N/A    N/A
                      * BSI DID NOT BRANCH - SHOULD HAVE
                      *
                      *
30BB 0   0687               DC       A544         BSI,Z- LONG FORM
                      * 0002   N/A    N/A   N/A   N/A    N/A
                      * BSI SKIPPED-SHOULD BRANCH
                      *
                      *
30BC 0   069C               DC       A546         BSI,Z LONG FORM
                      * 0000   N/A    N/A   N/A   N/A    N/A
                      * BSI BRANCHED-SHOULD NOT
                      *
                      *
30BD 0   069C               DC       A546         BSI,Z LONG FORM
                      * 0000   N/A    N/A   N/A   N/A    N/A
                      * BSI SKIPPED-SHOULD NOT      U
                      *
                      *
```



```
******************************************************************************
         ADDRESS      *
            OF        *
B-REG    ROUTINE      * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS
******************************************************************************
30BE 0   06AF               DC       A548         BSI,- LONG FORM
                      * 8001   N/A    N/A   N/A   N/A    N/A
                      * BSI SKIPPED-SHOULD NOT
                      *
                      *
30BF 0   06AF               DC       A548         BSI,- LONG FORM
                      * 8001   N/A    N/A   N/A   N/A    N/A
                      * BSI BRANCHED-SHOULD NOT
                      *
30C0 0   06C1               DC       A54A         BSI,+ LONG FORM
                      * 0002   N/A    N/A   N/A   N/A    N/A
                      * BSI SKIPPED-SHOULD NOT
                      *
                      *
30C1 0   06C1               DC       A54A         BSI,+ LONG FORM
                      * 0002   N/A    N/A   N/A   N/A    N/A
                      * BSI BRANCHED-SHOULD NOT
                      *
                      *
30C2 0   06D3               DC       A54C         BSI,E LONG FORM
                      * 0002   N/A    N/A   N/A   N/A    N/A
                      * BSI SKIPPED-SHOULD NOT
                      *
                      *
30C3 0   06D3               DC       A54C         BSI,E LONG FORM
                      * 0002   N/A    N/A   N/A   N/A    N/A
                      * BSI BRANCHED-SHOULD NOT
                      *
                      *
30C4 0   06E5               DC       A54E         BSI,C LONG FORM
                      * N/A    N/A    N/A   N/A   N/A     C
                      * BSI SKIPPED-SHOULD NOT
                      *
                      *
30C5 0   06E5               DC       A54E         BSI,C LONG FORM
                      * N/A    N/A    N/A   N/A   N/A     C
                      * BSI BRANCHED SHOULD NOT
                      *
                      *
30C6 0   06F7               DC       A54F         BSI,O LONG FORM
                      * N/A    N/A    N/A   N/A   N/A     O
                      * BSI SKIPPED-SHOULD NOT
                      *
                      *
30C7 0   06F7               DC       A54F         BSI,O LONG FORM
                      * N/A    N/A    N/A   N/A   N/A     O
                      * BSI BRANCHED-SHOULD NOT
                      *
                      *
30C8 0   070F               DC       A580         LDD
                      * 0000   0000   N/A   N/A   N/A    N/A
                      * ACCUM NOT EQUAL 0000
                      *
                      *
30C9 0   070F               DC       A580         LDD + RTE 16
                      * 0000   0000   N/A   N/A   N/A    N/A AFTER LDD
                      * 0000   0000   N/A   N/A   N/A    N/A AFTER RTE 16
                      * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED
                      *
                      *
30CA 0   0721               DC       A584         LDD
                      * FFFF   FFFF   N/A   N/A   N/A    N/A
                      * ACCUM NOT EQUAL FFFF
```

```
********************************************************************** 8B410910
        ADDRESS      *                                                  8B410920
          OF         *                                                  8B410930
B-REG   ROUTINE      * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS            8B410940
********************************************************************** 8B410950
30CB 0  0721              DC       A584       LDD + RTE 16             8B410960
                     * FFFF   FFFF   N/A   N/A   N/A   N/A AFTER LDD   8B410970
                     * FFFF   FFFF   N/A   N/A   N/A   N/A AFTER RTE 16 8B410980
                     * ACCUM NOT EQUAL FFFF-INDICATING Q REG FAILED     8B410990
                     *                                                  8B411000
                     *                                                  8B411010
30CC 0  0735              DC       A588       LDD ODD ADDRESS          8B411020
                     * 0000   0000   N/A   N/A   N/A   N/A             8B411030
                     * ACCUM NOT EQUAL 0000                             8B411040
                     *                                                  8B411050
                     *                                                  8B411060
30CD 0  0735              DC       A588       LDD-ODD ADDRESS          8B411070
                     *                        * + RTE 16               8B411080
                     * 0000   0000   N/A   N/A   N/A   N/A AFTER LDD   8B411090
                     * 0000   0000   N/A   N/A   N/A   N/A AFTER RTE 16 8B411100
                     * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED     8B411110
                     *                                                  8B411120
                     *                                                  8B411130
30CE 0  074C              DC       A5C0       STD                      8B411140
                     * 0000   0000   N/A   N/A   N/A   N/A             8B411150
                     * USING STD-ACCUM NOT STORED IN LOCATION EA        8B411160
                     *                                                  8B411170
                     *                                                  8B411180
30CF 0  074C              DC       A5C0       STD                      8B411190
                     * 0000   0000   N/A   N/A   N/A   N/A             8B411200
                     * USING STD-Q REG NOT STORED IN LOCATION EA+1      8B411210
                     *                                                  8B411220
                     *                                                  8B411230
30D0 0  0760              DC       A5C4       STD                      8B411240
                     * FFFF   FFFF   N/A   N/A   N/A   N/A             8B411250
                     * USING STD-ACCUM NCT STORED IN LOCATION EA        8B411260
                     *                                                  8B411270
                     *                                                  8B411280
30D1 0  0760              DC       A5C4       STD                      8B411290
                     * FFFF   FFFF   N/A   N/A   N/A   N/A             8B411300
                     * USING STD-Q REG NOT STORED IN LOCATION EA+1      8B411310
                     *                                                  8B411320
                     *                                                  8B411330
30D2 0  0779              DC       A5C8       STD ODD ADRESS           8B411340
                     * 0000   0000   N/A   N/A   N/A   N/A             8B411350
                     * STD USING ODD ADDRESS-ACCUM NOT STORED IN EA     8B411360
                     *                                                  8B411370
                     *                                                  8B411380
30D3 0  0779              DC       A5C8       STD-ODD ADDRESS          8B411390
                     * 0000   0000   N/A   N/A   N/A   N/A             8B411400
                     * STD USING ODD ADDRESS-ACCUM NOT STORED           8B411410
                     * IN EA+1                                          8B411420
                     *                                                  8B411430
                     *                                                  8B411440
30D4 0  079F              DC       A600       LDX 1                    8B411450
                     * N/A    N/A    N/A   N/A   N/A   N/A             8B411460
                     * TAG REG BIT 7 WILL NOT SET                       8B411470
                     *                                                  8B411480
                     *                                                  8B411490
30D5 0  07A8              DC       A602       LDX 2                    8B411500
                     * N/A    N/A    N/A   N/A   N/A   N/A             8B411510
                     * TAG REG BIT 6 WILL NOT SET                       8B411520
                     *                                                  8B411530
                     *                                                  8B411540
30D6 0  07B1              DC       A604       LDX 1                    8B411550
                     * N/A    N/A    0000  N/A   N/A   N/A             8B411560
                     * INDEX REG 1 NOT EQUAL 0000                       8B411570
                     *                                                  8B411580
```



```
********************************************************************** 8B411590
        ADDRESS      *                                                  8B411600
          OF         *                                                  8B411610
B-REG   ROUTINE      * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS            8B411620
********************************************************************** 8B411630
30D7 0  07BD              DC       A606       LDX 2                    8B411640
                     * N/A    N/A    N/A   0000  N/A   N/A             8B411650
                     * INDEX REG 2 NOT EQUAL 0000                       8B411660
                     *                                                  8B411670
                     *                                                  8B411680
30D8 0  07CA              DC       A608       LDX 3                    8B411690
                     * N/A    N/A    N/A   N/A   0000  N/A             8B411700
                     * INDEX REG 3 NOT EQUAL 0000                       8B411710
                     *                                                  8B411720
                     *                                                  8B411730
30D9 0  07D7              DC       A60A       LDX 1                    8B411740
                     * N/A    N/A    FFFF  N/A   N/A   N/A             8B411750
                     * INDEX REG 1 NOT EQUAL FFFF                       8B411760
                     *                                                  8B411770
                     *                                                  8B411780
30DA 0  07E4              DC       A60C       LDX 2                    8B411790
                     * N/A    N/A    N/A   FFFF  N/A   N/A             8B411800
                     * INDEX REG 2 NOT EQUAL FFFF                       8B411810
                     *                                                  8B411820
                     *                                                  8B411830
30DB 0  07F1              DC       A60E       LDX 3                    8B411840
                     * N/A    N/A    N/A   N/A   FFFF  N/A             8B411850
                     * INDEX REG 3 NOT EQUAL FFFF                       8B411860
                     *                                                  8B411870
                     *                                                  8B411880
30DC 0  07FE              DC       B600       LDX 1 LONG FORM          8B411890
                     * N/A    N/A    0001  N/A   N/A   N/A             8B411900
                     * INDEX REG 1 NOT EQUAL 0001                       8B411910
                     *                                                  8B411920
                     *                                                  8B411930
30DD 0  080C              DC       B602       LDX 3 INDIRECT           8B411940
                     * N/A    N/A    N/A   N/A   FFFF  N/A             8B411950
                     * INDEX REG 3 NOT EQUAL FFFF                       8B411960
                     *                                                  8B411970
                     *                                                  8B411980
30DE 0  0820              DC       A640       STX                      8B411990
                     * N/A    N/A    N/A   N/A   N/A   N/A             8B412000
                     * STX WITH NO TAG DID NOT STORE I-CTR CORRECT      8B412010
                     *                                                  8B412020
                     *                                                  8B412030
30DF 0  0837              DC       A642       STX 1                    8B412040
                     * N/A    N/A    0000  N/A   N/A   N/A             8B412050
                     * INDEX REG 1 WAS NCT STORED BY STX                8B412060
                     *                                                  8B412070
                     *                                                  8B412080
30E0 0  0844              DC       A644       STX 2                    8B412090
                     * N/A    N/A    N/A   0000  N/A   N/A             8B412100
                     * INDEX REG 2 NOT STORED BY STX                    8B412110
                     *                                                  8B412120
                     *                                                  8B412130
30E1 0  0851              DC       A646       STX 3                    8B412140
                     * N/A    N/A    N/A   N/A   0000  N/A             8B412150
                     * INDEX REG 3 NOT STOPED BY STX                    8B412160
                     *                                                  8B412170
                     *                                                  8B412180
30E2 0  085E              DC       A648       STX 1                    8B412190
                     * N/A    N/A    FFFF  N/A   N/A   N/A             8B412200
                     * INDEX REG 1 NOT STORED BY STX                    8B412210
                     *                                                  8B412220
                     *                                                  8B412230
30E3 0  086C              DC       A64A       STX 2                    8B412240
                     * N/A    N/A    N/A   FFFF  N/A   N/A             8B412250
                     * INDEX REG 2 NOT STORED BY STX                    8B412260
```

PROCESSOR-CONTROLLER FUNCTION TEST

```
**************************************************************************
         ADDRESS      *
           OF         *
B-REG    ROUTINE      * A-REG G-REG  XR-1  XR-2  XR-3  STATUS
**************************************************************************
                      *
30E4 0  087A                DC      A64C        STX 3
                      * N/A    N/A    N/A   N/A   FFFF  N/A
                      * INDEX REG 3 NOT STORED BY STX
                      *
                      *
30E5 0  08EC                DC      A680       ADD
                      * FFFF   N/A    N/A   N/A   N/A    C  AFTER LD+LDS
                      * FFFF   N/A    N/A   N/A   N/A    C  AFTER A
                      * ADD FFFF + 0000 TURNED ON OVERFLOW
                      *
                      *
30E6 0  08EC                DC      A680       ADD
                      * FFFF   N/A    N/A   N/A   N/A   N/A AFTER LD
                      * FFFF   N/A    N/A   N/A   N/A   N/A AFTER A
                      * ADD FFFF + 0000 FAILED TO EQUAL FFFF
                      *
                      *
30E7 0  0901                DC      A684       ADD
                      * FFFF   N/A    N/A   N/A   N/A   OFF AFTER LD+LDS
                      * 0000   N/A    N/A   N/A   N/A    C  AFTER A
                      * ADD FFFF + 0001 DID NOT TURN ON CARRY
                      *
                      *
30E8 0  0901                DC      A684       ADD
                      * FFFF   N/A    N/A   N/A   N/A   N/A AFTER LD+LDS
                      * 0000   N/A    N/A   N/A   N/A   N/A AFTER A
                      * ADD FFFF + 0001 DID NOT EQUAL 0000
                      *
                      *
30E9 0  0914                DC      A688       ADD
                      * FFFF   N/A    N/A   N/A   N/A   OFF AFTER LD+LDS
                      * FFFF   N/A    N/A   N/A   N/A    C  AFTER A
                      * ADD FFFF + FFFF DID NOT TURN ON CARRY
                      *
                      *
30EA 0  0914                DC      A688       ADD
                      * FFFF   N/A    N/A   N/A   N/A   N/A AFTER LD+LDS
                      * FFFF   N/A    N/A   N/A   N/A   N/A AFTER A
                      * ADD FFFF + FFFF DID NOT EQUAL FFFE
                      *
                      *
30EB 0  0928                DC      A68C       ADD
                      * 4000   N/A    N/A   N/A   N/A   OFF AFTER LD
                      * 8000   N/A    N/A                O  AFTER A
                      * ADD 4000 + 4000 DID NOT TURN ON OVERFLOW
                      *
                      *
30EC 0  0928                DC      A68C       ADD
                      * 4000   N/A    N/A   N/A   N/A   N/A
                      * ADD 4000 + 4000 DID NOT EQUAL 8000
                      *
                      *
30ED 0  093C                DC      B680       ADD
                      * 8000   N/A    N/A   N/A   N/A   N/A AFTER LD
                      * 0000   N/A    N/A   N/A   N/A   N/A AFTER A
                      * ADD 8000 + 8000 NOT EQUAL 0000
                      *
                      *
30EE 0  093C                DC      B680       ADD
                      * 8000   N/A    N/A   N/A   N/A   OFF AFTER LD
                      * 0000   N/A                      C+O AFTER A
                      * ADD 8000 + 8000 DID NOT TURN ON OVERFLOW
```


PROCESSOR-CONTROLLER FUNCTION TEST

```
**************************************************************************
         ADDRESS      *
           OF         *
B-REG    ROUTINE      * A-REG G-REG  XR-1  XR-2  XR-3  STATUS
**************************************************************************
                      *
                      *
30EF 0  093C                DC      B680       ADD
                      * 8000   N/A    N/A   N/A   N/A   OFF AFTER LD
                      * 0000   N/A    N/A   N/A   N/A   C+O AFTER A
                      * ADD 8000 + 8000 DID NOT TURN ON CARRY
                      *
                      *
30F0 0  0964                DC      A6C0        LDX 1
                      * N/A    N/A    FFF4  N/A   N/A   N/A
                      * INDEX REG 1 WAS NOT LOADED EQUAL FFF4
                      *
                      *
30F1 0  0964                DC      A6C0        LD 1
                      * N/A    N/A    FFF4  N/A   N/A   N/A
                      * A LOAD INSTR INDEXED BY INDEX REG 1
                      * LOADED THE WRONG LOCATION
                      *
                      *
30F2 0  097C                DC      A6C2        LDX 2
                      * N/A    N/A    N/A   0004  N/A   N/A
                      * INDEX REG 2 NOT LOADED EQUAL 0004
                      *
                      *
30F3 0  097C                DC      A6C2        LD 2
                      * N/A    N/A    N/A   0004  N/A   N/A
                      * A LOAD INSTR INDEXED BY INDEX REG 2
                      * LOADED THE WRONG LOCATION
                      *
                      *
30F4 0  0994                DC      A6C4        LDX 3
                      * N/A    N/A    N/A   N/A   0000  N/A
                      * INDEX REG 3 NOT LOADED EQUAL 0000
                      *
                      *
30F5 0  0994                DC      A6C4        LD 3
                      * N/A    N/A    N/A   N/A   0000  N/A
                      * A LOAD INSTR INDEXED BY INDEX REG 3
                      * LOADED THE WRONG LOCATION
                      *
                      *
30F6 0  09A8                DC      A6C6        LDX 3
                      * N/A    N/A    N/A   N/A   0001  N/A
                      * INDEX REG 3 NOT EQUAL 0001
                      *
                      *
30F7 0  09A8                DC      A6C6        LD 3 LONG FORM
                      * N/A    N/A    N/A   N/A   0001  N/A
                      * A LONG FORM LOAD INDEXED BY INDEX REG 3
                      * LOADED THE WRONG LOCATION
                      *
                      *
30F8 0  09C3                DC      A6C8        LDX 3
                      * N/A    N/A    N/A   N/A   FFFF  N/A
                      * INDEX REG 3 NOT EQUAL FFFF
                      *
                      *
30F9 0  09C3                DC      A6C8        LD 3 INDIRECT
                      * N/A    N/A    N/A   N/A   FFFF  N/A
                      * AN INDIRECT LOAD INDEXED BY INDEX REG 3
                      * LOADED THE WRONG LOCATION
                      *
                      *
```

```
*************************************************************************** 8B413630
        ADDRESS      *                                                      8B413640
          OF         *                                                      8B413650
B-REC   ROUTINE      * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                8B413660
*************************************************************************** 8B413670
30FA 0  0A48                 DC       A700       SUB                       8B413680
                     * 0000   N/A     N/A    N/A    N/A    N/A AFTER LD     8B413690
                     * FFFF   N/A     N/A    N/A    N/A    N/A AFTER S      8B413700
                     * SUB 0001 FORM 0000 DID NOT EQUAL FFFF                8B413710
                     *                                                      8B413720
                     *                                                      8B413730
30FB 0  0A48                 DC       A700       SUB                       8B413740
                     * 0000   N/A     N/A    N/A    N/A    OFF AFTER LD     8B413750
                     * FFFF   N/A     N/A    N/A    N/A     C  AFTER S      8B413760
                     * SUB 0001 FROM 0000 DID NOT SET CARRY                 8B413770
                     *                                                      8B413780
                     *                                                      8B413790
30FC 0  0A5F                 DC       A704       SUB                       8B413800
                     * 0000   N/A     N/A    N/A    N/A    N/A AFTER LD     8B413810
                     * 0001   N/A     N/A    N/A    N/A    N/A AFTER S      8B413820
                     * SUB FFFF FROM 0000 DID NOT EQUAL 0001                8B413830
                     *                                                      8B413840
                     *                                                      8B413850
30FD 0  0A5F                 DC       A704       SUB                       8B413860
                     * 0000   N/A     N/A    N/A    N/A    OFF AFTER LD     8B413870
                     * 0001   N/A     N/A    N/A    N/A     C  AFTER S      8B413880
                     * SUB FFFF FROM 0000 DID NOT SET CARRY                 8B413890
                     *                                                      8B413900
                     *                                                      8B413910
30FE 0  0A76                 DC       A708       SUB                       8B413920
                     * 8000   N/A     N/A    N/A    N/A    N/A AFTER LD     8B413930
                     * 7FFF   N/A     N/A    N/A    N/A    N/A AFTER S      8B413940
                     * SUB 0001 FROM 8000 DID NOT EQUAL 7FFF                8B413950
                     *                                                      8B413960
                     *                                                      8B413970
30FF 0  0A76                 DC       A708       SUB                       8B413980
                     * 8000   N/A     N/A    N/A    N/A    OFF AFTER LD     8B413990
                     * 0001   N/A     N/A    N/A    N/A     C  AFTER CARRY  8B414000
                     * AND OVERFLOW CONDITION HAD BEEN LOADED INTO           8B414010
                     * ACCUMULATOR AS A NUMBER                              8B414020
                     * SUB 0001 FROM 8000 DID NOT TURN ON OVERFLOW          8B414030
                     *                                                      8B414040
                     *                                                      8B414050
3100 0  0A8D                 DC       A70C       SUB                       8B414060
                     * 0000   N/A     N/A    N/A    N/A    N/A AFTER LD     8B414070
                     * 8000   N/A     N/A    N/A    N/A    N/A AFTER S      8B41408U
                     * SUB 8000 FROM 0000 DID NOT EQUAL 8000                8B414090
                     *                                                      8B414100
                     *                                                      8B414110
3101 0  0A8D                 DC       A70C       SUB                       8B414120
                     * 0000   N/A     N/A    N/A    N/A    OFF AFTER LD     8B414130
                     * 8000   N/A     N/A    N/A    N/A    C+O AFTER S      8B414140
                     * SUB 8000 FROM 0000 DID NOT TURN ON OVERFLOW          8B414150
                     *                                                      8B414160
                     *                                                      8B414170
3102 0  0A8D                 DC       A70C       SUB                       8B414180
                     * 0000   N/A     N/A    N/A    N/A    OFF AFTER LD     8B414190
                     * 8000   N/A     N/A    N/A    N/A    C+O AFTER S      8B414200
                     * SUB 8000 FROM 0000 DID NOT TURN ON CARRY             8B414210
                     *                                                      8B414220
                     *                                                      8B414230
3103 0  0A88                 DC       A740       AD-0000 0000              8B414240
                     * FFFF   FFFF    N/A    N/A    N/A    N/A AFTER LDD    8B414250
                     * FFFF   FFFF    N/A    N/A    N/A    N/A AFTER AD     8B414260
                     * ACCUM NOT EQUAL FFFF                                 8B414270
                     *                                                      8B414280
                     *                                                      8B414290
                     *                                                      8B414300
```



```
*************************************************************************** 8B414310
        ADDRESS      *                                                      8B414320
          OF         *                                                      8B414330
B-REG   ROUTINE      * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                8B414340
*************************************************************************** 8B414350
3104 0  0AB8                 DC       A740       AD-0000 0000              8B414360
                     * FFFF   FFFF    N/A    N/A    N/A    N/A AFTER ADD    8B414370
                     * FFFF   FFFF    N/A    N/A    N/A    N/A AFTER RTE    8B414380
                     * Q REG NOT EQUAL FFFF                                 8B414390
                     *                                                      8B414400
                     *                                                      8B414410
3105 0  0AB8                 DC       A740       AD-0000 0000              8B414420
                     * FFFF   FFFF    N/A    N/A    N/A    OFF AFTER LDD    8B414430
                     * FFFF   FFFF    N/A    N/A    N/A    OFF AFTER RTE    8B414440
                     * OVERFLOW SET SHOULD NOT BE                           8B414450
                     *                                                      8B414460
                     *                                                      8B414470
3106 0  0AB8                 DC       A740       AD-0000 0000              8B414480
                     * FFFF   FFFF    N/A    N/A    N/A    OFF AFTER LDD    8B414490
                     * FFFF   FFFF    N/A    N/A    N/A    OFF AFTER RTE    8B414500
                     * CARRY SET-SHOULD NOT BE                              8B414510
                     *                                                      8B414520
                     *                                                      8B414530
3107 0  0AE7                 DC       A746       AD-FFFF FFFF              8B414540
                     * 0000   0001    N/A    N/A    N/A    N/A AFTER LDD    8B414550
                     * 0000   0000    N/A    N/A    N/A    N/A AFTER AD     8B414560
                     * ACCUM NOT EQUAL 0000                                 8B414570
                     *                                                      8B414580
                     *                                                      8B414590
3108 0  0AE7                 DC       A746       AD-FFFF FFFF              8B414600
                     * 0000   0001    N/A    N/A    N/A    N/A AFTER LDD    8B414610
                     * 0000   0000    N/A    N/A    N/A    N/A AFTER AD     8B414620
                     * Q REG NOT EQUAL 0000                                 8B414630
                     *                                                      8B414640
                     *                                                      8B414650
3109 0  0AE7                 DC       A746       AD-FFFF FFFF              8B414660
                     * 0000   0001    N/A    N/A    N/A    OFF AFTER LDD    8B414670
                     * 0000   0000    N/A    N/A    N/A     C  AFTER AD     8B414680
                     * OVERFLOW SET-SHOULD NOT BE                           8B414690
                     *                                                      8B414700
                     *                                                      8B414710
310A 0  0AE7                 DC       A746       AD-FFFF FFFF              8B414720
                     * 0000   0001    N/A    N/A    N/A    OFF AFTER LDD    8B414730
                     * 0000   0000    N/A    N/A    N/A     C  AFTER AD     8B414740
                     * CARRY NOT SET-SHOULD BE                              8B414750
                     *                                                      8B414760
                     *                                                      8B414770
310B 0  0B14                 DC       A74C       AD-FFFF FFFF              8B414780
                     * FFFF   FFFF    N/A    N/A    N/A    N/A AFTER LDD    8B414790
                     * FFFF   FFFE    N/A    N/A    N/A    N/A AFTER AD     8B41480C
                     * ACCUM NOT EQUAL FFFF                                 8B414810
                     *                                                      8B414820
                     *                                                      8B414830
310C 0  0B14                 DC       A74C       AD-FFFF FFFF              8B414840
                     * FFFF   FFFF    N/A    N/A    N/A    N/A AFTER LDD    8B414850
                     * FFFF   FFFE    N/A    N/A    N/A    N/A AFTER AD     8B414860
                     * Q REG NOT EQUAL FFFE                                 8B414870
                     *                                                      8B414880
                     *                                                      8B414890
310D 0  0B14                 DC       A74C       AD-FFFF FFFF              8B414900
                     * FFFF   FFFF    N/A    N/A    N/A    OFF AFTER LDD    8B414910
                     * FFFF   FFFE    N/A    N/A    N/A     C  AFTER AD     8B414920
                     * OVERFLOW ON-SHOULD NOT BE                            8B414930
                     *                                                      8B414940
                     *                                                      8B41495C
                     *                                                      8B414960
                     *                                                      8B414970
                     *                                                      8B414980
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*************************************************************************** 8B414990
        ADDRESS      *                                                      8B415000
          OF         *                                                      8B415010
B-REG   ROUTINE      * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                8B415020
*************************************************************************** 8B415030
310E 0  0B14                 DC       A74C       AD-FFFF FFFF              8B415040
                     * FFFF   FFFF   N/A   N/A   N/A   OFF AFTER LDD        8B415050
                     * FFFF   FFFE   N/A   N/A   N/A    C  AFTER AD         8B415060
                     * CARRY NOT ON-SHOULD BE                               8B415070
                     *                                                      8B415080
                     *                                                      8B415090
310F 0  0B3E                 DC       B742       AD-FFFF FFFF              8B415100
                     * FFFF   7FFF   N/A   N/A   N/A   N/A AFTER LDD        8B415110
                     * FFFF   7FFE   N/A   N/A   N/A   N/A AFTER AD         8B415120
                     * ACCUM NOT EQUAL FFFF                                 8B415130
                     *                                                      8B415140
                     *                                                      8B415150
3110 0  0B3E                 DC       B742       AD-FFFF FFFF              8B415160
                     * FFFF   7FFF   N/A   N/A   N/A   N/A AFTER LDD        8B415170
                     * FFFF   7FFE   N/A   N/A   N/A   N/A AFTER AD         8B415180
                     * Q REG NOT EQUAL 7FFE                                 8B415190
                     *                                                      8B415200
                     *                                                      8B415210
3111 0  0B3E                 DC       B742       AD-FFFF FFFF              8B415220
                     * FFFF   7FFF   N/A   N/A   N/A   OFF AFTER LDD        8B415230
                     * FFFF   7FFE   N/A   N/A   N/A    C  AFTER AD         8B415240
                     * OVERFLOW SET-SHOULD NOT BE                           8B415250
                     *                                                      8B415260
                     *                                                      8B415270
3112 0  0B3E                 DC       B742       AD-FFFF FFFF              8B415280
                     * FFFF   7FFF   N/A   N/A   N/A   OFF AFTER LDD        8B415290
                     * FFFF   7FFE   N/A   N/A   N/A    C  AFTER AD         8B415300
                     * CARRY NOT SET-SHOULD BE                              8B415310
                     *                                                      8B415320
                     *                                                      8B415330
3113 0  0B68                 DC       B747       AD-0001 ODD LOC           8B415340
                     * 0000   0001   N/A   N/A   N/A   N/A AFTER LDD        8B415350
                     * 0001   0002   N/A   N/A   N/A   N/A AFTER AD         8B415360
                     * ACCUM NOT EQUAL 0001                                 8B415370
                     *                                                      8B415380
                     *                                                      8B415390
3114 0  0B68                 DC       B747       AD-0001 ODD LOC           8B415400
                     * 0000   0001   N/A   N/A   N/A   N/A AFTER LDD        8B415410
                     * 0001   0002   N/A   N/A   N/A   N/A AFTER AD         8B415420
                     * Q REG NOT EQUAL 0002                                 8B415430
                     *                                                      8B415440
                     *                                                      8B415450
3115 0  088C                 DC       A780       SD-0000 0001              8B415460
                     * 0000   0000   N/A   N/A   N/A   N/A AFTER LDD        8B415470
                     * FFFF   FFFF   N/A   N/A   N/A   N/A AFTER SD         8B415480
                     * ACCUM NOT EQUAL FFFF                                 8B415490
                     *                                                      8B415500
                     *                                                      8B415510
3116 0  088C                 DC       A780       SD-0000 0001              8B415520
                     * 0000   0000   N/A   N/A   N/A   N/A AFTER LDD        8B415530
                     * FFFF   FFFF   N/A   N/A   N/A   N/A AFTER SD         8B415540
                     * Q REG NOT EQUAL FFFF                                 8B415550
                     *                                                      8B415560
                     *                                                      8B415570
3117 0  088C                 DC       A780       SD-0000 0001              8D415580
                     * 0000   0000   N/A   N/A   N/A   OFF AFTER LDD        8B415590
                     * FFFF   FFFF   N/A   N/A   N/A    C  AFTER SD         8B415600
                     * OVERFLOW ON- SHOULD NOT BE                           8B415610
                     *                                                      8B415620
                     *                                                      8B415630
                     *                                                      8B415640
                     *                                                      8B415650
                                                                            8B415660
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*************************************************************************** 8B415670
        ADDRESS      *                                                      8B415680
          OF         *                                                      8B415690
B-REG   ROUTINE      * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                8B415700
*************************************************************************** 8B415710
3118 0  0B8C                 DC       A780       SD-0000 0001              8B415720
                     * 0000   0000   N/A   N/A   N/A   OFF AFTER LDD        8B415730
                     * FFFF   FFFF   N/A   N/A   N/A    C  AFTER SD         8B415740
                     * CARRY NOT ON-SHOULD BE                               8B415750
                     *                                                      8B415760
                     *                                                      8B415770
3119 0  0BB6                 DC       A786       SD-FFFF FFFF              8B415780
                     * 0000   0000   N/A   N/A   N/A   N/A AFTER LDD        8B415790
                     * 0000   0001   N/A   N/A   N/A   N/A AFTER SD         8B415800
                     * ACCUM NOT EQUAL TO 0000                              8B415810
                     *                                                      8B415820
                     *                                                      8B415830
311A 0  0BB6                 DC       A786       SD-FFFF FFFF              8B415840
                     * 0000   0000   N/A   N/A   N/A   N/A AFTER LDD        8B415850
                     * 0000   0001   N/A   N/A   N/A   N/A AFTER SD         8B415860
                     * Q REG NOT EQUAL 0001                                 8B415870
                     *                                                      8B415880
                     *                                                      8B415890
311B 0  0BCB                 DC       A78A       SD-FFFF FFFF              8B415900
                     * 0000   C000   N/A   N/A   N/A   N/A AFTER LDD        8B415910
                     * 0000   C001   N/A   N/A   N/A   N/A AFTER SD         8B415920
                     * ACCUM NOT EQUAL 0000                                 8B415930
                     *                                                      8B415940
                     *                                                      8B415950
311C 0  0BCB                 DC       A78A       SD-FFFF FFFF              8B415960
                     * 0000   C000   N/A   N/A   N/A   N/A AFTER LDD        8B415970
                     * 0000   C001   N/A   N/A   N/A   N/A AFTER SD         8B415980
                     * Q REG NOT EQUAL C001                                 8B415990
                     *                                                      8B416000
                     *                                                      8B416010
311D 0  0BDF                 DC       A78E       SD-FFFF ODD LOC           8B416020
                     * 0000   0000   N/A   N/A   N/A   N/A AFTER LDD        8B416030
                     * 0000   0001   N/A   N/A   N/A   N/A AFTER SD         8B416040
                     * ACCUM NOT EQUAL 0000                                 8B416050
                     *                                                      8B416060
                     *                                                      8B416070
311E 0  0BDF                 DC       A78E       SD-FFFF ODD LOC           8B416080
                     * 0000   0000   N/A   N/A   N/A   N/A AFTER LDD        8B416090
                     * 0000   0001   N/A   N/A   N/A   N/A AFTER SD         8B414100
                     * Q REG NOT EQUAL 0001                                 8B416110
                     *                                                      8B416120
                     *                                                      8B416130
311F 0  0C01                 DC       A7C0       MULT-2AAA                 8B416149
                     * 5555   N/A    N/A   N/A   N/A   N/A AFTER LD         8B416150
                     * 0E38   9C72   N/A   N/A   N/A   N/A AFTER M          8B416160
                     * ACCUM NOT EQUAL 0E38                                 8B416170
                     *                                                      8B416180
                     *                                                      8B416190
3120 0  0C01                 DC       A7C0       MULT-2AAA                 8B416200
                     * 5555   N/A    N/A   N/A   N/A   N/A AFTER LD         8B416210
                     * 0E38   9C72   N/A   N/A   N/A   N/A AFTER M          8B416220
                     * Q REG NOT EQUAL 9C72                                 8B416230
                     *                                                      8B416240
                     *                                                      8B416250
3121 0  0C16                 DC       A7C4       MULT-FFFF                 8B416260
                     * FFFF   N/A    N/A   N/A   N/A   N/A AFTER LD         8B416270
                     * 0000   0001   N/A   N/A   N/A   N/A AFTER M          8B416280
                     * ACCUM NOT EQUAL 0000                                 8B416290
                     *                                                      8B416300
                     *                                                      8B416310
                     *                                                      8B416320
                     *                                                      8B416330
                                                                            8B416340
```

```
************************************************************************
       ADDRESS      *
         OF         *
B-REG  ROUTINE      * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS
************************************************************************
3122 0  0C16              DC       A7C4        MULT-FFFF
                    * FFFF   N/A    N/A   N/A   N/A    N/A AFTER LD
                    * 0000   0001   N/A   N/A   N/A    N/A AFTER M
                    * Q REG NOT EQUAL 0001
                    *
                    *
3123 0  0C2A              DC       A7C8        MULT-FFFF
                    * 0000   N/A    N/A   N/A   N/A    N/A AFTER LD
                    * 0000   0000   N/A   N/A   N/A    N/A AFTER M
                    * ACCUM NOT EQUAL 0000
                    *
                    *
3124 0  0C2A              DC       A7C8        MULT-FFFF
                    * 0000   N/A    N/A   N/A   N/A    N/A AFTER LD
                    * 0000   0000   N/A   N/A   N/A    N/A AFTER M
                    * Q REG NOT EQUAL 0000
                    *
                    *
3125 0  0C3D              DC       A7CC        MULT-0000
                    * FFFF   N/A    N/A   N/A   N/A    N/A AFTER LD
                    * 0000   0000   N/A   N/A   N/A    N/A AFTER M
                    * ACCUM NOT EQUAL 0000
                    *
                    *
3126 0  0C3D              DC       A7CC        MULT-0000
                    * FFFF   N/A    N/A   N/A   N/A    N/A AFTER LD
                    * 0000   0000   N/A   N/A   N/A    N/A AFTER M
                    * Q REG NOT EQUAL 0000
                    *
                    *
3127 0  0C58              DC       A800        DVD-8000
                    * 4000   7FFF   N/A   N/A   N/A    N/A AFTER LDD
                    * 8000   7FFF   N/A   N/A   N/A    N/A AFTER D
                    * ACCUM NOT EQUAL 8000
                    *
                    *
3128 0  0C58              DC       A800        DVD-8000
                    * 4000   7FFF   N/A   N/A   N/A    N/A AFTER LDD
                    * 8000   7FFF   N/A   N/A   N/A    N/A AFTER D
                    * Q REG NOT EQUAL 7FFF
                    *
                    *
3129 0  0C58              DC       A800        DVD-8000
                    * 4000   7FFF   N/A   N/A   N/A    OFF AFTER LDD
                    * 8000   7FFF   N/A   N/A   N/A    N/A AFTER D
                    * OVERFLOW ON-SHOULD NOT BE
                    *
                    *
312A 0  0C58              DC       A800        DVD-8000
                    * 4000   7FFF   N/A   N/A   N/A    OFF AFTER LDD
                    * 8000   7FFF   N/A   N/A   N/A    N/A AFTER D
                    * CARRY ON-SHOULD NOT BE
                    *
                    *
312B 0  0C87              DC       A806        DVD-5555
                    * 1C71   BBE3   N/A   N/A   N/A    N/A AFTER LDD
                    * 5555   2DAA   N/A   N/A   N/A    N/A AFTER D
                    * ACCUM NOT EQUAL 5555
                    *
                    *
                    *
                    *
                    *
```



```
************************************************************************
       ADDRESS      *
         OF         *
B-REG  ROUTINE      * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS
************************************************************************
312C 0  0C87              DC       A806        DVD-5555
                    * 1C71   BBE3   N/A   N/A   N/A    N/A AFTER LDD
                    * 5555   2DAA   N/A   N/A   N/A    N/A AFTER D
                    * Q REG NOT EQUAL 2DAA
                    *
                    *
312D 0  0C87              DC       A806        DVD-5555
                    * 1C71   BBE3   N/A   N/A   N/A    OFF AFTER LDD
                    * 5555   2DAA   N/A   N/A   N/A    N/A AFTER D
                    * OVERFLOW ON-SHOULD NOT BE
                    *
                    *
312E 0  0C87              DC       A806        DVD-5555
                    * 1C71   BBE3   N/A   N/A   N/A    OFF AFTER LDD
                    * 5555   2DAA   N/A   N/A   N/A    N/A AFTER D
                    * CARRY ON-SHOULD NOT BE
                    *
                    *
312F 0  0C82              DC       A80C        DVD-0000
                    * 0000   0001   N/A   N/A   N/A    OFF AFTER LDD
                    * N/A    N/A    N/A   N/A   N/A     O  AFTER D
                    * OVERFLOW NOT ON-SHOULD BE
                    *
                    *
3130 0  0C8D              DC       A80E        DVD-0001
                    * 4000   0000   N/A   N/A   N/A    OFF AFTER LDD
                    * N/A    N/A    N/A   N/A   N/A     O  AFTER D
                    * OVERFLOW NOT ON-SHOULD BE
                    *
                    *
3131 0  0CC8              DC       B800        DVD-4000
                    * A000   0000   N/A   N/A   N/A    OFF AFTER LDD
                    * N/A    N/A    N/A   N/A   N/A     O  AFTER D
                    * OVERFLOW NOT ON-SHOULD BE
                    *
                    *
3132 0  0CD3              DC       B802        DVD-8000
                    * C000   0000   N/A   N/A   N/A    OFF AFTER LDD
                    * N/A    N/A    N/A   N/A   N/A     O  AFTER D
                    * OVERFLOW OFF--SHOULD BE ON
                    *
                    *
3133 0  0CDE              DC       B804        DVD-0001
                    * 0000   FFFF   N/A   N/A   N/A    OFF AFTER LDD
                    * N/A    N/A    N/A   N/A   N/A     O  AFTER D
                    * OVERFLOW OFF--SHOULD BE ON
                    *
                    *
3134 0  0CE9              DC       B806        DVD-0001
                    * FFFF   7FFF   N/A   N/A   N/A    OFF AFTER LDD
                    * N/A    N/A    N/A   N/A   N/A     O  AFTER D
                    * OVERFLOW OFF--SHOULD BE ON
                    *
                    *
3135 0  0D6A              DC       A840        MDX 1
                    * N/A    N/A    0000  N/A   N/A    N/A AFTER LDX
                    * N/A    N/A    FFFF  N/A   N/A    N/A AFTER MDX 1
                    * INDEX REG 1 NOT EQUAL FFFF WHEN MODIFIED
                    * BY MINUS 1
                    *
                    *
3136 0  0D78              DC       A842        MDX LONG FORM
                    * ADD +1 TO MEMORY FAILED
```

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*************************************************************************** 8B417710
        ADDRESS      *                                                      8B417720
          OF         *                                                      8B417730
B-REG     ROUTINE    * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                8B417740
*************************************************************************** 8B417750
                     *                                                      8B417760
                     *                                                      8B417770
3137 0  0D8D               DC       A844        MDX 2 LONG FORM            8B417780
                     * N/A    N/A    N/A   FFFE  N/A   N/A AFTER LDX        8B417790
                     * N/A    N/A    N/A   FFFF  N/A   N/A AFTER MDX 2      8B417800
                     * INDEX REG 2 NOT EQUAL TO FFFF AFTER MDX +1           8B417810
                     * TO INDEX REG 2                                       8B417820
                     *                                                      8B417830
                     *                                                      8B417840
3138 0  0D9C               DC       A846        MDX 3                      8B417850
                     * N/A    N/A    N/A   N/A   FFFF  N/A AFTER LDX        8B417860
                     * N/A    N/A    N/A   N/A   0000  N/A AFTER MDX 2      8B417870
                     * MDX DID NOT CAUSE A SKIP WHEN INDEX REG 3            8B417880
                     * SENT TO 0000                                         8B417890
                     *                                                      8B417900
                     *                                                      8B417910
3139 0  0DA6               DC       A848        MDX 1                      8B417920
                     * N/A    N/A    FFFF  N/A   N/A   N/A AFTER LDX        8B417930
                     * N/A    N/A    0003  N/A   N/A   N/A AFTER MDX 1      8B417940
                     * MDX DID NOT CAUSE A SKIP WHEN THE SIGN               8B417950
                     * CHANGED ON INDEX REG 1                               8B417960
                     *                                                      8B417970
                     *                                                      8B417980
313A 0  0DB0               DC       A849        MDX 1 INDIRECT             8B417990
                     * N/A    N/A    FFFE  N/A   N/A   N/A AFTER LDX        8B418000
                     * N/A    N/A    FFFF  N/A   N/A   N/A AFTER LDX 11     8B418010
                     * INDIRECT MDX OF INDEX REG 1 BY +1 FAILED             8B418020
                     *                                                      8B418030
                     *                                                      8B418040
3138 0  0DE4               DC       A880        SLCA-XR 1                  8B418050
                     * 0000   N/A    0010  N/A   N/A   N/A AFTER LDX        8B418060
                     * 0000   N/A    0000  N/A   N/A   N/A AFTER SLCA       8B418070
                     * ACCUM NOT EQUAL 0000                                 8B418080
                     *                                                      8B418090
                     *                                                      8B418100
313C 0  0DE4               DC       A880        SLCA-XR 1                  8B418110
                     * 0000   N/A    0010  N/A   N/A   N/A AFTER LDX        8B418120
                     * 0000   N/A    0000  N/A   N/A   N/A AFTER SLAC       8B418130
                     * INDEX REG 1 NOT EQUAL 0000                          8B418140
                     *                                                      8B418150
                     *                                                      8B418160
313D 0  0E08               DC       A884        SLCA-XR 1                  8B418170
                     * 0001   N/A    FFDO  N/A   N/A   N/A AFTER LDX        8B418180
                     * 8000   N/A    FFC1  N/A   N/A   N/A AFTER ASCL       8B418190
                     * ACCUM NOT EQUAL 8000                                 8B418200
                     *                                                      8B418210
                     *                                                      8B418220
313E 0  0E08               DC       A884        SLCA-XR 1                  8B418230
                     * 0001   N/A    FFDC  N/A   N/A   N/A AFTER LDX        8B418240
                     * 8000   N/A    FFC1  N/A   N/A   N/A AFTER LDX        8B418250
                     * INDEX REG 1 NOT EQUAL FFC1                           8B418260
                     *                                                      8B418270
                     *                                                      8B418280
313F 0  0E33               DC       A888        SLCA-XR 1                  8B418290
                     * 8000   N/A    0010  N/A   N/A   N/A AFTER LDX        8B418300
                     * 8000   N/A    0010  N/A   N/A   N/A AFTER SLCA       8B418310
                     * ACCUM NOT EQUAL 8000                                 8B418320
                     *                                                      8B418330
                     *                                                      8B418340
3140 0  0E33               DC       A888        SLCA-XR 1                  8B418350
                     * 8000   N/A    0010  N/A   N/A   N/A AFTER LDX        8B418360
                     * 8000   N/A    0010  N/A   N/A   N/A AFTER SLCA       8B418370
                     * INDEX REG 1 NOT EQUAL 0010                          8B418380
```



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*************************************************************************** 8B418390
        ADDRESS      *                                                      8B418400
          OF         *                                                      8B418410
B-REG     ROUTINE    * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                8B418420
*************************************************************************** 8B418430
                     *                                                      8B418440
                     *                                                      8B418450
3141 0  0E6E               DC       A88C        SLC-XR 1                   8B418460
                     * 0000   0000   0020  N/A   N/A   N/A AFTER LDX        8B418470
                     * 0000   0000   0000  N/A   N/A   N/A AFTER SLC        8B418480
                     * ACCUM NOT EQUAL 0000                                 8B418490
                     *                                                      8B418500
                     *                                                      8B418510
3142 0  0E6E               DC       A88C        SLC-XR 1                   8B418520
                     * 0000   0000   0020  N/A   N/A   N/A AFTER LDX        8B418530
                     * 0000   0000   0000  N/A   N/A   N/A AFTER SLC        8B418540
                     * Q REG NOT EQUAL 0000                                 8B418550
                     *                                                      8B418560
                     *                                                      8B418570
3143 0  0E6E               DC       A88C        SLC-XR 1                   8B418580
                     * 0000   0000   0020  N/A   N/A   N/A AFTER LDX        8B418590
                     * 0000   0000   0000  N/A   N/A   N/A AFTER SLC        8B418600
                     * INDEX REG 1 NOT EQUAL 0000                          8B418610
                     *                                                      8B418620
                     *                                                      8B418630
3144 0  0E8D               DC       B882        SLC-XR 1                   8B418640
                     * 0000   0002   FFDF  N/A   N/A   N/A AFTER LDX        8B418650
                     * 8000   0000   FFC1  N/A   N/A   N/A AFTER SLC        8B418660
                     * ACCUM NOT EQUAL 8000                                 8B418670
                     *                                                      8B418680
                     *                                                      8B418690
3145 0  0E8D               DC       B882        SLC-XR 1                   8B418700
                     * 0000   0002   FFDF  N/A   N/A   N/A AFTER LDX        8B418710
                     * 8000   0000   FFC1  N/A   N/A   N/A AFTER SLC        8B418720
                     * Q REG NOT EQUAL 0000                                 8B418730
                     *                                                      8B418740
                     *                                                      8B418750
3146 0  0E8D               DC       B882        SLC-XR 1                   8B418760
                     * 0000   0002   FFDF  N/A   N/A   N/A AFTER LDX        8B418770
                     * 8000   0000   FFC1  N/A   N/A   N/A AFTER SLC        8B418780
                     * INDEX REG 1 NOT EQUAL FFC1                           8B418790
                     *                                                      8B418800
                     *                                                      8B418810
3147 0  0EAF               DC       B884        SLC-XR 1                   8B418820
                     * 0000   0002   001F  N/A   N/A   N/A AFTER LDD+LDX    8B418830
                     * 8000   0000   0001  N/A   N/A   C   AFTER SLC        8B418840
                     * A SLC TERMINATED BY A CNE BIT IN ACCUM BIT           8B418850
                     * ZERO DID NOT TURN ON CARRY                           8B418860
                     *                                                      8B418870
                     *                                                      8B418880
3148 0  0EAF               DC       B884        SLC-XR 1                   8B418890
                     * 0000   0002   001F  N/A   N/A   N/A AFTER LDD+LDX    8B418900
                     * 8000   0000   0001  N/A   N/A   C   AFTER SLC        8B418910
                     * ACCUM WAS NOT EQUAL TO 8000                          8B418920
                     *                                                      8B418930
                     *                                                      8B418940
3149 0  0EAF               DC       B884        SLC-XR 1                   8B418950
                     * 0000   0002   001F  N/A   N/A   N/A AFTER LDD+LDX    8B418960
                     * 8000   0002   0001  N/A   N/A   C   AFTER SLC        8B418970
                     * A SLC TERMINATED BY A CNE IN ACCUM BIT               8B418980
                     * ZERO DID NOT LEAVE XR 1 EQUAL 0001                   8B418990
                     *                                                      8B419000
                     *                                                      8B419010
314A 0  0ECF               DC       B885        SLC-IX 1                   8B419020
                     * 0000   0002   001C  N/A   N/A   N/A AFTER LDD+LDX    8B419030
                     * 2000   0000   0000  N/A   N/A   OFF AFTER SLC        8B419040
                     * A SLC TERMINATED BY XR 1 GOING TO ZERO LEFT           8B419050
                     * THE CARRY FF SET                                     8B419060
```

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*************************************************************************** 8B419070
       ADDRESS        *                                                     8B419080
         OF           *                                                     8B419090
B-REG  ROUTINE        * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS               8B419100
*************************************************************************** 8B419110
                      *                                                     8B419120
                      *                                                     8B419130
314B 0  0EEC               DC       B8A0       CMP   A GREATER M            8B419140
                      * 4000   N/A    N/A    N/A   N/A    N/A               8B419150
                      * A GREATER THAN M CMP FAILED                         8B419160
                      *                                                     8B419170
                      *                                                     8B419180
314C 0  0EEC               DC       B8A0       CMP   A GREATER M            8B419190
                      * 4000   N/A    N/A    N/A   N/A    N/A AFTER LD      8B419200
                      * 4000   N/A    N/A    N/A   N/A    N/A AFTER CMP     8B419210
                      * ACC DISTROYED AFTER CMP                             8B419220
                      *                                                     8B419230
                      *                                                     8B419240
314D 0  0F07               DC       B8A1       CMP   A LESS M               8B419250
                      * 0000   N/A    N/A    N/A   N/A    N/A               8B419260
                      * ACC LESS THAN M FAILS                               8B419270
                      *                                                     8B419280
                      *                                                     8B419290
314E 0  0F11               DC       B8A2       CMP   A LESS M               8B419300
                      * 0000   N/A    N/A    N/A   N/A    N/A               8B419310
                      * ACC LESS THAN M FAILS                               8B419320
                      *                                                     8B419330
                      *                                                     8B419340
314F 0  0F1B               DC       B8A3       CMP A LESS M                 8B419350
                      * 0000   N/A    N/A    N/A   N/A    N/A               8B419360
                      * ACC LESS THAN M FAILS                               8B419370
                      *                                                     8B419380
                      *                                                     8B419390
3150 0  0F25               DC       B8A4       CMP A LESS M                 8B419400
                      * 8000   N/A    N/A    N/A   N/A    N/A               8B419410
                      * ACC LESS THAN M FAILS                               8B419420
                      *                                                     8B419430
                      *                                                     8B419440
3151 0  0F2F               DC       B8A5       CMP  A EQ M                  8B419450
                      * 1000   N/A    N/A    N/A   N/A    N/A               8B419460
                      * ACC EQ M FAILED                                     8B419470
                      *                                                     8B419480
                      *                                                     8B419490
3152 0  0F3A               DC       B8C0       DCM  AQ GTR M,M+1            8B419500
                      * 8000  0001    N/A    N/A   N/A    N/A               8B419510
                      * DCM AQ GREATER THAN M, M+1 FAILED                   8B419520
                      *                                                     8B419530
                      *                                                     8B419540
3153 0  0F3A               DC       B8C0       DCM AQ GTR M, M+1            8B419550
                      * 8000  0001    N/A    N/A   N/A    N/A               8B419560
                      * ACC DISTROYED AFTER DCM                             8B419570
                      *                                                     8B419580
                      *                                                     8B419590
3154 0  0F3A               DC       B8C0       DCM AQ GTR M,M+1             8B419600
                      * 8000  0001    N/A    N/A   N/A    N/A               8B419610
                      * Q REG DISTROYED AFTER DCM                           8B419620
                      *                                                     8B419630
                      *                                                     8B419640
3155 0  0F54               DC       B8C1       DCM AQ LESS M,M+1            8B419650
                      * 0000  8000    N/A    N/A   N/A    N/A               8B419660
                      * DCM FAILED WHEN A,Q LESS THAN M, M+1                8B419670
                      *                                                     8B419680
                      *                                                     8B419690
3156 0  0F5D               DC       B8C2       DCM AQ EQ M,M+1              8B419700
                      * 0000  8000    N/A    N/A   N/A    N/A               8B419710
                      * DCM FAILED WHEN A,Q EQ M, M+1                       8B419720
                      *                                                     8B419730
                      *                                                     8B419740
```



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*************************************************************************** 8B419750
       ADDRESS        *                                                     8B419760
         OF           *                                                     8B419770
B-REG  ROUTINE        * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS               8B419780
*************************************************************************** 8B419790
3157 0  088F               DC       A660       LDX 1 -1                     8B419800
                      *  N/A   N/A  0000   0000  0000   N/A AFTER LDX'S     8B419810
                      *  N/A   N/A  FFFF   0000  0000   N/A AFTER LDX 1     8B419820
                      * INDEX 2 CHANGED                                     8B419830
                      *                                                     8B419840
                      *                                                     8B419850
3158 0  088F               DC       A660       LDX 1 -1                     8B419860
                      *  N/A   N/A  0000   0000  0000   N/A AFTER LDX'S     8B419870
                      *  N/A   N/A  FFFF   0000  0000   N/A AFTER LDX 1     8B419880
                      * INDEX 3 CHANGED                                     8B419890
                      *                                                     8B419900
                      *                                                     8B419910
3159 0  08A7               DC       A662       LDX 2 -1                     8B419920
                      *  N/A   N/A  0000   0000  0000   N/A AFTER LDX'S     8B419930
                      *  N/A   N/A  0000   FFFF  0000   N/A AFTER LDX 2     8B419940
                      * INDEX 1 CHANGED                                     8B419950
                      *                                                     8B419960
                      *                                                     8B419970
315A 0  08A7               DC       A662       LDX 2 -1                     8B419980
                      *  N/A   N/A  0000   0000  0000   N/A AFTER LDX'S     8B419990
                      *  N/A   N/A  0000   FFFF  0000   N/A AFTER LDX 2     8B420000
                      * INDEX 3 CHANGED                                     8B420010
                      *                                                     8B420020
                      *                                                     8B420030
315B 0  08BF               DC       A664       LDX 3 -1                     8B420040
                      *  N/A   N/A  0000   0000  0000   N/A AFTER LDX'S     8B420050
                      *  N/A   N/A  0000   0000  FFFF   N/A AFTER LDX 3     8B420060
                      * INDEX 1 CHANGED                                     8B420070
                      *                                                     8B420080
                      *                                                     8B420090
315C 0  08BF               DC       A664       LDX 3 -1                     8B420100
                      *  N/A   N/A  0000   0000  0000   N/A AFTER LDX'S     8B420110
                      *  N/A   N/A  0000   0000  FFFF   N/A AFTER LDX 3     8B420120
                      * INDEX 2 CHANGED                                     8B420130
                      *                                                     8B420140
                      *                                                     8B420150
315D 0  09EC               DC       A6D0       INDEXED INST F=0             8B420160
                      * INITIALLY XR 1 HAS CORE LOCATION OF                 8B420170
                      *   SYMBOLIC LABEL N6C1                               8B420180
                      * AFTER THE TEST THE ACC SHOULD HAVE                  8B420190
                      *   CORE LOCATION OF SYMBOLIC LABEL N6C0              8B420200
                      * SHORT FORM INDEXED INST FAILED (X=1)                8B420210
                      *                                                     8B420220
                      *                                                     8B420230
315E 0  09F8               DC       A6D2       INDEXED INST F=0             8B420240
                      * INITIALLY XR 2 HAS CORE LOCATION OF                 8B420250
                      *   SYMBOLIC LABEL N6C1                               8B420260
                      * AFTER THE TEST THE ACC SHOULD HAVE                  8B420270
                      *   CORE LOCATION OF SYMBOLIC LABEL N6C2              8B420280
                      * SHORT FORM INDEXED INST FAILED (X=2)                8B420290
                      *                                                     8B420300
                      *                                                     8B420310
315F 0  0A04               DC       A6D3       INDEXED INST F=0             8B420320
                      * INITIALLY XR 3 HAS CORE LOCATION OF                 8B420330
                      *   SYMBOLIC LABEL N6C1                               8B420340
                      * AFTER THE TEST THE ACC SHOULD HAVE                  8B420350
                      *   CORE LOCATION OF SYMBOLIC LABEL N6C1              8B420360
                      * SHORT FORM INDEXED INST. FAILED (X=3)               8B420370
                      *                                                     8B420380
                      *                                                     8B420390
                      *                                                     8B420400
                      *                                                     8B420410
                      *                                                     8B420420
```

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*************************************************************************** 8B420430
        ADDRESS      *                                                      8B420440
          OF         *                                                      8B420450
B-REG   ROUTINE      * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                8B420460
*************************************************************************** 8B420470
*************************************************************************** 8B420480
3160 0  0DE4                 DC       A880        SLCA  CK CARRY            8B420490
                      * 0000  FFFF  000A   N/A    N/A   C     AFTER LDD+LDS 8B420500
                      * 0000  FFFF  0000   N/A    N/A   OFF   AFTER STS     8B420510
                      * CARRY ON  SHOULD BE OFF                             8B420520
                      *                                                     8B420530
                      *                                                     8B420540
3161 0  0E0B                 DC       A884        SLCA CK CARRY             8B420550
                      * 0001  0010  FFD0   N/A    N/A   OFF   AFTER LDD+LDX 8B420560
                      * 8000  0010  FF01   N/A    N/A   C     AFTER SLCA    8B420570
                      * CARRY OFF, SHOULD BE ON                             8B420580
                      *                                                     8B420590
                      *                                                     8B420600
3162 0  0E50                 DC       A889        NON INDEXED SLCA          8B420610
                      * 0001   N/A  0010   0010   0010   N/A AFTER LD        8B420620
                      * 0002   N/A   N/A    N/A    N/A   N/A AFTER SLCA      8B420630
                      * SLCA  T=0  FAILED                                   8B420640
                      *                                                     8B420650
                      *                                                     8B420660
3163 0  0A10                 DC       A6D5        INDEXED SLA               8B420670
                      * 0001   N/A   0002   N/A    N/A   N/A AFTER LD+LDX    8B420680
                      * 0004   N/A    N/A   N/A    N/A   N/A  AFTER SLA      8B420690
                      * INDEXED SLA  FAILED                                 8B420700
                      *                                                     8B420710
                      *                                                     8B420720
3164 0  0A1C                 DC       A6D6        INDEXED SRA               8B420730
                      * 0004   N/A    N/A  0002   N/A   N/A AFTER LDX+LD     8B420740
                      * 0001  N/A    N/A   N/A    N/A   N/A AFTER SRA        8B420750
                      * INDEXED SRA  FAILED                                 8B420760
                      *                                                     8B420770
                      *                                                     8B420780
3165 0  0A28                 DC       A6F0        INDEXED BSC               8B420790
                      * INITIALLY ACC HAS CORE LOCATION OF                  8B420800
                      *   SYMBOLIC LABEL N6F1                               8B420810
                      * ACC DISTROYED AFTER INDEXED BSC                     8B420820
                      *                                                     8B420830
                      *                                                     8B420840
3166 0  0A39                 DC       A6F1        INDIR, INDEX BSC          8B420850
                      *  N/A   N/A   0001   N/A    N/A   N/A AFTER LDX      8B420860
                      *  N/A   N/A    N/A   N/A    N/A   N/A  AFTER BSC      8B420870
                      * INDIRECT, INDEXED BSC FAILED                        8B420880
                      *                                                     8B420890
                      *                                                     8B420900
3167 0  0B20                 DC       A640        STX  CK ACC               8B420910
                      * INITIALLY ACC HAS CORE LOCATION OF                  8B420920
                      *   SYMBOLIC LABEL H640                               8B420930
                      * ACC DISTROYED AFTER  STX                            8B420940
                      *                                                     8B420950
                      *                                                     8B420960
3168 0  0D80                 DC       A849        MDX  CK ACC               8B420970
                      * INITIALLY ACC HAS CORE LOCATION OF                  8B420980
                      *   SYMBOLIC LABEL H849                               8B420990
                      * ACC DISTROYED AFTER MDX                             8B421000
                      *                                                     8B421010
                      *                                                     8B421020
3169 0  08D9                 DC       A670        ACC DECODE                8B421030
                      * 0001   N/A   0010   N/A    N/A   N/A                 8B421040
                      * 0000   N/A   0000   N/A    N/A   N/A                 8B421050
                      * FALSE DECODE OF ACC BE ZERO                         8B421060
                      * * EACH BIT POSITION IS TESTED                       8B421070
                      *                                                     8B421080
                      *                                                     8B421090
                      *                                                     8B421100
```



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*************************************************************************** 8B421110
        ADDRESS      *                                                      8B421120
          OF         *                                                      8B421130
B-REC   ROUTINE      * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                8B421140
*************************************************************************** 8B421150
316A 0  0D18                 DC       B807        DVD  OVFLO                8B421160
                      * 6100   0000   N/A    N/A    N/A   OFF AFTER LDD      8B421170
                      *  N/A    N/A   N/A    N/A    N/A   C  AFTER D         8B421180
                      * OVFLO NOT ON                                        8B421190
                      *                                                     8B421200
                      *                                                     8B421210
316B 0  0D23                 DC       B808        DVD  OVFLO                8B421220
                      * 8000   0000   N/A    N/A    N/A   OFF AFTER LDD      8B421230
                      *  N/A    N/A   N/A    N/A    N/A   O  AFTER D         8B421240
                      * OVFLO NOT ON                                        8B421250
                      *                                                     8B421260
                      *                                                     8B421270
316C 0  0D2E                 DC       B809        DVD  NO OVFLO             8B421280
                      * FFFF   FFFF   N/A    N/A    N/A   OFF AFTER LDD      8B421290
                      *  N/A    N/A   N/A    N/A    N/A   OFF AFTER D        8B421300
                      * OVFLO ON, SHOULD BE OFF                             8B421310
                      *                                                     8B421320
                      *                                                     8B421330
316D 0  0D3A                 DC       B810        MPY-DIV ZERO REM          8B421340
                      * ACC WRONG AFTER MPY-DIV TEST                        8B421350
                      *                                                     8B421360
                      *                                                     8B421370
316E 0  0D3A                 DC       B810        MPY-DIV ZERO REM          8B421380
                      * Q REG WRONG AFTER MPY-DIV TEST                      8B421390
                      *                                                     8B421400
                      *                                                     8B421410
316F 0  0D78                 DC       A842        MDX  CK ACC               8B421420
                      * INITIALLY ACC HAS CORE LOCATION OF                  8B421430
                      *   SYMBOLIC LABEL N844                               8B421440
                      * ACC DISTROYED AFTER ADD TO MEMORY                   8B421450
                      *                                                     8B421460
                      *                                                     8B421470
3170 0  0600                 DC       A50A        BSC  CK ACC               8B421480
                      * 8001   N/A    N/A   N/A    N/A   N/A AFTER LD        8B421490
                      * 6001   N/A    N/A   N/A    N/A   N/A AFTER BSC       8B421500
                      * ACC DISTROYED AFTER BSC CONDITIONS MET              8B421510
                      *                                                     8B421520
                      *                                                     8B421530
3171 0  0DC6                 DC       A84A        MDX MEM  CK SKIP          8B421540
                      * MEMORY LOC HAS ZERO                                 8B421550
                      * MDX FAILED TO SKIP                                  8B421560
                      *                                                     8B421570
                      *                                                     8B421580
3172 0  0DD0                 DC       A85A        MDX MEM CK NO SKP         8B421590
                      * MEMORY LOC IS NON ZERO                              8B421600
                      * MDX SKIPED, SHOULD NOT HAVE                         8B421610
                      *                                                     8B421620
                      *                                                     8B421630
                      *                                                     8B421640
3173 0  0E60                 DC       A88A        SW 15 NO INDEX            8B421650
                      * 0000   FFFF   0010   0010   0010   NAFTER LDX'S      8B421660
                      * 7FFF   N/A    N/A    N/A    N/A   NAFTER SLC         8B421670
                      *ACCUM NOT EQ TO 7FFF                                 8B421680
                      *                                                     8B421690
                      *                                                     8B421700
                      *                                                     8B421710
3174 0  0F83                 DC       F000        IMPROPER CONTROL          8B421720
                      *                          OPERATION SPECIFIED,       8B421730
                      *                          BIT SW 14 ON WITHOUT       8B421740
                      *                          BIT SW 8 OR 12 ON.         8B421750
                      *                          CORRECT SWS AND PUSH       8B421760
                      *                          START TO CONTINUE          8B421770
                      *                                                     8B421780
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PROCESSOR-CONTROLLER FUNCTION TEST

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                    ***********************************************        8B421790
                    ***********************************************        8B421800
3175                       ORG     300                                     8B421810
012C 0  B400               DC      /B400        PID                        8B421820
                    *                                                      8B421830
                    ****************************************************** 8B421840
                    *                                                      8B421850
                    * 8000   N/A    N/A   N/A   N/A     O  AFTER A         8B421860
                    * 0000   N/A    N/A   N/A   N/A     C+OAFTER A         8B421870
                    *                  TEST MDX OPERATION                  8B421880
                    *                                                      8B421890
                    ***********************************************        8B421900
****************************************************************************** 8B421910
CORE    DATA OR     *LA- OPER-                                             8B421920
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEG= AT RIGHT    8B421930
****************************************************************************** 8B421940
012D 0  3000        X000 DC      /3000        SET SWITCHES TO RUN          8B421950
012E 0  7001        A080 MDX     G080                                      8B421960
012F 0  3004             DC      /3004        ERR ID + ERR WAIT            8B421970
                    *                         MDX BY 1 FAILED              8B421980
0130 0  7002        G080 MDX     G081                                      8B421990
0131 0  3005             DC      /3005        ERR ID + ERR WAIT            8B422000
                    *                         MDX BY 2 FAILED              8B422010
0132 0  3006             DC      /3006        ERR ID + ERR WAIT            8B422020
                    *                         MDX BY 2 FAILED              8B422030
0133 0  7004        G081 MDX     G082                                      8B422040
0134 0  3007             DC      /3007        ERR ID + ERR WAIT            8B422050
                    *                         MDX BY 4 FAILED              8B422060
0135 0  3008             DC      /3008        ERR ID + ERR WAIT            8B422070
                    *                         MDX BY 4 FAILED              8B422080
0136 0  3009             DC      /3009        ERR ID + ERR WAIT            8B422090
                    *                         MDX BY 4 FAILED              8B422100
0137 0  300A             DC      /300A        ERR ID + ERR WAIT            8B422110
                    *                         MDX BY 4 FAILED              8B422120
0138 0  7002        G082 MDX     G084                                      8B422130
0139 0  300B             DC      /300B        ERR ID + ERR WAIT            8B422140
                    *                         MDX BY 2 FAILED              8B422150
013A 0  7004        G083 MDX     A0C0         EXIT TO NEXT ROUTINE         8B422160
013B 0  70FE        G084 MDX     G083                                      8B422170
013C 0  300C             DC      /300C        ERR ID + ERR WAIT            8B422180
                    *                         MDX BY -2 FAILED             8B422190
013D 0  300D             DC      /300D        ERR ID + ERR WAIT            8B422200
                    *                         MDX BY -2 FAILED             8B422210
013E 0  300E             DC      /300E        ERR ID + ERR WAIT            8B422220
                    *                         MDX BY -2 FAILED             8B422230
                    *                                                      8B422240
                    *                  TEST OF BSC SKIP WHEN IT            8B422250
                    *                  SHOULD NOT                          8B422260
                    *                                                      8B422270
                    ***********************************************        8B422280
013F 0  2003        A0C0 LDS     3            SET C AND OF ON              8B422290
0140 0  4802             BSC     C            SK IF CARRY IS OFF           8B422300
0141 0  7002             MDX     GOC1                                      8B422310
0142 0  300F             DC      /300F        ERR ID + ERR WAIT            8B422320
                    *                         BSC-CARRY FAILED             8B422330
0143 0  0000        N100 DC      0                                         8B422340
0144 0  4801        GOC1 BSC     O                                         8B422350
0145 0  7001             MDX     GOC2                                      8B422360
0146 0  3010             DC      /3010        ERR ID + ERR WAIT            8B422370
                    *                         BSC-OVERFLOW FAILED          8B422380
0147 0  4801        GOC2 BSC     O            CK IF OF WAS RESET           8B422390
0148 0  3011             DC      /3011        ERR ID + ERR WAIT            8B422400
                    *                         BSC-OVFLW SKPD-SHOULD        8B422410
                    *                         *NOT HAVE                    8B422420
0149 0  2000             LDS     0            RESET CARRY TO OFF           8B422430
014A 0  4802             BSC     C            SK IF CARRY IS OFF           8B422440
014B 0  3012             DC      /3012        ERR ID + ERR WAIT            8B422450
                    *                         BSC-C DID NOT SKIP           8B422460
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PROCESSOR-CONTROLLER FUNCTION TEST

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                    *                                                      8B422470
                    *                  TEST OF ACC ABILITY TO HOLD         8B422480
                    *                  ALL ZEROS                           8B422490
                    *                                                      8B422500
                    ***********************************************        8B422510
****************************************************************************** 8B422520
CORE    DATA OR     *LA- OPER-                                             8B422530
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEG= AT RIGHT    8B422540
****************************************************************************** 8B422550
014C 0  C0F6        A100 LD      N100         LD /0000                     8B422560
014D 0  4820             BSC     Z            SK IF ZERO                   8B422570
014E 0  3013             DC      /3013        ERR ID + ERR WAIT            8B422580
                    *                         LD ACC TO O FAILED           8B422590
014F 0  C0F3             LD      N100         ACC=0,RELOAD TO 0            8B422600
0150 0  4820             BSC     Z            SK IF ZERO                   8B422610
0151 0  3014             DC      /3014        ERR ID + ERR WAIT            8B422620
                    *                         LD ACC TO O FAILED           8B422630
0152 0  4804             BSC     E            SK IF EVEN                   8B422640
0153 0  3015             DC      /3015        ERR ID + ERR WAIT            8B422650
                    *                         BSC ON EVEN FAILED           8B422660
                    *                                                      8B422670
                    *                  CONTAIN ALL ONES                    8B422680
                    *                                                      8B422690
                    ***********************************************        8B422700
0154 0  C04A        A140 LD      N140         ACC.=0,RELOAD TO ONES        8B422710
0155 0  4810             BSC     -            SK IF MINUS                  8B422720
0156 0  3016             DC      /3016        ERR ID + ERR WAIT            8B422730
                    *                         LOAD ACC. FAILED OR          8B422740
                    *                         *BSC ON NEG. FAILED          8B422750
0157 0  4808             BSC     +                                         8B422760
0158 0  7001             MDX     G140                                      8B422770
0159 0  3017             DC      /3017        ERR ID + ERR WAIT            8B422780
                    *                         BSC ON + SKPD-               8B422790
015A 0  4804        G140 BSC     E            *SHOULD NOT HAVE             8B422800
015B 0  7001             MDX     G141                                      8B422810
015C 0  3018             DC      /3018        ERR ID + ERR WAIT            8B422820
                    *                         BSC ON E SKPD-               8B422830
015D 0  1801        G141 SRA     1            *SHOULD NOT HAVE             8B422840
015E 0  4804             BSC     E                                         8B422850
015F 0  7001             MDX     G142                                      8B422860
0160 0  3019             DC      /3019        ERR ID + ERR WAIT            8B422870
                    *                         ACC NOT = 7FFF               8B422880
0161 0  1801        G142 SRA     1                                         8B422890
0162 0  4804             BSC     E                                         8B422900
0163 0  7001             MDX     G143                                      8B422910
0164 0  301A             DC      /301A        ERR ID + ERR WAIT            8B422920
                    *                         ACC NOT = 3FFF               8B422930
0163 0  1801        G143 SRA     1                                         8B422940
0166 0  4804             BSC     E                                         8B422950
0167 0  7001             MDX     G144                                      8B422960
0168 0  301B             DC      /301B        ERR ID + ERR WAIT            8B422970
                    *                         ACC NOT = 1FFF               8B422980
0169 0  1801        G144 SRA     1                                         8B422990
016A 0  4804             BSC     E                                         8B423000
016B 0  7001             MDX     G145                                      8B423010
016C 0  0000             DC                   ERR ID + ERR WAIT            8B423020
                    *            /301C        ACC NOT = 0FFF               8B423030
016D 0  1801        G145 SRA     1                                         8B423040
016E 0  4804             BSC     E                                         8B423050
016F 0  7001             MDX     G146                                      8B423060
0170 0  301D             DC      /301D        ERR ID + ERR WAIT            8B423070
                    *                         ACC NOT = 07FF               8B423080
0171 0  1801        G146 SRA     1                                         8B423090
0172 0  4804             BSC     E                                         8B423100
0173 0  7001             MDX     G147                                      8B423110
0174 0  301E             DC      /301E        ERR ID + ERR WAIT            8B423120
                    *                         ACC NOT = 03FF               8B423130
0175 0  1801        G147 SRA     1                                         8B423140
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0176 0  4804           BSC   E                                          8B423150
0177 0  7001           MDX   G148                                       8B423160
0178 0  301F           DC    /301F      ERR ID + ERR WAIT               8B423170
                  *                     ACC NOT = 01FF                  8B423180
0179 0  1801      G148 SRA   1                                          8B423190
017A 0  4804           BSC   E                                          8B423200
017B 0  7001           MDX   G149                                       8B423210
017C 0  3020           DC    /3020      ERR ID + ERR WAIT               8B423220
                  *                     ACC NOT = 00FF                  8B423230
017D 0  1801      G149 SRA   1                                          8B423240
017E 0  4804           BSC   E                                          8B423250
017F 0  7001           MDX   G14A                                       8B423260
0180 0  3021           DC    /3021      ERR ID + ERR WAIT               8B423270
                  *                     ACC NOT = 007F                  8B423280
0181 0  1801      G14A SRA   1                                          8B423290
0182 0  4804           BSC   E                                          8B423300
0183 0  7001           MDX   G14B                                       8B423310
0184 0  3022           DC    /3022      ERR ID + ERR WAIT               8B423320
                  *                     ACC NOT = 003F                  8B423330
0185 0  1801      G14B SRA   1                                          8B423340
0186 0  4804           BSC   E                                          8B423350
0187 0  7001           MDX   G14C                                       8B423360
0188 0  3023           DC    /3023      ERR ID + ERR WAIT               8B423370
                  *                     ACC NOT = 001F                  8B423380
0189 0  1801      G14C SRA   1                                          8B423390
018A 0  4804           BSC   E                                          8B423400
018B 0  7001           MDX   G14D                                       8B423410
018C 0  3024           DC    /3024      ERR ID + ERR WAIT               8B423420
                  *                     ACC NOT = 000F                  8B423430
018D 0  1801      G14D SRA   1                                          8B423440
018E 0  4804           BSC   E                                          8B423450
018F 0  7001           MDX   G14E                                       8B423460
0190 0  3025           DC    /3025      ERR ID + ERR WAIT               8B423470
                  *                     ACC NOT = 0007                  8B423480
0191 0  1801      G14E SRA   1                                          8B423490
0192 0  4804           BSC   E                                          8B423500
0193 0  7001           MDX   G14F                                       8B423510
0194 0  3026           DC    /3026      ERR ID + ERR WAIT               8B423520
                  *                     ACC NOT = 0003                  8B423530
0195 0  1801      G14F SRA   1                                          8B423540
0196 0  4804           BSC   E                                          8B423550
0197 0  7001           MDX   G150                                       8B423560
0198 0  3027           DC    /3027      ERR ID + ERR WAIT               8B423570
                  *                     ACC NOT = 0001                  8B423580
0199 0  1801      G150 SRA   1                                          8B423590
019A 0  4804           BSC   E                                          8B423600
019B 0  3028           DC    /3028      ERR ID + ERR WAIT               8B423610
                  *                     ACC NOT = 0000                  8B423620
019C 0  4820           BSC   Z                                          8B423630
019D 0  3029           DC    /3029      ERR ID + ERR WAIT               8B423640
                  *                     ACC NOT = 0000                  8B423650
019E 0  7001           MDX   A180       EXIT TC NEXT ROUTINE            8B423660
019F 0  FFFF      N140 DC    /FFFF                                      8B423670
                  *                                                     8B423680
                  *              TEST LDING OF ONES ON ONES             8B423690
                  *                                                     8B423700
                  ********************************************          8B423710
*****************************************************************       8B423720
CORE    DATA OR    *LA- OPER-                                           8B423730
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B423740
*****************************************************************       8B423750
01A0 0  C049      A180 LD    N180       LD  /FFFF                       8B423760
01A1 0  482C           BSC   +EZ        SK ON +,EVEN OR ZERO            8B423770
01A2 0  4810           BSC   -          SK IF MINUS                     8B423780
01A3 0  302A           DC    /302A      ERR ID + ERR WAIT               8B423790
                  *                     ACC NOT = FFFF                  8B423800
01A4 0  C045           LD    N180       LD  /FFFF                       8B423810
01A5 0  482C           BSC   +EZ                                        8B423820
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01A6 0  4810           BSC   -                                          8B423830
01A7 0  302B           DC    /302B      ERR ID + ERR WAIT               8B423840
                  *                     ACC NOT = FFFF                  8B423850
01A8 0  1801           SRA   1          SHIFT RIGHT ONE                 8B423860
                  *              TEST ABILITY OF ACC TO SHIFT           8B423870
01A9 0  4804           BSC   E                                          8B423880
01AA 0  7001           MDX   G181                                       8B423890
01AB 0  302C           DC    /302C      ERR ID + ERR WAIT               8B423900
                  *                     ACC NOT = 7FFF                  8B423910
01AC 0  1801      G181 SRA   1                                          8B423920
01AD 0  4804           BSC   E                                          8B423930
01AE 0  7001           MDX   G182                                       8B423940
01AF 0  302D           DC    /302D      ERR ID + ERR WAIT               8B423950
                  *                     ACC NOT = 3FFF                  8B423960
01B0 0  1801      G182 SRA   1                                          8B423970
01B1 0  4804           BSC   E                                          8B423980
01B2 0  7001           MDX   G183                                       8B423990
01B3 0  302E           DC    /302E      ERR ID + ERR WAIT               8B424000
                  *                     ACC NOT = 1FFF                  8B424010
01B4 0  1801      G183 SRA   1                                          8B424020
01B5 0  4804           BSC   E                                          8B424030
01B6 0  7001           MDX   G184                                       8B424040
01B7 0  302F           DC    /302F      ERR ID + ERR WAIT               8B424050
                  *                     ACC NOT = 0FFF                  8B424060
01B8 0  1801      G184 SRA   1                                          8B424070
01B9 0  4804           BSC   E                                          8B424080
01BA 0  7001           MDX   G185                                       8B424090
01BB 0  3030           DC    /3030      ERR ID + ERR WAIT               8B424100
                  *                     ACC NOT = 07FF                  8B424110
01BC 0  1801      G185 SRA   1                                          8B424120
01BD 0  4804           BSC   E                                          8B424130
01BE 0  7001           MDX   G186                                       8B424140
01BF 0  3031           DC    /3031      ERR ID + ERR WAIT               8B424150
                  *                     ACC NOT = 03FF                  8B424160
01C0 0  1801      G186 SRA   1                                          8B424170
01C1 0  4804           BSC   E                                          8B424180
01C2 0  7001           MDX   G187                                       8B424190
01C3 0  3032           DC    /3032      ERR ID + ERR WAIT               8B424200
                  *                     ACC NOT = 01FF                  8B424210
01C4 0  1801      G187 SRA   1                                          8B424220
01C5 0  4804           BSC   E                                          8B424230
01C6 0  7001           MDX   G188                                       8B424240
01C7 0  3033           DC    /3033      ERR ID + ERR WAIT               8B424250
                  *                     ACC NOT = 00FF                  8B424260
01C8 0  1801      G188 SRA   1                                          8B424270
01C9 0  4804           BSC   E                                          8B424280
01CA 0  7001           MDX   G189                                       8B424290
01CB 0  3034           DC    /3034      ERR ID + ERR WAIT               8B424300
                  *                     ACC NOT = 007F                  8B424310
01CC 0  1801      G189 SRA   1                                          8B424320
01CD 0  4804           BSC   E                                          8B424330
01CE 0  7001           MDX   G18A                                       8B424340
01CF 0  3035           DC    /3035      ERR ID + ERR WAIT               8B424350
                  *                     ACC NOT = 003F                  8B424360
01D0 0  1801      G18A SRA   1                                          8B424370
01D1 0  4804           BSC   E                                          8B424380
01D2 0  7001           MDX   G18B                                       8B424390
01D3 0  3036           DC    /3036      ERR ID + ERR WAIT               8B424400
                  *                     ACC NOT = 001F                  8B424410
01D4 0  1801      G18B SRA   1                                          8B424420
01D5 0  4804           BSC   E                                          8B424430
01D6 0  7001           MDX   G18C                                       8B424440
01D7 0  3037           DC    /3037      ERR ID + ERR WAIT               8B424450
                  *                     ACC NOT = 000F                  8B424460
01D8 0  1801      G18C SRA   1                                          8B424470
01D9 0  4804           BSC   E                                          8B424480
01DA 0  7001           MDX   G18D                                       8B424490
01DB 0  3038           DC    /3038      ERR ID + ERR WAIT               8B424500
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PROCESSOR-CONTROLLER FUNCTION TEST

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                    *                     ACC NOT = 0007           8B424510
01DC 0  1801        G18D  SRA    1                                 8B424520
01DD 0  4804              BSC    E                                 8B424530
01DE 0  7001              MDX    G18E                              8B424540
01DF 0  3039              DC     /3039    ERR ID + ERR WAIT        8B424550
                    *                     ACC NOT = 0003           8B424560
01E0 0  1801        G18E  SRA    1                                 8B424570
01E1 0  4804              BSC    E                                 8B424580
01E2 0  7001              MDX    G18F                              8B424590
01E3 0  303A              DC     /303A    ERR ID + ERR WAIT        8B424600
                    *                     ACC NOT = 0001           8B424610
01E4 0  1801        G18F  SRA    1                                 8B424620
01E5 0  4804              BSC    E                                 8B424630
01E6 0  303B              DC     /303B    ERR ID + ERR WAIT        8B424640
                    *                     ACC NOT = 0000           8B424650
01E7 0  4820              BSC    Z                                 8B424660
01E8 0  303C              DC     /303C    ERR ID + ERR WAIT        8B424670
                    *                     ACC NOT = 0000           8B424680
01E9 0  7001              MDX    A1C0     EXIT TO NEXT ROUTINE     8B424690
01EA 0  FFFF        N1B0  DC     /FFFF                             8B424700
                    *                                              8B424710
                    *                 TEST ABILITY TO LOAD ZEROS   8B424720
                    *                 ON TOP OF ZEROS AND ONES ON  8B424730
                    *                 TOP OF ZEROS                 8B424740
                    *                                              8B424750
                    ********************************************   8B424760
****************************************************************** 8B424770
CORE    DATA OR     *LA- OPER-                                     8B424780
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B424790
****************************************************************** 8B424800
01EB 0  C007        A1C0  LD     N1C0     LD  /0000                8B424810
01EC 0  4820              BSC    Z        SK ON ZERO               8B424820
01ED 0  303D              DC     /303D    ERR ID + ERR WAIT        8B424830
                    *                     ACC NOT = ZERO           8B424840
01EE 0  C005              LD     N1C1     LD  /FFFF                8B424850
01EF 0  482C              BSC    +EZ                               8B424860
01F0 0  4810              BSC    -        SK ON MINUS              8B424870
01F1 0  303E              DC     /303E    ERR ID + ERR WAIT        8B424880
                    *                     ACC NOT = FFFF           8B424890
01F2 0  7002              MDX    A1D0     EXIT TO NEXT ROUTINE     8B424900
01F3 0  0000        N1C0  DC     /0000                             8B424910
01F4 0  FFFF        N1C1  DC     /FFFF                             8B424920
                    *                                              8B424930
                    *                 TEST EOR OPERATION           8B424940
                    *                                              8B424950
                    ********************************************   8B424960
01F5 0  C01C        A1D0  LD     N1D1     LD  /0000                8B424970
01F6 0  4820              BSC    Z        SK ON ZERO               8B424980
01F7 0  303F              DC     /303F    ERR ID + ERR WAIT        8B424990
                    *                     ACC NOT = ZERO           8B425000
01F8 0  F019              EOR    N1D1     ZERO WITH /0000          8B425010
01F9 0  4820              BSC    Z        SK ON ZERO               8B425020
01FA 0  3040              DC     /3040    ERR ID + ERR WAIT        8B425030
                    *                     EOR OF 0 AND 0 FAILED    8B425040
01FB 0  C015              LD     N1D0     LD  /FFFF                8B425050
01FC 0  F014              EOR    N1D0     ZERO WITH /FFFF          8B425060
01FD 0  4820              BSC    Z                                 8B425070
01FE 0  3041              DC     /3041    ERR ID + ERR WAIT        8B425080
                    *                     EOR OF 1 AND 1 FAILED    8B425090
01FF 0  F011              EOR    N1D0                              8B425100
0200 0  482C              BSC    +EZ                               8B425110
0201 0  4810              BSC    -                                 8B425120
0202 0  3042              DC     /3042    ERR ID + ERR WAIT        8B425130
                    *                     EOR OF 1 AND 0 FAILED    8B425140
0203 0  1801              SRA    1                                 8B425150
0204 0  F00E              EOR    N1D2                              8B425160
0205 0  4820              BSC    Z                                 8B425170
0206 0  3043              DC     /3043    ERR ID + ERR WAIT        8B425180
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PROCESSOR-CONTROLLER FUNCTION TEST

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                    *                     EOR OF 1 AND 0 FAILED    8B425190
0207 0  C009              LD     N1D0                              8B425200
0208 0  F009              EOR    N1D1                              8B425210
0209 0  482C              BSC    +EZ                               8B425220
020A 0  4810              BSC    -                                 8B425230
020B 0  3044              DC     /3044    ERR ID + ERR WAIT        8B425240
                    *                     EOR OF 0 AND 1 FAILED    8B425250
020C 0  1801              SRA    1                                 8B425260
020D 0  F005              EOR    N1D2                              8B425270
020E 0  4820              BSC    Z                                 8B425280
020F 0  3045              DC     /3045    ERR ID + ERR WAIT        8B425290
                    *                     EOR OF 0 AND 1 FAILED    8B425300
0210 0  7003              MDX    A1E0     EXIT TO NEXT ROUTINE     8B425310
0211 0  FFFF        N1D0  DC     /FFFF                             8B425320
0212 0  0000        N1D1  DC     /0000                             8B425330
0213 0  7FFF        N1D2  DC     /7FFF                             8B425340
                    *                                              8B425350
                    *                 TEST OF ABILITY TO SET       8B425360
                    *                 F BIT TO ONE                 8B425370
                    *                                              8B425380
                    ********************************************   8B425390
0214 00 C400021F    A1E0  LD   L N1E1     LD  /0000                8B425400
0216 0  4820              BSC    Z        SK ON ZERO               8B425410
0217 0  3046              DC     /3046    ERR ID + ERR WAIT        8B425420
                    *                     WRONG LOCATION LOADED    8B425430
0218 00 C400021E          LD   L N1E0     LD C(N1E0)               8B425440
021A 0  F003              EOR    N1E0                              8B425450
021B 0  4820              BSC    Z        SK ON ZERO               8B425460
021C 0  3047              DC     /3047    ERR ID + ERR WAIT        8B425470
                    *                     WRONG LOCATION LOADE     8B425480
021D 0  7002              MDX    A1F0     EXIT TO NEXT ROUTINE     8B425490
021E 0  021E        N1E0  DC     N1E0                              8B425500
021F 0  0000        N1E1  DC     /0000                             8B425510
                    *                                              8B425520
                    *                 TEST OF INDIRECT ADDRESSING  8B425530
                    *                                              8B425540
                    ********************************************   8B425550
0220 00 C480022C    A1F0  LD   I N1F2     LD  /0000                8B425560
0222 0  4820              BSC    Z        SK ON ZERO               8B425570
0223 0  3048              DC     /3048    ERR ID + ERR WAIT        8B425580
                    *                     WRONG LOCATION LOADED    8B425590
0224 00 C480022B          LD   I N1F1     LD C(N1F1)               8B425600
0226 0  F004              EOR    N1F1     ZERO WITH C(N1F1)        8B425610
0227 0  4820              BSC    Z                                 8B425620
0228 0  3049              DC     /3049    ERR ID + ERR WAIT        8B425630
                    *                     WRONG LOCATION LOADED    8B425640
0229 0  7003              MDX    A200     EXIT TO NEXT ROUTINE     8B425650
022A 0  0000        N1F0  DC     /0000                             8B425660
022B 0  022B        N1F1  DC     N1F1                              8B425670
022C 0  022A        N1F2  DC     N1F0                              8B425680
                    *                                              8B425690
                    *                 TEST OF BSC LONG FORM AND    8B425700
                    *                 INDIRECT OPERATION           8B425710
                    *                                              8B425720
                    ********************************************   8B425730
****************************************************************** 8B425740
CORE    DATA OR     *LA- OPER-                                     8B425750
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B425760
****************************************************************** 8B425770
022D 00 4C000231    A200  BSC  L G200                              8B425780
022F 0  304A              DC     /304A    ERR ID + ERR WAIT        8B425790
                    *                     BSC DID NOT BRANCH       8B425800
0230 0  304B              DC     /304B    ERR ID + ERR WAIT        8B425810
                    *                     BSC SKPD-SHOULD BRNCH    8B425820
0231 0  C03A        G200  LD     N200                              8B425830
0232 00 4C040236          BSC  L G201,E   BR IF NOT EVEN           8B425840
0234 0  304C              DC     /304C    ERR ID + ERR WAIT        8B425850
                    *                     BSC E DID NOT BRANCH     8B425860
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0235 0  304D                DC      /304D     ERR ID + ERR WAIT       8B425870
                     *                        BSC SKPD-SHOULD BRNCH   8B425880
0236 00 4C08023A     G201   BSC  L  G202,+    BR IF NOT PLUS          8B425890
0238 0  304E                DC      /304E     ERR ID + ERR WAIT       8B425900
                     *                        BSC - DID NOT BRANCH    8B425910
0239 0  304F                DC      /304F     ERR ID + ERR WAIT       9B425920
                     *                        BSC SKPD-SHOULD BRNCH   8B425930
023A 00 4C20023E     G202   BSC  L  G203,Z                            8B425940
023C 0  3050                DC      /3050     ERR ID + ERR WAIT       8B425950
                     *                        BSC Z DID NOT SKIP      8B425960
023D 0  3051                DC      /3051     ERR ID + ERR WAIT       8B425970
                     *                        BSC SKPD-SHOULD BRNCH   8B425980
023E 00 4C100241     G203   BSC  L  V154,-    BR IF NOT MINUS         8B425990
0240 0  7001                MDX     G204                              8B426000
0241 0  3052         V154   DC      /3052     ERR ID + ERR WAIT       8B426010
                     *                        BSC SKPD-SHOULD NOT     8B426020
0242 0  2003         G204   LDS     3         SET C AND OF ON         8B426030
0243 00 4C020247            BSC  L  G205,C    BR IF CARRY IS ON       8B426040
0245 0  3053                DC      /3053     ERR ID + ERR WAIT       8B426050
                     *                        BSC C DID NOT BRANCH    8B426060
0246 0  3054                DC      /3054     ERR ID + ERR WAIT       8B426070
                     *                        BSC SKPD-SHOULD BRNCH   8B426080
0247 00 4C01024B     G205   BSC  L  G208,C    BR IF OF ON             8B426090
0249 0  3055                DC      /3055     ERR ID + ERR WAIT       8B426100
                     *                        BSC O DID NOT BRANCH    8B426110
024A 0  3056                DC      /3056     ERR ID + ERR WAIT       8B426120
                     *                        BSC SKPD-SHOULD BRNCH   8B426130
024B 00 4C01024E     G208   BSC  L  V168,O    BR IF OF ON             8B426140
024D 0  7001                MDX     G206                              8B426150
024E 0  3057         V168   DC      /3057     ERR ID + ERR WAIT       8B426160
                     *                        BSC BRNCD-SHOULD NOT    8B426170
024F 0  2000         G206   LDS     0                                 8B426180
0250 00 4C020253            BSC  L  V170,C    BR IF CARRY IS OFF      8B426190
0252 0  7001                MDX     G207                              8B426200
0253 0  3058         V170   DC      /3058     ERR ID + ERR WAIT       8B426210
                     *                        BSC BRNCD-SHOULD NOT    8B426220
0254 00 4C010257     G207   BSC  L  V174,C    BR IF OF ON             8B426230
0256 0  7001                MDX     G209                              8B426240
0257 0  3059         V174   DC      /3059     ERR ID + ERR WAIT       8B426250
                     *                        BSC BRNCD-SHOULD NOT    8B426260
0258 0  C014         G209   LD      N201                              8B426270
0259 00 4C18025D            BSC  L  G20A,+-   BR ON ZERO              8B426280
025B 0  305A                DC      /305A     ERR ID + ERR WAIT       8B426290
                     *                        BSC +- DID NOT BRANCH   8B426300
025C 0  305B                DC      /305B     ERR ID + ERR WAIT       8B426310
                     *                        BSC SKPD-SHOULD BRNCH   8B426320
025D 0  C00E         G20A   LD      N200                              8B426330
025E 00 4C180261            BSC  L  V180,+-                           8B426340
0260 0  7001                MDX     G200                              8B426350
0261 0  305C         V180   DC      /305C     ERR ID + ERR WAIT       8B426360
                     *                        BSC BRNCHED-SHOULDNT    8B426370
0262 0  C00B         G20D   LD      N202                              8B426380
0263 00 4C180266            BSC  L  V184,+-                           8B426390
0265 0  7001                MDX     G208                              8B426400
0266 0  305D         V184   DC      /305D     ERR ID + ERR WAIT       8B426410
                     *                        BSC BRNCHED-SHOULDNT    8B426420
0267 00 4C80026F     G208   BSC  I  N203                              8B426430
0269 0  305E                DC      /305E     ERR ID + ERR WAIT       8B426440
                     *                        INDIRECT BSC FAILED     8B426450
026A 0  305F                DC      /305F     ERR ID + ERR WAIT       8B426460
                     *                        INDIRECT BSC FAILED     8B426470
026B 0  7004         G20C   MDX     A240      EXIT TO NEXT ROUTINE    8B426480
026C 0  FFFF         N200   DC      /FFFF                             8B426490
026D 0  0000         N201   DC      /0000                             8B426500
026E 0  0001         N202   DC      /0001                             8B426510
026F 0  026B         N203   DC      G20C                              8B426520
                     *                                                8B426530
                     *                TEST SHORT AND LONG FORM        8B426540
```



```
                     *                BSI                                             8B426550
                     *                                                                8B426560
                     ********************************************                    8B426570
**************************************************************************************** 8B426580
CORE  DATA OR        *LA- OPER-                                                       8B426590
ADDR  INSTRUCTION    *BEL ATION FT OPERANDS + REMARKS     ID+SEQ= AT RIGHT            8B426600
**************************************************************************************** 8B426610
0270 0  4002         A240 BSI     N241      STORE ADDRESS OF I REG                    8B426620
0271 0  0271         N240 DC      N240      STORE ADDRESS OF I REG                    8B426630
0272 0  3060              DC      /3060     ERR ID + ERR WAIT                         8B426640
                     *                      BSI SKPD-SHOULD BRNCH                     8B426650
0273 0  0000         N241 DC      /0000     RETURN ADDR FOR MAIN PROG                 8B426660
0274 0  C0FE              LD      N241      LD RETURN ADDR                            8B426670
0275 0  F0FB              EOR     N240      ZERO IN RETURN ADDR                       8B426680
0276 0  4820              BSC     Z                                                   8B426690
0277 0  3061              DC      /3061     ERR ID + ERR WAIT                         8B426700
                     *                      BSI NOT STORED I REG                      8B426710
0278 00 4408027D          BSI  L  N243,+    STORE ADDR OF I REG                       8B426720
027A 0  3062         V1AC DC      /3062     ERR ID + ERR WAIT                         8B426730
                     *                      BSI + DID NOT BRANCH                      8B426740
027B 0  3063              DC      /3063     ERR ID + ERR WAIT                         8B426750
                     *                      BSI SKPD-SHOULD BNCH                      8B426760
027C 0  027A         N242 DC      V1AC                                                8B426770
027D 0  0000         N243 DC      /0000     RETURN ADDR FOR MAIN PROG                 8B426780
027E 0  C0FE              LD      N243                                                8B426790
027F 0  F0FC              EOR     N242                                                8B426800
0280 0  4820              BSC     Z                                                   8B426810
0281 0  3064              DC      /3064     ERR ID + ERR WAIT                         8B426820
                     *                      BSI NOT STORE I REG                       8B426830
                     *                                                                8B426840
                     *              TEST OF INSTR REQUIRED FOR                        8B426850
                     *              ERROR CONTROL                                     8B426860
                     *                                                                8B426870
                     ********************************************                    8B426880
0282 0  C04A         A900 LD      F911      LD A NUMBER                               8B426890
0283 0  D04A              STO     F912                                                8B426900
0284 0  C04A              LD      F913                                                8B426910
0285 0  CC48              LD      F912                                                8B426920
0286 0  F046              EOR     F911                                                8B426930
0287 0  4820              BSC     Z                                                   8B426940
0288 0  3065              DC      /3065     ERR ID + ERR WAIT                         8B426950
                     *                      STORE FAILED                              8B426960
0289 0  C049              LD      F918      CK FIRST PASS SW (/0002)                  8B426970
028A 0  4820              BSC     Z         IS SW ON                                  8B426980
028B 0  704D              MDX     A280      YES GO TO NEXT ROUTINE                    8B426990
028C 0  C044              LD      F916      GET 0002                                  8B427000
028D 0  D045              STO     F918      STORE /0002                               8B427010
028E 0  1810              SRA     16        CLEAR ACC                                 8B427020
028F 00 D4000001          STO  L  /0001     ZERO WITH /0001                           8B427030
0291 0  61FF              LDX  1  -1        LD XR 1 WITH -1                           8B427040
0292 00 C4000001          LD   L  /0001     ZERO IN 1800 -1 FOR 1130                  8B427050
0294 0  4820              BSC     Z         ZERO FOR 1800                             8B427060
0295 0  7010              MDX     G901      1130 CPU                                  8B427070
0296 0  C03D              LD      F919      1800 P-C LD /0240                         8B427080
0297 0  D033              STO     F903      STO /0240 THIS IS AREA,                   8B427090
0298 00 D4000F81          STO  L  N8C2      * FUNCTION AND MODIFIER                   8B427100
029A 00 D4000FED          STO  L  F004      * FOR READING DATA ENTRY                  8B427110
029C 00 D4000FF4          STO  L  F007      * SWITCHES IN 1800                        8B427120
029E 0  0837         G902 XIO     F922      SENSE SENSE/PROG SWS                      8B427130
029F 0  E038              AND     F923      IGNORE CE SWS. (/FF00)                    8B427140
02A0 0  F037              EOR     F923      ZERO WITH /FF00                           8B427150
**************************************************************************************** 8B427160
CORE  DATA OR        *LA- OPER-                                                       8B427170
ADDR  INSTRUCTION    *BEL ATION FT OPERANDS + REMARKS     ID+SEQ= AT RIGHT            8B427180
**************************************************************************************** 8B427190
02A1 00 4C1802AE          BSC  L  G900,+-   BRANCH ON ZERO                            8B427200
02A3 0  F034              EOR     F923                                                8B427210
02A4 0  3066              DC      /3066     ERROR ID + ERR WAIT                       8B427220
```

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                         *                                   SENSE/PROG SWS NOT          88427230
                         *                                   * EQUAL TO /FF00            88427240
02A5 0  70F8                   MDX       G902                REPEAT TEST                 88427250
02A6 0  C02E             G901  LD        F920                1130 CPU  LD /3A00          88427260
02A7 0  D023                   STO       F903                STO /3A00  THIS IS          88427270
02A8 00 D4000F81               STO   L   N8C2                * AREA, FUNCTION +          88427280
02AA 00 D4000FED               STO   L   F004                * MODIFIER FOR READING      88427290
02AC 00 D4000FF4               STO   L   F007                * DATA ENTRY SWITCHES       88427300
02AE 0  081B             G900  XIO       F902                TEST DATA ENTRY SWS         88427310
02AF 0  C022                   LD        F917                * FOR /FFFF                 88427320
02B0 0  F01F                   EOR       F915                                            88427330
02B1 00 4C1802B6               BSC   L   X001,+-             BRANCH ON ZERO              88427340
02B3 0  F01C                   EOR       F915                                            88427350
02B4 0  3067                   DC        /3067               ERR ID + ERR WAIT           88427360
                         *                                   DATA ENTRY SWS NOT          88427370
                         *                                   EQUAL TO /FFFF              88427380
02B5 0  70F8                   MDX       G900                                            88427390
02B6 0  3001             X001  DC        /3001               SET SENSE/PROG AND          88427400
                         *                                   DATA ENTRY SWS TO           88427410
                         *                                   ZEROS AND PUSH START        88427420
02B7 0  C013                   LD        F903                CK FOR 1130 (3A00-1130)     88427430
02B8 0  F01C                   EOR       F920                                            88427440
02B9 00 4C1802C1               BSC   L   G904,+-             XFER IF 1130                88427450
02BB 0  081A             G903  XIO       F922                TEST SENSE/PROG SWS         88427460
02BC 0  E01B                   AND       F923                IGNORE CE SWS.  (/FF00)     88427470
02BD 00 4C1802C1               BSC   L   G904,+-             BRANCH IF CK                88427480
02BF 0  3068                   DC        /3068               ERR ID + ERR WAIT           88427490
                         *                                   SENSE/PROG SWS NOT          88427500
                         *                                   * EQUAL TO /0000            88427510
02C0 0  70FA                   MDX       G903                REPEAT TEST                 88427520
02C1 0  0808             G904  XIO       F902                TEST DATA ENTRY SWS         88427530
02C2 0  C00F                   LD        F917                * FOR /0000                 88427540
02C3 00 4C1802C7               BSC   L   X003,+-             BRANCH ON ZERO              88427550
02C5 0  3069                   DC        /3069               ERR ID + ERR WAIT           88427560
                         *                                   DATA ENTRY SWITCHES         88427570
                         *                                   * NOT EQ /0000              88427580
02C6 0  70FA                   MDX       G904                                            88427590
02C7 0  3002             X003  DC        /3002               SET BIT SWITCHES AS         88427600
                         *                                   * DESIRED FOR RUN           88427610
                         *                                   * AND PUSH START            88427620
02C8 0  7010                   MDX       A280                EXIT TO NEXT ROUTINE        88427630
02CA    0000                   BSS   E                                                   88427640
02CA 0  0202             F902  DC        F917                                            88427650
02CB 0  0240             F903  DC        /0240               EQUAL /3A00 IN 1130         88427660
02CC 0  02CC             F904  DC        F904                                            88427670
02CD 0  02CE             F911  DC        F912                                            88427680
02CE 0  0000             F912  DC        /0000                                           88427690
02CF 0  0000             F913  DC        /0000                                           88427700
02D0 0  FFFF             F915  DC        /FFFF                                           88427710
02D1 0  0002             F916  DC        /0002                                           88427720
02D2 0  0000             F917  DC        /0000                                           88427730
02D3 0  0000             F918  DC        /0000                                           88427740
02D4 0  0240             F919  DC        /0240               1800 READ BIT SWS CONSTANT  88427750
02D5 0  3A00             F920  DC        /3A00               1130 READ BIT SWS CONSTANT  88427760
02D6 0  0000             F922  DC        0                   SENSE SENSE/PROG CON        88427770
02D7 0  0760                   DC        /0760                                           88427780
02D8 0  FF00             F923  DC        /FF00                                           88427790
                         ********************************************************        88427800
                         ********************************************************        88427810
                         *                                                               88427820
                         *                       BEGINING OF SECTION OF                  88427830
                         *                       PROGRAM USING COMMON ERROR              88427840
                         *                       CONTROL ROUTINE                         88427850
                         *                                                               88427860
                         ********************************************************        88427870
                         ********************************************************        88427880
                         *                                                               88427890
                         *                       TEST OF SRA OPERATION                   88427900
```



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                         *                                                               88427910
                         ********************************************************        88427920
****************************************************************************************** 88427930
CORE    DATA OR          *LA- OPER-                                                      88427940
ADDR    INSTRUCTION      *BEL ATION FT OPERANDS + REMARKS       ID+SEQ= AT RIGHT         88427950
****************************************************************************************** 88427960
02D9 0  C039             A280  LD        N280                                            88427970
02DA 0  1810                   SRA       16                                              88427980
02DB 00 4C1802E0               BSC   L   G280,+-             BRANCH ON ZERO              88427990
02DD 00 44000F83               BSI   L   F000                SRA 16 FAILED               88428000
02DF 0  306A                   DC        /306A               ERR ID                      88428010
02E0 00 44000FDE         G280  BSI   L   F005                CK LOCK ON ERROR            88428020
02E2 0  70F6                   MDX       A280                LOOP                        88428030
                         ********************************************************        88428040
02E3 0  C030             A281  LD        N281                LD /8000                    88428050
02E4 0  180F                   SRA       15                  NOW A=/0001                 88428060
02E5 0  F02F                   EOR       N282                ZERO WITH /0001             88428070
02E6 00 4C1802EB               BSC   L   G281,+-             BRANCH ON ZERO              88428080
02E8 00 44000F83               BSI   L   F000                SRA 15 FAILED               88428090
02EA 0  306B                   DC        /306B               ERR ID                      88428100
02EB 00 44000FDE         G281  BSI   L   F005                CK LOCK ON ERROR            88428110
02ED 0  70F5                   MDX       A281                LOOP                        88428120
                         ********************************************************        88428130
02EE 0  C027             A282  LD        N283                LD /AAAA                    88428140
02EF 0  1801                   SRA       1                   NOW A=/5555                 88428150
02F0 0  F026                   EOR       N284                ZERO WITH /5555             88428160
02F1 00 4C1802F6               BSC   L   G282,+-             BRANCH ON ZERO              88428170
02F3 00 44000F83               BSI   L   F000                SRA 1 FAILED                88428180
02F5 0  306C                   DC        /306C               ERR ID                      88428190
02F6 00 44000FDE         G282  BSI   L   F005                CK LOCK ON ERROR            88428200
02F8 0  70F5                   MDX       A282                LOOP                        88428210
                         ********************************************************        88428220
02F9 0  C01D             A283  LD        N284                LD /5555                    88428230
02FA 0  1801                   SRA       1                   NOW A=/2AAA                 88428240
02FB 0  F01C                   EOR       N285                ZERO WITH /2AAA             88428250
02FC 00 4C180301               BSC   L   G283,+-             BRANCH ON ZERO              88428260
02FE 00 44000F83               BSI   L   F000                SRA 1 FAILED                88428270
0300 0  306D                   DC        /306D               ERR ID                      88428280
0301 00 44000FDE         G283  BSI   L   F005                CK LOCK ON ERROR            88428290
0303 0  70F5                   MDX       A283                LOOP                        88428300
                         ********************************************************        88428310
0304 0  C00F             A284  LD        N281                LD /8000                    88428320
0305 0  1801                   SRA       1                   NOW A- /4000                88428330
0306 0  1802                   SRA       2                   A= /1000                    88428340
0307 0  1804                   SRA       4                   A=/0100                     88428350
0308 0  1808                   SRA       8                   A = /0001                   88428360
0309 0  F008                   EOR       N282                ZERO WITH /0001             88428370
030A 00 4C18030F               BSC   L   G284,+-             BRANCH ON ZERO              88428380
030C 00 44000F83               BSI   L   F000                COMB SRA FAILED             88428390
030E 0  306E                   DC        /306E               ERR ID                      88428400
030F 00 44000FDE         G284  BSI   L   F005                CK LOCK ON ERROR            88428410
0311 0  70F2                   MDX       A284                LOOP                        88428420
0312 0  7006                   MDX       A2C0                EXIT TO NEXT ROUTINE        88428430
0313 0  FFFF             N280  DC        /FFFF                                           88428440
0314 0  8000             N281  DC        /8000                                           88428450
0315 0  0001             N282  DC        /0001                                           88428460
0316 0  AAAA             N283  DC        /AAAA                                           88428470
0317 0  5555             N284  DC        /5555                                           88428480
0318 0  2AAA             N285  DC        /2AAA                                           88428490
                         *                                                               88428500
                         *                       TEST OF AND FUNCTION                    88428510
                         *                                                               88428520
                         ********************************************************        88428530
****************************************************************************************** 88428540
CORE    DATA OR          *LA- OPER-                                                      88428550
ADDR    INSTRUCTION      *BEL ATION FT OPERANDS + REMARKS       ID+SEQ= AT RIGHT         88428560
****************************************************************************************** 88428570
0319 0  C029             A2C0  LD        N2C0                LD /0000                    88428580
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031A 0  E028          AND     N2C0        AND /0000                    8B428590
031B 00 4C180320      BSC  L  G2C0,+-     BRANCH ON ZERO               8B428600
031D 00 44000F83      BSI  L  F000        AND OF 0 AND FAILED          8B428610
031F 0  306F          DC      /306F       ERR ID                       8B428620
0320 00 44000FDE  G2C0 BSI  L  F005       CK LOCK ON ERROR             8B428630
0322 0  70F6          MDX     A2C0        LOOP                         8B428640
                      ********************************************     8B428650
0323 0  C01F          A2C4 LD     N2C0        LD /0000                 8B428660
0324 0  E01F          AND     N2C2        LD /FFFF                     8B428670
0325 00 4C18032A      BSC  L  G2C4,+-     BRANCH ON ZERO               8B428680
0327 00 44000F83      BSI  L  F000        AND OF 0 AND 1 FAILED        8B428690
0329 0  3070          DC      /3070       ERR ID                       8B428700
032A 00 44000FDE  G2C4 BSI  L  F005       CK LOCK ON ERROR             8B428710
032C 0  70F6          MDX     A2C4        LOOP                         8B428720
                      ********************************************     8B428730
032D 0  C016          A2C8 LD     N2C2        LD /FFFF                 8B428740
032E 0  E014          AND     N2C0        AND /0000                    8B428750
032F 00 4C180334      BSC  L  G2C8,+-     BRANCH ON ZERO               8B428760
0331 00 44000F83      BSI  L  F000        AND OF 1 AND 0 FAILED        8B428770
0333 0  3071          DC      /3071       ERR ID                       8B428780
0334 00 44000FDE  G2C8 BSI  L  F005       CK LOCK ON ERROR             8B428790
0336 0  70F6          MDX     A2C8        LOOP                         8B428800
                      ********************************************     8B428810
0337 0  C00C          A2CC LD     N2C2        LD /FFFF                 8B428820
0338 0  E00B          AND     N2C2        AND /FFFF                    8B428830
0339 0  F00A          EOR     N2C2        ZERO WITH /FFFF              8B428840
033A 00 4C18033F      BSC  L  G2CC,+-     BRANCH ON ZERO               8B428850
033C 00 44000F83      BSI  L  F000        AND OF 1 AND 1 FAILED        8B428860
033E 0  3072          DC      /3072       ERR ID                       8B428870
033F 00 44000FDE  G2CC BSI  L  F005       CK LOCK ON ERROR             8B428880
0341 0  70F5          MDX     A2CC        LOOP                         8B428890
0342 0  7002          MDX     A300        EXIT TO NEXT ROUTINE         8B428900
0343 0  0000          N2C0 DC     /0000                                8B428910
0344 0  FFFF          N2C2 DC     /FFFF                                8B428920
                      *                                                8B428930
                      *           TEST OF OR FUNCTION                  8B428940
                      *                                                8B428950
                      ********************************************     8B428960
************************************************************************8B428970
CORE    DATA OR     *LA- OPER-                                         8B428980
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B428990
************************************************************************8B429000
0345 0  C020          A300 LD     N300        LD /0000                 8B429010
0346 0  E81F          OR      N300        OR /0000                     8B429020
0347 00 4C18034C      BSC  L  G300,+-     BRANCH ON ZERO               8B429030
0349 00 44000F83      BSI  L  F000        OR OF 0 AND 0 FAILED         8B429040
034B 0  3073          DC      /3073       ERR ID                       8B429050
034C 00 44000FDE  G300 BSI  L  F005       CK LOCK ON ERROR             8B429060
034E 0  70F6          MDX     A300        LOOP                         8B429070
                      ***** ******* ****************************       8B429080
034F 0  C016          A302 LD     N300        LD /0000                 8B429090
0350 0  E816          OR      N302        OR /FFFF                     8B429100
0351 0  F015          EOR     N302        ZERO WITH /FFFF              8B429110
0352 00 4C180357      BSC  L  G302,+-     BRANCH ON ZERO               8B429120
0354 00 44000F83      BSI  L  F000        OR OF 0 AND 1 FAILED         8B429130
0356 0  3074          DC      /3074       ERR ID                       8B429140
0357 00 44000FDE  G302 BSI  L  F005       CHECK LOOP SWITCH            8B429150
0359 0  70F5          MDX     A302        LOOP                         8B429160
                      ********************************************     8B429170
035A 0  C00C          A304 LD     N302        LD /FFFF                 8B429180
0358 0  E80B          OR      N302        OR /FFFF                     8B429190
035C 0  F00A          EOR     N302        EOR IN /FFFF                 8B429200
035D 00 4C180362      BSC  L  G304,+-     BRANCH ON ZERO               8B429210
035F 00 44000F83      BSI  L  F000        OR OF 1 AND 1 FAILED         8B429220
0361 0  3075          DC      /3075       ERR ID                       8B429230
0362 00 44000FDE  G304 BSI  L  F005       CK LOCK ON ERROR             8B429240
0364 0  70F5          MDX     A304        LOOP                         8B429250
0365 0  7002          MDX     A340        EXIT TO NEXT ROUTINE         8B429260
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0366 0  0000          N300 DC     /0000                                8B429270
0367 0  FFFF          N302 DC     /FFFF                                8B429280
                      *                                                8B429290
                      *           TEST OF RTE 16 OPERATION             8B429300
                      *                                                8B429310
                      ********************************************     8B429320
************************************************************************8B429330
CORE    DATA OR     *LA- OPER-                                         8B429340
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B429350
************************************************************************8B429360
0368 0  C016          A340 LD     N340        LD /0000                 8B429370
0369 0  18D0          RTE     16          PLACE /0000 IN Q REG         8B429380
036A 0  C015          LD      N341        LD /FFFF                     8B429390
036B 0  18D0          RTE     16          NOW A=/0000  Q=/FFFF         8B429400
036C 00 4C180271      BSC  L  G340,+-     BRANCH ON ZERO               8B429410
036E 00 44000F83      BSI  L  F000        ALL 0 THRU Q FAILED          8B429420
0370 0  3076          DC      /3076       ERR ID                       8B429430
0371 00 44000FB2  G340 BSI  L  F00E       CK LOCK ON ERROR             8B429440
0373 0  70F4          MDX     A340        LOOP                         8B429450
0374 0  18D0          RTE     16          NOW A=/FFFF  Q=/0000         8B429460
0375 0  F00A          EOR     N341        ZERO WITH /FFFF              8B429470
0376 00 4C18037B      BSC  L  G342,+-     BRANCH ON ZERO               8B429480
0378 00 44000F83      BSI  L  F000        ALL 1 THRU Q FAILED          8B429490
037A 0  3077          DC      /3077       ERR ID                       8B429500
0378 00 44000FDE  G342 BSI  L  F005       CK LOCK ON ERROR             8B429510
037D 0  70EA          MDX     A340        LOOP                         8B429520
037E 0  7002          MDX     A380        EXIT TO NEXT ROUTINE         8B429530
037F 0  0000          N340 DC     /0000                                8B429540
0380 0  FFFF          N341 DC     /FFFF                                8B429550
                      *                                                8B429560
                      *           TEST OF SRT OPERATION                8B429570
                      *                                                8B429580
                      ********************************************     8B429590
0381 0  C055          A380 LD     N380        LD /8000                 8B429600
0382 0  18A0          SRT     32          NOW  A=/FFFF  Q=/FFFF        8B429610
0383 0  F054          EOR     N381        EOR IN /FFFF                 8B429620
0384 00 4C180389      BSC  L  G380,+-     BRANCH ON ZERO               8B429630
0386 00 44000F83      BSI  L  F000        SRT 32-A REG FAILED          8B429640
0388 0  3078          DC      /3078       ERR ID                       8B429650
0389 00 44000FB2  G380 BSI  L  F00E       CK LOCK ON ERROR             8B429660
038B 0  70F5          MDX     A380        LOOP                         8B429670
038C 0  18D0          RTE     16          NOW A=/FFFF  Q=/0000         8B429680
038D 0  F04A          EOR     N381        EOR IN /FFFF                 8B429690
038E 00 4C180393      BSC  L  G382,+-     BRANCH ON ZERO               8B429700
0390 00 44000F83      BSI  L  F000        SRT 32-Q REG FAILED          8B429710
0392 0  3079          DC      /3079       ERR ID                       8B429720
0393 00 44000FDE  G382 BSI  L  F005       CK LOCK ON ERROR             8B429730
0395 0  70EB          MDX     A380        LOOP                         8B429740
                      ********************************************     8B429750
0396 0  C042          A384 LD     N382        LD /4000                 8B429760
0397 0  18A0          SRT     32          NOW A=/0000  Q=/0000         8B429770
0398 00 4C18039D      BSC  L  G384,+-     BRANCH ON ZERO               8B429780
039A 00 44000F83      BSI  L  F000        SRT 32-A REG FAILED          8B429790
039C 0  307A          DC      /307A       ERR ID                       8B429800
039D 00 44000FDE  G384 BSI  L  F005       CK LOCK ON ERROR             8B429810
039F 0  70F6          MDX     A384        LOOP                         8B429820
03A0 0  18D0          RTE     16          NOW  A=/0000  Q=/0000        8B429830
03A1 00 4C1803A6      BSC  L  G386,+-     BRANCH ON ZERO               8B429840
03A3 00 44000F83      BSI  L  F000        SRT 32-Q REG FAILED          8B429850
03A5 0  307B          DC      /307B       ERR ID                       8B429860
03A6 00 44000FDE  G386 BSI  L  F005       CK LOCK ON ERROR             8B429870
03A8 0  70ED          MDX     A384        LOOP                         8B429880
                      ********************************************     8B429890
03A9 0  C030          A388 LD     N383        LD  /5555                8B429900
03AA 0  188F          SRT     15          NOW  A=/0000  Q=/0000        8B429910
03AB 00 4C1803B0      BSC  L  G388,+-     BRANCH ON ZERO               8B429920
03AD 00 44000F83      BSI  L  F000        SRT 15-A REG FAILED          8B429930
03AF 0  307C          DC      /307C       ERR ID                       8B429940
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03B0 00 44000FB2    G388  BSI  L  F00E       CK LOCK ON ERROR                    8B429950
03B2 0  70F6              MDX     A388        LOOP                                8B429960
03B3 0  18D0              RTE     16          NOW A=/AAAA  Q=/0000               8B429970
03B4 0  F026              EOR     N384        ZERO WITH /AAAA                     8B429980
03B5 00 4C1803BA          BSC  L  G36A,+-     BRANCH ON ZERO                      8B429990
03B7 00 44000F83          BSI  L  F000        SRT 15-Q REG FAILED                 8B430000
03B9 0  307D              DC      /307D       ERR ID                              8B430010
03BA 00 44000FDE    G38A  BSI  L  F005        CK LOCK ON ERROR                    8B430020
03BC 0  70EC              MDX     A388        LOOP                                8B430030
                    ********************************************                  8B430040
********************************************************************************* 8B430050
CORE    DATA OR     *LA- OPER-                                                    8B430060
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS    ID+SEQ= AT RIGHT        8B430070
********************************************************************************* 8B430080
03BD 0  C01C        A38C  LD        N383        LD /5555                        8B430090
03BE 0  1880              SRT     0           NOW A=/5555  Q=/0000                8B430100
03BF 0  1882              SRT     2           NOW  A=/1555  Q=/4000               8B430110
03C0 0  1884              SRT     4                    /0155    /5400             8B430120
03C1 0  1886              SRT     6                    /0005    /5550             8B430130
03C2 0  1888              SRT     8                    /0000    /0555             8B430140
03C3 0  188A              SRT     10                   /0000    /0001             8B430150
03C4 00 4C1803C9          BSC  L  G38C,+-     BRANCH ON ZERO                      8B430160
03C6 00 44000F83          BSI  L  F000        SERIES SRT FAILED                   8B430170
03C8 0  307E              DC      /307E       ERR ID                              8B430180
03C9 00 44000FB2    G38C  BSI  L  F00E        CK LOCK ON ERROR                    8B430190
03CB 0  70F1              MDX     A38C        LOOP                                8B430200
03CC 0  18D0              RTE     16          NOW  A=/0001  Q=/0000               8B430210
03CD 0  F00E              EOR     N385        ZERO WITH /0001                     8B430220
03CE 00 4C1803D3          BSC  L  G38E,+-     BRANCH ON ZERO                      8B430230
03D0 00 44000F83          BSI  L  F000        SERIES SRT FAILED                   8B430240
03D2 0  307F              DC      /307F       ERR ID                              8B430250
03D3 00 44000FDE    G38E  BSI  L  F005        CK LOCK ON ERROR                    8B430260
03D5 0  70E7              MDX     A38C        LOOP                                8B430270
03D6 0  7006              MDX     A3C0        EXIT TO NEXT ROUTINE                8B430280
03D7 0  8000        N380  DC      /8000                                           8B430290
03D8 0  FFFF        N381  DC      /FFFF                                           8B430300
03D9 0  4000        N382  DC      /4000                                           8B430310
03DA 0  5555        N383  DC      /5555                                           8B430320
03DB 0  AAAA        N384  DC      /AAAA                                           8B430330
03DC 0  0001        N385  DC      /0001                                           8B430340
                    *                                                             8B430350
                    *                TEST OF RTE OPERATION                        8B430360
                    *                                                             8B430370
                    ********************************************                  8B430380
03DD 0  C035        A3C0  LD        N3C1        LD /AAAA                        8B430390
03DE 0  18D0              RTE     16          NOW  A=/0000  Q=/AAAA               8B430400
03DF 0  C032              LD      N3C0        NOW  A=/5555  Q=/AAAA               8B430410
03E0 0  18CF              RTE     15          NOW  A=/5554  Q=/AAAB               8B430420
03E1 0  F034              EOR     N3C4        ZERO WITH /5554                     8B430430
03E2 00 4C1803E7          BSC  L  G3C0,+-     BRANCH ON ZERO                      8B430440
03E4 00 44000F83          BSI  L  F000        RTE 15-Q TO A FAILED                8B430450
03E6 0  3080              DC      /3080       ERR ID                              8B430460
03E7 00 44000FB2    G3C0  BSI  L  F00E        CK LOCK ON ERROR                    8B430470
03E9 0  70F3              MDX     A3C0        LOOP                                8B430480
03EA 0  18D0              RTE     16          NOW  A=/AAAB  Q=/5554               8B430490
03EB 0  F02B              EOR     N3C5        ZERO WITH /AAAB                     8B430500
03EC 00 4C1803F1          BSC  L  G3C2,+-     BRANCH ON ZERO                      8B430510
03EE 00 44000F83          BSI  L  F000        RTE 15-A TO Q FAILED                8B430520
03F0 0  3081              DC      /3081       ERR ID                              8B430530
03F1 00 44000FDE    G3C2  BSI  L  F005        CK LOCK ON ERROR                    8B430540
03F3 0  70E9              MDX     A3C0        LOOP                                8B430550
                    ********************************************                  8B430560
********************************************************************************* 8B430570
CORE    DATA OR     *LA- OPER-                                                    8B430580
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS    ID+SEQ= AT RIGHT        8B430590
********************************************************************************* 8B430600
03F4 0  C020        A3C4  LD        N3C3        LD /8000                        8B430610
03F5 0  18D0              RTE     16          NOW  A=/XXXX  Q=/8000               8B430620
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03F6 0  C01D              LD      N3C2        LD /0000                        8B430630
03F7 0  18C0              RTE     0           NOW  A=/0000  Q=/8000             8B430640
03F8 0  18C1              RTE     1                /0000    /4000             8B430650
03F9 0  18C2              RTE     2                /0000    /1000             8B430660
03FA 0  18C3              RTE     3                /0000    /0200             8B430670
03FB 0  18C4              RTE     4                /0000    /0020             8B430680
03FC 0  18C5              RTE     5                /0000    /0002             8B430690
03FD 0  18C6              RTE     6                /0400    /0000             8B430700
03FE 0  18CA              RTE     10               /0001    /0000             8B430710
03FF 0  F018              EOR     N3C6        ZERO WITH /0001                 8B430720
0400 00 4C180405          BSC  L  G3C4,+-     BRANCH ON ZERO                  8B430730
0402 00 44000F83          BSI  L  F000        SERIES RTE FAILED               8B430740
0404 0  3082              DC      /3082       ERR ID                          8B430750
0405 00 44000FB2    G3C4  BSI  L  F00E        CK LOCK ON ERROR                8B430760
0407 0  70EC              MDX     A3C4        LOOP                            8B430770
0408 0  18D0              RTE     16          NOW  A=/0000  Q=/0001           8B430780
0409 00 4C18040E          BSC  L  G3C6,+-     BRANCH ON ZERO                  8B430790
040B 00 44000F83          BSI  L  F000        SERIES RTE FAILED               8B430800
040D 0  3083              DC      /3083       ERR ID                          8B430810
040E 00 44000FDE    G3C6  BSI  L  F005        CK LOCK ON ERROR                8B430820
0410 0  70E3              MDX     A3C4        LOOP                            8B430830
0411 0  7007              MDX     A400        EXIT TO NEXT ROUTINE            8B430840
0412 0  5555        N3C0  DC      /5555                                       8B430850
0413 0  AAAA        N3C1  DC      /AAAA                                       8B430860
0414 0  0000        N3C2  DC      /0000                                       8B430870
0415 0  8000        N3C3  DC      /8000                                       8B430880
0416 0  5554        N3C4  DC      /5554                                       8B430890
0417 0  AAAB        N3C5  DC      /AAAB                                       8B430900
0418 0  0001        N3C6  DC      /0001                                       8B430910
                    *                                                         8B430920
                    *                TEST OF SLA OPERATION                    8B430930
                    *                                                         8B430940
                    ********************************************              8B430950
0419 00 C40004BD    A400  LD   L  N400        LD /FFFF                        8B430960
041B 0  18D0              RTE     16          NOW  A=/XXXX  Q=/FFFF           8B430970
041C 00 C40004BD          LD   L  N400        LD /FFFF                        8B430980
041E 0  1010              SLA     16          NOW A=/0000  Q=/FFFF            8B430990
041F 00 4C020424          BSC  L  G404,C      BR ON CARRY                     8B431000
0421 00 44000F83          BSI  L  F000        SLA 16-CARRY FAILED             8B431010
0423 0  3085              DC      /3085       ERR ID                          8B431020
0424 00 44000FB2    G404  BSI  L  F00E        CK LOCK ON ERROR                8B431030
0426 0  70F2              MDX     A400        LOOP                            8B431040
0427 00 4C18042C          BSC  L  G400,+-     BRANCH ON ZERO                  8B431050
0429 00 44000F83          BSI  L  F000        SLA 16-A REG FAILED             8B431060
042B 0  3084              DC      /3084       ERR ID                          8B431070
042C 00 44000FB2    G400  BSI  L  F00E        CK LOCK ON ERROR                8B431080
042E 0  70EA              MDX     A400        LOOP                            8B431090
042F 0  18D0              RTE     16          NOW  A=/FFFF  Q=/0000           8B431100
0430 00 F40004BD          EOR  L  N400        ZERO WITH /FFFF                 8B431110
0432 00 4C180437          BSC  L  G406,+-     BRANCH ON ZERO                  8B431120
0434 00 44000F83          BSI  L  F000        SLA 16-AFFECTED Q REG           8B431130
0436 0  3086              DC      /3086       ERR ID                          8B431140
0437 00 44000FDE    G406  BSI  L  F005        CK LOCK ON ERROR                8B431150
0439 0  70DF              MDX     A400        LOOP                            8B431160
                    ********************************************              8B431170
********************************************************************************* 8B431180
CORE    DATA OR     *LA- OPER-                                                8B431190
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS    ID+SEQ= AT RIGHT    8B431200
********************************************************************************* 8B431210
043A 00 C40004C2    A408  LD   L  N405        LD /0000                        8B431220
043C 0  18D0              RTE     16          NOW A=/XXXX  Q=/0000            8B431230
043D 00 C40004C3          LD   L  N406              /FFFE    /0000            8B431240
043F 0  1010              SLA     16                /0000    /0000            8B431250
0440 00 4C020443          BSC  L  G407,C      BR ON CARRY                     8B431260
0442 0  7003              MDX     G40C                                        8B431270
0443 00 44000F83    G407  BSI  L  F000        SLA 16- CARRY FAILED            8B431280
0445 0  3088              DC      /3088       ERR ID                          8B431290
0446 00 44000FB2    G40C  BSI  L  F00E        CK LOCK ON ERROR                8B431300
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0448 0  70F1          MDX     A408        LOOP                                  8B431310
0449 00 4C18044E      BSC  L  G408,+-     BRANCH ON ZERO                        8B431320
044B 00 44000F83      BSI  L  F000        SLA 16-A REG FAILED                   8B431330
044D 0  3087          DC      /3087       ERR ID                                8B431340
044E 00 44000FB2  G408 BSI  L  F00E        CK LOCK ON ERROR                      8B431350
0450 0  70E9          MDX     A408        LOOP                                  8B431360
0451 0  18D0          RTE     16          NOW  A=/0000  Q=/0000                 8B431370
0452 00 4C180457      BSC  L  G40E,+-     BRANCH ON ZERO                        8B431380
0454 00 44000F83      BSI  L  F000        SLA 16-AFFECTED Q REG                 8B431390
0456 0  3089          DC      /3089       EPR ID                                8B431400
0457 00 44000FDE  G40E BSI  L  F005        CK LOCK ON ERROR                      8B431410
0459 0  70E0          MDX     A408        LOOP                                  8B431420
                      ********************************************              8B431430
045A 0  C067      B400 LD     N405        LD  /0000                             8B431440
045B 0  18D0          RTE     1S          NOW  A=/XXXX  Q=/0000                 8B431450
045C 0  C063          LD      N403        LD  /AAAA                             8B431460
045D 0  1001          SLA     1           NOW  A=/5554  Q=/0000                 8B431470
045E 00 4C020463      BSC  L  H402,C      BRANCH ON CARRY                       8B431480
0460 00 44000F83      BSI  L  F000        SLA 1-CARRY FAILED                    8B431490
0462 0  308B          DC      /308B       ERR ID                                8B431500
0463 00 44000FB2  H402 BSI  L  F00E        CK LOCK ON ERROR                      8B431510
0465 0  70F4          MDX     B400        LOOP                                  8B431520
0466 0  F05A          EOR     N404        ZERO WITH /5554                       8B431530
0467 00 4C18046C      BSC  L  H400,+-     BRANCH ON ZERO                        8B431540
0469 00 44000F83      BSI  L  F000        SLA 1-A REG FAILED                    8B431550
046B 0  308A          DC      /308A       ERR ID                                8B431560
046C 00 44000FB2  H400 BSI  L  F00E        CK LOCK ON ERROR                      8B431570
046E 0  70EB          MDX     B400        LOOP                                  8B431580
046F 0  18D0          RTE     16          NOW  A=/0000  Q=/5554                 8B431590
0470 00 4C180475      BSC  L  H404,+-     BRANCH ON ZERO                        8B431600
0472 00 44000F83      BSI  L  F000        SRA 1-AFFECTED Q REG                  8B431610
0474 0  308C          DC      /308C       ERR ID                                8B431620
0475 00 44000FDE  H404 BSI  L  F005        CK LOCK ON ERROR                      8B431630
0477 0  70E2          MDX     B400        LOOP                                  8B431640
                      ********************************************              8B431650
0478 0  C049      B406 LD     N405        LD  /0000                             8B431660
0479 0  18D0          RTE     16          NOW  A=/XXXX  Q=/0000                 8B431670
047A 0  C044          LD      N402        LD /5555                              8B431680
047B 0  1001          SLA     1           NOW A=/AAAA  Q=/0000                  8B431690
047C 00 4C02047F      BSC  L  H407,C      BR ON CARRY                           8B431700
047E 0  7003          MDX     H405                                              8B431710
047F 00 44000F83  H407 BSI  L  F000        SLA 1-CARRY FAILED                    8B431720
0481 0  308E          DC      /308E       ERR ID                                8B431730
0482 00 44000FB2  H405 BSI  L  F00E        CK LOCK ON ERROR                      8B431740
0484 0  70F3          MDX     B406        LOOP                                  8B431750
0485 0  F03A          EOR     N403        ZERO WITH /AAAA                       8B431760
0486 00 4C18046B      BSC  L  H406,+-     BRANCH ON ZERO                        8B431770
0488 00 44000F83      BSI  L  F000        SLA 1-A REG FAILED                    8B431780
048A 0  308D          DC      /308D       ERR ID                                8B431790
048B 00 44000FB2  H406 BSI  L  F00E        CK LOCK ON ERROR                      8B431800
048D 0  70EA          MDX     B406        LOOP                                  8B431810
048E 0  18D0          RTE     16          NOW  A=/0000  Q=/AAAA                 8B431820
048F 00 4C180494      BSC  L  H408,+-     BRANCH ON ZERO                        8B431830
0491 00 44000F83      BSI  L  F000        SLA 1-AFFECTED Q REG                  8B431840
0493 0  308F          DC      /308F       ERR ID                                8B431850
0494 00 44000FDE  H408 BSI  L  F005        CK LOCK ON ERROR                      8B431860
0496 0  70E1          MDX     B406        LOOP                                  8B431870
                      ********************************************              8B431880
************************************************************************      8B431890
CORE    DATA OR     *LA- OPER-                                                8B431900
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS    ID+SEQ= AT RIGHT      8B431910
************************************************************************      8B431920
0497 0  C02A      B40A LD     N405        LD /0000                              8B431930
0498 0  18D0          RTE     16          NOW A=/XXXX  Q=/0000                  8B431940
0499 0  C024          LD      N401        LD /0001                              8B431950
049A 0  6101          LDX  1  1                                                 8B431960
0498 0  6204          LDX  2  4                                                 8B431970
049C 0  6303          LDX  3  3                                                 8B431980
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049D 0  1000          SLA     0           NOW A=/0001  Q=/0000                 8B431990
049E 0  1100          SLA  1  0                /0002     /0000                 8B432000
049F 0  1002          SLA     2                /0008     /0000                 8B432010
04A0 0  1200          SLA  2  0                /0080     /0000                 8B432020
04A1 0  1006          SLA     6                /2000     /0000                 8B432030
04A2 0  1300          SLA  3  0                /0000     /0000                 8B432040
04A3 00 4C0204A8      BSC  L  H40D,C      BRANCH ON CARRY                       8B432050
04A5 00 44000F83      BSI  L  F000        COMB SLA-CARRY FAILED                 8B432060
04A7 0  3091          DC      /3091       ERR ID                                8B432070
04A8 00 44000FB2  H40D BSI  L  F00E        CK LOCK ON ERROR                      8B432080
04AA 0  70EC          MDX     B40A        LOOP                                  8B432090
04AB 00 4C1804B0      BSC  L  H40A,+-     BRANCH ON ZERO                        8B432100
04AD C0 44000F83      BSI  L  F000        COMB SLA-A REG FAILED                 8B432110
04AF 0  3090          DC      /3090       ERR ID                                8B432120
04B0 00 44000FB2  H40A BSI  L  F00E        CK LOCK ON ERROR                      8B432130
04B2 0  70E4          MDX     B40A        LOOP                                  8B432140
04B3 0  18D0          RTE     16                                                8B432150
04B4 00 4C1804B9      BSC  L  H40E,+-     BRANCH ON ZERO                        8B432160
04B6 00 44000F83      BSI  L  F000        COMB SLA-AFFECTED Q                   8B432170
04B8 0  3092          DC      /3092       ERR ID                                8B432180
04B9 00 44000FDE  H40E BSI  L  F005        CK LOCK ON ERROR                      8B432190
04BB 0  70DB          MDX     B40A        LOOP                                  8B432200
04BC 0  7007          MDX     A440        EXIT TO NEXT ROUTINE                  8B432210
04BD 0  FFFF      N400 DC     /FFFF                                             8B432220
04BE 0  0001      N401 DC     /0001                                             8B432230
04BF 0  5555      N402 DC     /5555                                             8B432240
04C0 0  AAAA      N403 DC     /AAAA                                             8B432250
04C1 0  5554      N404 DC     /5554                                             8B432260
04C2 0  0000      N405 DC     /0000                                             8B432270
04C3 0  FFFE      N406 DC     /FFFE                                             8B432280
                  *                                                             8B432290
                  *                 TEST OF SLT OPERATION                       8B432300
                  *                                                             8B432310
                  ********************************************                  8B432320
04C4 0  C07E      A440 LD     N440        LD /0001                              8B432330
04C5 0  18D0          RTE     16          NOW A=/XXXX  Q=Q=/0001                8B432340
04C6 0  C07D          LD      N441        LD  /0000                             8B432350
04C7 0  10A0          SLT     32               /0000  Q=/0000                   8B432360
04C8 00 4C0204CD      BSC  L  G442,C      BRANCH ON CARRY                       8B432370
04CA 00 44000F83      BSI  L  F000        SLT 32-CARRY FAILED                   8B432380
04CC 0  3094          DC      /3094       ERR ID                                8B432390
04CD 00 44000FB2  G442 BSI  L  F00E        CK LOCK ON ERROR                      8B432400
04CF 0  70F4          MDX     A440        LOOP                                  8B432410
04D0 00 4C1804D5      BSC  L  G440,+-     BRANCH ON ZERO                        8B432420
04D2 00 44000F83      BSI  L  F000        SLT 32-A REG FAILED                   8B432430
04D4 0  3093          DC      /3093       ERR ID                                8B432440
04D5 00 44000FB2  G440 BSI  L  F00E        CK LOCK ON ERROR                      8B432450
04D7 0  70EC          MDX     A440        LOOP                                  8B432460
04D8 0  18D0          RTE     16          NOW  A=/0000  Q=/0000                 8B432470
04D9 00 4C1804DE      BSC  L  G443,+-     BRANCH ON ZERO                        8B432480
04DB 00 44000F83      BSI  L  F000        SLT 32-Q REG FAILED                   8B432490
04DD 0  3095          DC      /3095       ERR ID                                8B432500
04DE 00 44000FDE  G443 BSI  L  F005        CK LOCK ON ERROR                      8B432510
04E0 0  70E3          MDX     A440        LOOP                                  8B432520
                      ********************************************              8B432530
************************************************************************      8B432540
CORE    DATA OR     *LA- OPER-                                                8B432550
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS    ID+SEQ= AT RIGHT      8B432560
************************************************************************      8B432570
04E1 0  C063      A444 LD     N442        LD  /FFFF                             8B432580
04E2 0  18D0          RTE     16          NOW  A=/XXXX  Q=/FFFF                 8B432590
04E3 0  C060          LD      N441        LD  /0000                             8B432600
04E4 0  1090          SLT     16          NOW  A=/FFFF  Q=/0000                 8B432610
04E5 00 4C0204E8      BSC  L  G446,C      BR ON CARRY                           8B432620
04E7 0  7003          MDX     G447                                              8B432630
04E8 00 44000F83  G446 BSI  L  F000        SLT 16-CARRY FAILED                   8B432640
04EA 0  3097          DC      /3097       ERR ID                                8B432650
04EB 00 44000FB2  G447 BSI  L  F00E        CK LOCK ON ERROR                      8B432660
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PROCESSOR-CONTROLLER FUNCTION TEST

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04ED 0  70F3              MDX     A444       LOOP                        8B432670
04EE 0  F056              EOR     N442       ZERO WITH /FFFF             8B432680
04EF 00 4C1804F4          BSC  L  G444,+-    BRANCH ON ZERO              8B432690
04F1 00 44000F83          BSI  L  F000       SLT 16-A REG FAILED         8B432700
04F3 0  3096              DC      /3096      ERR ID                      8B432710
04F4 00 44000FB2    G444  BSI  L  F00E       CK LOCK ON ERROR            8B432720
04F6 0  70FA              MDX     A444       LOOP                        8B432730
04F7 0  18D0              RTE     16         NOW A=/0000  Q=/0000        8B432740
04F8 00 4C1804FD          BSC  L  G448,+-    BRANCH ON ZERO              8B432750
04FA 00 44000F83          BSI  L  F000       SLT 16-Q REG FAILED         8B432760
04FC 0  3098              DC      /3098      ERR ID                      8B432770
04FD 00 44000FDE    G448  BSI  L  F005       CK LOCK ON ERROR            8B432780
04FF 0  70E1              MDX     A444       LOOP                        8B432790
                    ******************************************           8B432800
0500 0  C045        A44A  LD      N443       LD  /5555                   8B432810
0501 0  18D0              RTE     16         NOW  A=/XXXX  Q=/5555       8B432820
0502 0  C041              LD      N441             /0000     /5555       8B432830
0503 0  108F              SLT     15               /2AAA     /8000       8B432840
0504 00 4C020507          BSC  L  G44C,C     BR ON CARRY                 8B432850
0506 0  7003              MDX     G44D                                   8B432860
0507 00 44000F83    G44C  BSI  L  F000       SLT 15-CARRY FAILED         8B432870
0509 0  309A              DC      /309A      ERR ID                      8B432880
050A 00 44000FB2    G44D  BSI  L  F00E       CK LOCK ON ERROR            8B432890
050C 0  70F3              MDX     A44A       LOOP                        8B432900
050D 0  F039              EOR     N444       ZERO WITH /2AAA             8B432910
050E 00 4C180513          BSC  L  G44A,+-    BRANCH ON ZERO              8B432920
0510 00 44000F83          BSI  L  F000       SLT 15-A REG FAILED         8B432930
0512 0  3099              DC      /3099      ERR ID                      8B432940
0513 00 44000FB2    G44A  BSI  L  F00E       CK LOCK ON ERROR            8B432950
0515 0  70EA              MDX     A44A       LOOP                        8B432960
0516 0  18D0              RTE     16         NOW  A=/8000  Q=/0000       8B432970
0517 0  F030              EOR     N445       ZERO WITH /8000             8B432980
0518 00 4C18051D          BSC  L  G44E,+-    BRANCH ON ZERO              8B432990
051A 00 44000F83          BSI  L  F000       SLT 15-Q REG FAILED         8B433000
051C 0  309B              DC      /309B      ERR ID                      8B433010
051D 00 44000FDE    G44E  BSI  L  F005       CK LOCK ON ERROR            8B433020
051F 0  70E[illegible]    MDX     A44A       LOOP                        8B433030
                    ******************************************           8B433040
********************  ********************************************** 8B433050
CORE    DATA OR     *LA- OPER-                                         8B433060
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B433070
****************************************************************** 8B433080
0520 0  C022        B440  LD      N440       LD  /0001                   8B433090
0521 0  18D0              RTE     16         NOW  A=/XXXX  Q=/0001       8B433100
0522 0  C021              LD      N441       LD /0000                    8B433110
0523 0  1080              SLT     0          NOW  A=/0000  Q=/0001       8B433120
0524 0  1081              SLT     1                /0000     /0002       8B433130
0525 0  1085              SLT     5                /0000     /0040       8B433140
0526 0  1087              SLT     7                /0000     /2000       8B433150
0527 0  1089              SLT     9                /0040     /0000       8B433160
0528 0  108A              SLT     10               /0000     /0000       8B433170
0529 00 4C02052E          BSC  L  H443,C     BR ON CARRY                 8B433180
052B 00 44000F83          BSI  L  F000       COMB SLT-CARRY FAILED       8B433190
052D 0  309D              DC      /309D      ERR ID                      8B433200
052E 00 44000FB2    H443  BSI  L  F00E       CK LOCK ON ERROR            8B433210
0530 0  70EF              MDX     B440       LOOP                        8B433220
0531 00 4C180536          BSC  L  H440,+     BRANCH ON ZERO              8B433230
0533 00 44000F83          BSI  L  F000       COMB SLT-A REG FAILE        8B433240
0535 0  309C              DC      /309C      ERR ID                      8B433250
0536 00 44000FB2    H440  BSI  L  F00E       CK LOCK ON ERROR            8B433260
0538 0  70E7              MDX     B440       LOOP                        8B433270
0539 0  18D0              RTE     16         NOW  A=/0000  Q=/0000       8B433280
053A 00 4C18053F          BSC  L  H444,+-    BRANCH ON ZERO              8B433290
053C 00 44000F83          BSI  L  F000       COMB SLT-Q REG FAILE        8B433300
053E 0  309E              DC      /309E      ERR ID                      8B433310
053F 00 44000FDE    H444  BSI  L  F005       CK LOCK ON ERROR            8B433320
0541 0  700E              MDX     B440       LOOP                        8B433330
0542 0  7006              MDX     A480       EXIT TO NEXT ROUTINE        8B433340
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PROCESSOR-CONTROLLER FUNCTION TEST

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0543 0  0001        N440  DC      /0001                                  8B433350
0544 0  0000        N441  DC      /0000                                  8B433360
0545 0  FFFF        N442  DC      /FFFF                                  8B433370
0546 0  5555        N443  DC      /5555                                  8B433380
0547 0  2AAA        N444  DC      /2AAA                                  8B433390
0548 0  8000        N445  DC      /8000                                  8B433400
                    *                                                    8B433410
                    *                  TEST OF STO OPERATION             8B433420
                    *                                                    8B433430
                    ******************************************           8B433440
0549 0  C019        A480  LD      N480       LD  /0000                   8B433450
054A 0  D01A              STO     N482       STO  /0000                  8B433460
054B 0  C018              LD      N481       LD  /FFFF                   8B433470
054C 0  C018              LD      N482       LD  /0000                   8B433480
054D 00 4C180552          BSC  L  G480,+-    BRANCH ON ZERO              8B433490
054F 00 44000F83          BSI  L  F000       STO ZEROS FAILED            8B433500
0551 0  309F              DC      /309F      EPR ID                      8B433510
0552 00 44000FDE    G480  BSI  L  F005       CK LOCK ON ERROR            8B433520
0554 0  70F4              MDX     A480       LOOP                        8B433530
                    ******************************************           8B433540
0555 0  C00E        A482  LD      N481       LD  /FFFF                   8B433550
0556 0  D00E              STO     N482                                   8B433560
0557 0  C00B              LD      N480       LD  /0000                   8B433570
0558 0  C00C              LD      N482       LD  /FFFF                   8B433580
0559 0  F00A              EOR     N481       ZERO WITH /FFFF             8B433590
055A 00 4C18055F          BSC  L  G482,+-    BRANCH ON ZERO              8B433600
055C 00 44000F83          BSI  L  F000       STO ONES FAILED             8B433610
055E 0  30A0              DC      /30A0      ERR ID                      8B433620
055F 00 44000FDE    G482  BSI  L  F005       CK LOCK ON ERROR            8B433630
0561 0  70F3              MDX     A482       LOOP                        8B433640
0562 0  7003              MDX     A4C0       EXIT TO NEXT ROUTINE        8B433650
0563 0  0000        N480  DC      /0000                                  8B433660
0564 0  FFFF        N481  DC      /FFFF                                  8B433670
0565 0  FFFF        N482  DC      /FFFF                                  8B433680
                    *                                                    8B433690
                    *                  TEST OF STS OPERATION             8B433700
                    *                                                    8B433710
                    ******************************************           8B433720
****************************************************************** 8B433730
CORE    DATA OR     *LA- OPER-                                         8B433740
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B433750
****************************************************************** 8B433760
0566 0  2000        A4C0  LDS     0          SET C AND OF OFF            8B433770
0567 0  285B              STS     N4C0                                   8B433780
0568 0  C05A              LD      N4C0                                   8B433790
0569 00 4C18056E          BSC  L  G4C0,+-                                8B433800
056B 00 44000F83          BSI  L  F000       STS FAILED TO STORE         8B433810
056D 0  30A1              DC      /30A1      ERR ID                      8B433820
056E 00 44000FDE    G4C0  BSI  L  F005       CK LOCK ON ERROR            8B433830
0570 0  70F5              MDX     A4C0       LOOP                        8B433840
                    ******************************************           8B433850
0571 0  C0FF        A4C2  LD      A4C2                                   8B433860
0572 0  2003              LDS     3                                      8B433870
0573 0  284F              STS     N4C0                                   8B433880
0574 0  F0FC              EOR     A4C2                                   8B433890
0575 00 4C18057A          BSC  L  H4C3,+-    BRANCH ON ZERO              8B433900
0577 00 44000F83          BSI  L  F000       ACC GONE AFT LDS-STS        8B433910
0579 0  30A3              DC      /30A3      ERR ID                      8B433920
057A 00 4C02057D    H4C3  BSC  L  H4C2,C     BR IF CARRY IS NO           8B433930
057C 0  7003              MDX     G4C2                                   8B433940
057D 00 44000F83    H4C2  BSI  L  F000       STS NOT CLEAR CARRY         8B433950
057F 0  30A2              DC      /30A2      ERR ID                      8B433960
0580 00 44000FB2    G4C2  BSI  L  F00E       CK LOCK ON ERROR            8B433970
0582 0  70EE              MDX     A4C2       LOOP                        8B433980
0583 00 4C010586          BSC  L  H4C4,C     BR IF CARRY IS ON           8B433990
0585 0  7003              MDX     G4C4                                   8B434000
0586 00 44000F83    H4C4  BSI  L  F000       STS NOT CLEAR OVERFLW       8B434010
0588 0  30A4              DC      /30A4      ERR ID                      8B434020
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0589 00 44000FB2    G4C4  BSI  L  F00E       CK LOCK ON ERROR                8B434030
058B 0  70E5              MDX     A4C2       LOOP                            8B434040
058C 0  C036              LD      N4C0                                       8B434050
058D 0  F036              EOR     N4C1                                       8B434060
058E 00 4C1805B3          BSC  L  G4C6,+-    BRANCH ON ZERO                  8B434070
0590 00 44000F83          BSI  L  F000       STS FAILED TO STORE             8B434080
0592 0  30A5              DC      /30A5      ERR ID                          8B434090
0593 00 44000FDE    G4C6  BSI  L  F005       CK LOCK ON ERROR                8B434100
0595 0  70DB              MDX     A4C2       LOOP                            8B434110
                    ********************************************            8B434120
0596 0  2002        A4C8  LDS     2          SET C ON    OF OFF              8B434130
0597 0  282B              STS     N4C0       SET /0002 IN N4C0               8B434140
0598 0  282C              STS     N4C2       SET /0002 IN N4C2               8B434150
0599 0  C029              LD      N4C0       LD /0002                        8B434160
059A 0  F02B              EOR     N4C3       ZERO WITH /0002                 8B434170
059B 00 4C1805A0          BSC  L  G4C8,+-    BRANCH ON ZERO                  8B434180
059D 00 44000F83          BSI  L  F000       STS FAILED TO STORE             8B434190
059F 0  30A6              DC      /30A6      ERR ID                          8B434200
05A0 00 44000FB2    G4C8  BSI  L  F00E       CK LOCK ON ERROR                8B434210
05A2 0  70F3              MDX     A4C8       LOOP                            8B434220
05A3 0  C021              LD      N4C2       LD /0002                        8B434230
05A4 00 4C1805A9          BSC  L  G4CA,+-    BRANCH ON ZERO                  8B434240
05A6 00 44000F83          BSI  L  F000       STS NOT CLEAR CARRY             8B434250
05A8 0  30A7              DC      /30A7      ERR ID                          8B434260
05A9 00 44000FDE    G4CA  BSI  L  F005       CK LOCK ON ERROR                8B434270
05AB 0  70EA              MDX     A4C8       LOOP                            8B434280
                    ********************************************            8B434290
05AC 0  2001        A4CC  LDS     1          SET C-OFF  OF - ON              8B434300
05AD 0  2815              STS     N4C0       SET /0001 IN N4C0               8B434310
05AE 0  2816              STS     N4C2       SET /0001 IN N4C2               8B434320
05AF 0  C013              LD      N4C0       LD /0001                        8B434330
05B0 0  F016              EOR     N4C4       ZERO WITH /0001                 8B434340
05B1 00 4C1805B6          BSC  L  G4CC,+-    BRANCH ON ZERO                  8B434350
05B3 00 44000F83          BSI  L  F000       STS FAILED TO STORE             8B434360
05B5 0  30A8              DC      /30A8      ERR ID                          8B434370
05B6 00 44000FB2    G4CC  BSI  L  F00E       CK LOCK ON ERROR                8B434380
05B8 0  70F3              MDX     A4CC       LOOP                            8B434390
05B9 0  C00B              LD      N4C2       LD /0001                        8B434400
05BA 00 4C1805BF          BSC  L  G4CD,+-    BRANCH ON ZERO                  8B434410
05BC 00 44000F83          BSI  L  F000       STS NOT CLEAR OVERFL            8B434420
05BE 0  30A9              DC      /30A9      ERR ID                          8B434430
05BF 00 44000FDE    G4CD  BSI  L  F005       CK LOCK ON ERROR                8B434440
05C1 0  70EA              MDX     A4CC       LOOP                            8B434450
05C2 0  7005              MDX     A500       EXIT TO NEXT ROUTINE            8B434460
05C3 0  0003        N4C0  DC      /0003                                      8B434470
05C4 0  0003        N4C1  DC      /0003                                      8B434480
05C5 0  0000        N4C2  DC      /0000                                      8B434490
05C6 0  0002        N4C3  DC      /0002                                      8B434500
05C7 0  0001        N4C4  DC      /0001                                      8B434510
                    *                                                        8B434520
                    *              TEST OF BSC OPERATION                     8B434530
                    *                                                        8B434540
                    ********************************************            8B434550
************************************************************************** 8B434560
CORE    DATA OR     *LA- OPER-                                             8B434570
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT     8B434580
************************************************************************** 8B434590
05C8 0  2003        A500  LDS     3          SET C AND OF ON                 8B434600
05C9 00 C400065C          LD   L  N500       LD /8001                        8B434610
05CB 0  482F              BSC     O+EZC      SK IF OF OFF, PLUS, EVEN,       8B434620
                    *                        * ZERO OR CARRY OFF.            8B434630
05CC 0  7003              MDX     G500                                       8B434640
05CD 00 44000F83          BSI  L  F000       BSC SKPD-SHOULD NOT             8B434650
05CF 0  30AA              DC      /30AA      ERR ID                          8B434660
05D0 00 44000FDE    G500  BSI  L  F005       CK LOCK ON ERROR                8B434670
05D2 0  70F5              MDX     A500       LOOP                            8B434680
                    ********************************************            8B434690
05D3 0  2003        A502  LDS     3          SET C + OF ON                   8B434700
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05D4 00 C400065D          LD   L  N501       LD /0000                        8B434710
05D6 0  481B              BSC     -OC+       SK IF MINUS, OF OFF, CARRY      8B434720
                    *                        *OFF OR PLUS                    8B434730
05D7 0  7003              MDX     G502                                       8B434740
05D8 00 44000F83          BSI  L  F000       BSC SKPD-SHOULD NOT             8B434750
05DA 0  30AB              DC      /30AB      ERR ID                          8B434760
05DB 00 44000FDE    G502  BSI  L  F005       CK LOCK ON ERROR                8B434770
05DD 0  70F5              MDX     A502       LOOP                            8B434780
                    ********************************************            8B434790
05DE 0  2003        A504  LDS     3          SET C AND OF ON                 8B434800
05DF 0  C07E              LD      N502       LD /8000                        8B434810
05E0 0  2809              STS     N507       SET /0003 IN N507               8B434820
05E1 0  4815              BSC     O-E        SK IF OF OFF,MUNIS OR EVEN      8B434830
05E2 0  7001              MDX     G504                                       8B434840
05E3 0  7003              MDX     G505                                       8B434850
05E4 00 44000F83    G504  BSI  L  F000       BSC FAILED TO SKIP              8B434860
05E6 0  30AC              DC      /30AC      ERR ID                          8B434870
05E7 00 44000FB2    G505  BSI  L  F00E       CK LOCK ON ERROR                8B434880
05E9 0  70F4              MDX     A504       LOOP                            8B434890
05EA 0  2000        N507  LDS     0          SET C + OF OFF                  8B434900
05EB 0  4801              BSC     O          SKIP IF OVERFLOW IS OFF         8B434910
05EC 0  4801              BSC     O                                          8B434920
05ED 0  7001              MDX     G506                                       8B434930
05EE 0  7003              MDX     G507                                       8B434940
05EF 00 44000F83    G506  BSI  L  F000       BSC NOT CLEAR OVERFLW           8B434950
05F1 0  30AD              DC      /30AD      ERR ID                          8B434960
05F2 00 44000FDE    G507  BSI  L  F005       CK LOCK ON ERROR                8B434970
05F4 0  70E9              MDX     A504       LOOP                            8B434980
                    ********************************************            8B434990
05F5 0  2000        A508  LDS     0          SET C AND OF OFF                8B435000
05F6 0  C068              LD      N503       LD /0001                        8B435010
05F7 0  482A              BSC     C+Z        SK IF CARRY OFF, PLUS           8B435020
                    *                        * OR ZERO                       8B435030
05F8 0  7001              MDX     G508                                       8B435040
05F9 0  7003              MDX     H508                                       8B435050
05FA 00 44000F83    G508  BSI  L  F000       BSC FAILED TO SKIP              8B435060
05FC 0  30AE              DC      /30AE      ERR ID                          8B435070
05FD 00 44000FDE    H508  BSI  L  F005       CK LOCK ON ERROR                8B435080
05FF 0  70F5              MDX     A508       LOOP                            8B435090
                    ********************************************            8B435100
0600 0  2003        A50A  LDS     3          SET C AND OF ON                 8B435110
0601 0  C05A              LD      N500       LD /8001                        8B435120
0602 00 4C0F0613          BSC  L  G50A,+OCE  BR ON NOT PLUS, OF ON,          8B435130
                    *                        * CARRY ON OR NOT EVEN          8B435140
0604 0  7001              MDX     H50A                                       8B435150
0605 0  7007              MDX     J50A                                       8B435160
0606 00 44000F83    H50A  BSI  L  F000       BSC FELL THRU                   8B435170
0608 0  30AF              DC      /30AF      ERR ID                          8B435180
0609 00 44000FB2          BSI  L  F00E       CK LOCK ON ERROR                8B435190
060B 0  70F4              MDX     A50A       LOOP                            8B435200
060C 0  7006              MDX     G50A                                       8B435210
060D 00 44000F83    J50A  BSI  L  F000       BSC SKPD-SHOULD BRNCH           8B435220
060F 0  3080              DC      /3080      ERR ID                          8B435230
0610 00 44000FB2          BSI  L  F00E       CK LOCK ON ERROR                8B435240
0612 0  70ED              MDX     A50A       LOOP                            8B435250
0613 0  F048        G50   EOR     N500       ZERO WITH /8001                 8B435260
0614 0  4820              BSC     Z          SK ON ZERO                      8B435270
0615 0  7001              MDX     H50B                                       8B435280
0616 0  7003              MDX     K50B                                       8B435290
0617 00 44000F83    H50B  BSI  L  F000       ACC DISTPOYED AFTER BSC         8B435300
0619 0  3170              DC      /3170      ERR ID                          8B435310
061A 00 44000FDE    K50B  BSI  L  F005       CK LOCK ON ERROR                8B435320
061C 0  7000              MDX     A50C       EXIT TO NEXT ROUTINE            8B435330
                    ********************************************            8B435340
************************************************************************** 8B435350
CORE    DATA OR     *LA- OPER-                                             8B435360
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT     8B435370
************************************************************************** 8B435380
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061D 0  2003        A50C  LDS     3           SET C + OF ON                    8B435390
061E 0  C041              LD      N504        LD /0004                         8B435400
061F 00 4C300623          BSC  L  G50C,-Z     BR NOT MINUS OR NOT ZERO         8B435410
0621 0  7002              MDX     H50C                                         8B435420
0622 0  7008              MDX     J50C                                         8B435430
0623 0  700A        G50C  MDX     K50C                                         8B435440
0624 00 44000F83    H50C  BSI  L  F000        BSC FELL THRU                    8B435450
0626 0  3081              DC      /3081       ERR ID                           8B435460
0627 00 44000FDE          BSI  L  F005        CK LOCK ON ERROR                 8B435470
0629 0  70F3              MDX     A50C        LOOP                             8B435480
062A 0  7006              MDX     A50E                                         8B435490
062B 00 44000F83    J50C  BSI  L  F000        BSC SKPD-SHOULD BRNC             8B435500
062D 0  3082              DC      /3082       ERR ID                           8B435510
062E 00 44000FDE    K50C  BSI  L  F005        CK LOCK ON ERROR                 8B435520
0630 0  70EC              MDX     A50C        LOOP                             8B435530
0631 0  2000        A50E  LDS     0           SET C AND OF OFF                 8B435540
                    **********************************************             8B435550
0632 0  2003              LDS     3           SET C AND OF ON                  8B435560
0633 0  C028              LD      N500        LD /8001                         8B435570
0634 00 4C3F0638          BSC  L  G50E,+EOCZ- BR ON NOT PLUS, NOT EVEN,        8B435580
                    *                         *OF, CARRY, NOT ZERO OR          8B435590
                    *                         *NOT MINUS                       8B435600
0636 0  7008              MDX     H50E                                         8B435610
0637 0  7007              MDX     J50E                                         8B435620
0638 00 44000F83    G50E  BSI  L  F000        BSC BRNCHED-SHOULDNT             8B435630
063A 0  3083              DC      /3083       ERR ID                           8B435640
063B 00 44000FDE          BSI  L  F005        CK LOCK ON ERROR                 8B435650
063D 0  70F3              MDX     A50E        LOOP                             8B435660
063E 0  7006              MDX     B500                                         8B435670
063F 00 44000F83    J50E  BSI  L  F000        BSC SKPD-SHOULDNT                8B435680
0641 0  3084              DC      /3084       ERR ID                           8B435690
0642 00 44000FDE    H50E  BSI  L  F005        CK LOCK ON ERROR                 8B435700
0644 0  70EC              MDX     A50E        LOOP                             8B435710
                    **********************************************             8B435720
0645 0  2003        B500  LDS     3           SET C AND OF ON                  8B435730
0646 0  C018              LD      N503        LD /0001                         8B435740
0647 0  4808              BSC     +           SK ON PLUS                       8B435750
0648 0  700C              MDX     S501                                         8B435760
0649 0  2817              STS     N505        SET /0003 IN N505                8B435770
064A 0  C016              LD      N505        LD /0003                         8B435780
064B 0  F016              EOR     N506        ZERO WITH /0003                  8B435790
064C 00 4C180658          BSC  L  S503,+-     BRANCH ON ZERO                   8B435800
064E 00 44000F83          BSI  L  F000        BSC + CLEARED OVFLW              8B435810
0650 0  3085              DC      /3085       ERR ID                           8B435820
0651 00 44000FDE          BSI  L  F005        CK LOCK ON ERROR                 8B435830
0653 0  70F1              MDX     B500        LOOP                             8B435840
0654 0  700L              MDX     A540        EXIT TO NEXT ROUTINE             8B435850
0655 00 44000F83    S501  BSI  L  F000        BSC FAILED TO SKP                8B435860
0657 0  3086              DC      /3086       ERR ID                           8B435870
0658 00 44000FDE    S503  BSI  L  F005        CK LOCK ON ERROR                 8B435880
065A 0  70EA              MDX     B500        LOOP                             8B435890
065B 0  7007              MDX     A540        EXIT TO NEXT ROUTINE             8B435900
065C 0  8001        N500  DC      /8001                                        8B435910
065D 0  0000        N501  DC      /0000                                        8B435920
065E 0  8000        N502  DC      /8000                                        8B435930
065F 0  0001        N503  DC      /0001                                        8B435940
0660 0  0004        N504  DC      /0004                                        8B435950
0661 0  0000        N505  DC      /0000                                        8B435960
0662 0  0003        N506  DC      /0003                                        8B435970
                    *                                                          8B435980
                    *                 TEST OF BSI OPERATION                    8B435990
                    *                                                          8B436000
                    **********************************************             8B436010
**************************************************************************** 8B436020
CORE    DATA OR     *LA- OPER-                                                 8B436030
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT       8B436040
**************************************************************************** 8B436050
0663 0  2003        A540  LDS     3           SET C AND OF ON                  8B436060
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0664 00 C400070B            LD   L  N540        LD /8001                     8B436070
0666 00 442F0678            BSI  L  G540,ECO+Z  BR ON NOT EVEN, CARRY, OF,   8B436080
0668 0  7001                MDX     H540        * NOT PLUS OR NOT ZERO       8B436090
0669 0  7007                MDX     J540                                     8B436100
066A 00 44000F83    H540    BSI  L  F000        BSI FELL THRU                8B436110
066C 0  30B7                DC      /30B7       ERR ID                       8B436120
066D 00 44000FB2            BSI  L  F00E        CK LOCK ON ERROR             8B436130
066F 0  70F3                MDX     A540        LOOP                         8B436140
0670 0  7016                MDX     A5 4        EXIT TO NEXT ROUTINE         8B436150
0671 00 44000F83    J540    BSI  L  F000        BSI SKPD-SHOULD BRNCH        8B436160
0673 0  30B8                DC      /30B8       ERR ID                       8B436170
0674 00 44000FB2            BSI  L  F00E        CK LOCK ON ERROR             8B436180
067a 0  70EC                MDX     A540        LOOP                         8B436190
0677 0  7001                MDX     G540+1      SK TO WORD AFTER G540        8B436200
0678 0  0000        G540    DC      /0000                                    8B436210
0679 00 2C00070C            STS  L  N541        STORE /0002 IN N541          8B436220
067B 00 C400070C            LD   L  N541        LD /0002                     8B436230
067D 00 F400070D            EOR  L  N542        ZERO WITH /0002              8B436240
067F 00 4C180684            BSC  L  G542,+-     BRANCH ON ZERO               8B436250
0681 00 44000F83            BSI  L  F000        BSI NOT CLEAR OVERFLOW       8B436260
0683 0  30B9                DC      /30B9       ERR ID                       8B436270
0684 00 44000FDE    G542    BSI  L  F005        CK LOCK ON ERROR             8B436280
0686 0  70DC                MDX     A540        LOOP                         8B436290
                    **********************************************           8B436300
0687 00 C400070D    A544    LD   L  N542        LD /0002                     8B436310
0689 00 44300698            BSI  L  G544,7-     SK ON NOT ZERO OR            8B436320
068B 0  7001                MDX     H544        * NOT MINUS                  8B436330
068C 0  7007                MDX     J544                                     8B436340
068D 00 44000F83    H544    BSI  L  F000        BSI DID NOT BRANCH           8B436350
068F 0  30BA                DC      /30BA       ERR ID                       8B436360
0690 00 44000FDE            BSI  L  F005        CK LOCK ON ERRCR             8B436370
0692 0  70F4                MDX     A544        LOOP                         8B436380
0693 0  7008                MDX     A546        EXIT TO NEXT ROUTINE         8B436390
0694 00 44000F83    J544    BSI  L  F000        BSI SKPD-SHOULD BRNC         8B436400
0696 0  30BB                DC      /30BB       ERR ID                       8B436410
0697 00 44000FDE            BSI  L  F005        CK LOCK ON ERROR             8B436420
0699 0  70ED                MDX     A544        LOOP                         8B436430
069A 0  7001                MDX     A546        EXIT TO NEXT ROUTINE         8B436440
069B 0  0000        G544    DC      /0000                                    8B436450
                    **********************************************           8B436460
069C 0  C071        A546    LD      N543                                     8B436470
069D 00 442006A1            BSI  L  G546,Z      BR WHEN NOT ZERO             8B436480
069F 0  700C                MDX     J546                                     8B436490
06A0 0  7008                MDX     H546                                     8B436500
06A1 0  0000        G546    DC      /0000                                    8B436510
06A2 00 44000F83            BSI  L  F000        BSI BRNCHD-SHOULD NO         8B436520
06A4 0  30BC                DC      /30BC       ERR ID                       8B436530
06A5 00 44000FDE            BSI  L  F005        CK LOCK ON ERROR             8B436540
06A7 0  70F4                MDX     A546        LOOP                         8B436550
06A8 0  7006                MDX     A548        EXIT TO NEXT ROUTINE         8B436560
06A9 00 44000F83    H546    BSI  L  F000        BSI SKPD-SHOULD NOT          8B436570
06AB 0  30BD                DC      /30BD       ERR ID                       8B436580
06AC 00 44000FDE    J546    BSI  L  F005        CK LOCK ON ERROR             8B436590
06AE 0  70ED                MDX     A546        LOOP                         8B436600
                    **********************************************           8B436610
**************************************************************************** 8B436620
CORE    DATA OR     *LA- OPER-                                               8B436630
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT      8B436640
**************************************************************************** 8B436650
06AF 0  C05B        A548    LD      N540                                     8B436660
06B0 00 441006BA            BSI  L  G548,-      BR WHEN NOT MINUS            8B436670
06B2 0  700B                MDX     H548                                     8B436680
06B3 00 44000F83            BSI  L  F000        BSI SKP-ON COND TRUE         8B436690
06B5 0  30BF                DC      /30BF       ERR ID                       8B436700
06B6 00 44000FDE            BSI  L  F005        CK LOCK ON ERROR             8B436710
06B8 0  70F6                MDX     A548        LOOP                         8B436720
06B9 0  7007                MDX     A54A        EXIT TO NEXT ROUTINE         8B436730
06BA 0  0000        G548    DC      /0000                                    8B436740
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066B 00 44000F83        BSI  L  F000        BSI BRNCHD-SHOULD NOT     8B436750
066D 0  30BF            DC       /30BF       ERR ID                    8B436760
066E 00 44000FDE   H548 BSI  L  F005        CK LOCK ON ERROR          8B436770
0670 0  70EE            MDX      A548        LOOP                      8B436780
                        ****************************************      8B436790
0671 0  C04B       A54A LD       N542                                  8B436800
0672 00 44080670        BSI  L  G54A,+      BR WHEN NOT PLUS          8B436810
0674 0  700B            MDX      H54A                                  8B436820
0675 00 44000F83        BSI  L  F000        BSI SKPD ON COND TRUE     8B436830
0677 0  30C0            DC       /30C0       ERR ID                    8B436840
0678 00 44000FDE        BSI  L  F005        CK LOCK ON ERROR          8B436850
067A 0  70F6            MDX      A54A        LOOP                      8B436860
067B 0  7007            MDX      A54C        EXIT TO NEXT ROUTINE      8B436870
067C 0  0000       G54A DC       /0000                                 8B436880
067D 00 44000F83        BSI  L  F000        BSI BRNCHD-SHOULD NOT     8B436890
067F 0  30C1            DC       /30C1       ERR ID                    8B436900
0680 00 44000FDE   H54A BSI  L  F005        CK LOCK ON ERROR          8B436910
0682 0  70EE            MDX      A54A        LOOP                      8B436920
                        ****************************************      8B436930
0683 0  C039       A54C LD       N542                                  8B436940
0684 00 44040686        BSI  L  G54C,E      BR WHEN NOT EVEN          8B436950
0686 0  700B            MDX      H54C                                  8B436960
0687 00 44000F83        BSI  L  F000        BSI SKPD ON COND TRUE     8B436970
0689 0  30C2            DC       /30C2       ERR ID                    8B436980
068A 00 44000FDE        BSI  L  F005        CK LOCK ON ERROR          8B436990
068C 0  70F6            MDX      A54C        LOOP                      8B437000
068D 0  7007            MDX      A54E        EXIT TO NEXT ROUTINE      8B437010
068E 0  0000       G54C DC       /0000                                 8B437020
068F 00 44000F83        BSI  L  F000        BSI BRNCHD-SHOULD NOT     8B437030
0691 0  30C3            DC       /30C3       ERR ID                    8B437040
0692 00 44000FDE   H54C BSI  L  F005        CK LOCK ON ERROR          8B437050
0694 0  70EE            MDX      A54C        LOOP                      8B437060
                        ****************************************      8B437070
0695 0  2000       A54E LDS      0           SET C AND OF OFF          8B437080
0696 00 440206F0        BSI  L  G54F,C      BR IF CARRY IS ON         8B437090
0698 0  700B            MDX      H54E                                  8B437100
0699 00 44000F83        BSI  L  F000        BSI SKPD ON COND TRUE     8B437110
069B 0  30C4            DC       /30C4       ERR ID                    8B437120
069C 00 44000FDE        BSI  L  F005        CK LOCK ON ERROR          8B437130
069E 0  70F6            MDX      A54E        LOOP                      8B437140
069F 0  7007            MDX      A54F        EXIT TO NEXT ROUTINE      8B437150
06F0 0  0000       G54E DC       /0000                                 8B437160
06F1 00 44000F83        BSI  L  F000        BSI BRNCHD-SHOULD NOT     8B437170
06F3 0  30C5            DC       /30C5       ERR ID                    8B437180
06F4 00 44000FDE   H54E BSI  L  F005        CK LOCK ON ERROR          8B437190
06F6 0  70EE            MDX      A54E        LOOP                      8B437200
                        ****************************************      8B437210
06F7 0  2000       A54F LDS      0           SET C AND OF OFF          8B437220
06F8 00 4401C703        BSI  L  G54F,O      BR ON OVERFLOW            8B437230
06FA 0  700C            MDX      H54F                                  8B437240
06FB 00 44000F83        BSI  L  F000        BSI SKPD ON COND TRUE     8B437250
06FD 0  30C6            DC       /30C6       ERR ID                    8B437260
06FE 0  30C6            DC       /30C6       ERR ID                    8B437270
06FF 00 44000FDE        BSI  L  F005        CK LOCK ON ERROR          8B437280
0701 0  70F5            MDX      A54F        LOOP                      8B437290
0702 0  700C            MDX      A580        EXIT TO NEXT ROUTINE      8B437300
0703 0  0000       G54F DC       /0000                                 8B437310
0704 00 44000F83        BSI  L  F000        BSI BRNCHD-SHOULD NOT     8B437320
0706 0  30C7            DC       /30C7       ERR ID                    8B437330
0707 00 44000FDE   H54F BSI  L  F005        CK LOCK ON ERROR          8B437340
0709 0  70ED            MDX      A54F        LOOP                      8B437350
070A 0  7004            MDX      A580        EXIT TO NEXT ROUTINE      8B437360
070B 0  8001       N540 DC       /8001                                 8B437370
070C 0  0000       N541 DC       /0000                                 8B437380
070D 0  0002       N542 DC       /0002                                 8B437390
070E 0  0000       N543 DC       /0000                                 8B437400
                        *                                             8B437410
                        *          TEST OF LDD OPERATION              8B437420
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                        *                                             8B437430
                        ****************************************      8B437440
*************************************************************       8B437450
CORE     DATA OR      *LA- OPER-                                     8B437460
ADDR     INSTRUCTION  *BEL ATION FT OPERANDS + REMARKS  ID+SEQ= AT RIGHT 8B437470
*************************************************************       8B437480
070F 0  C838       A580 LDD      N581        LDD A=/0000  Q=/0000      8B437490
0710 00 4C180715        BSC  L  G580,+-     BRANCH ON ZERO            8B437500
0712 00 44000F83        BSI  L  F000        LDD-A REG INCORRECT       8B437510
0714 0  30C8            DC       /30C8       ERR ID                    8B437520
0715 00 44000FB2   G580 BSI  L  F00E        CK LOCK ON ERROR          8B437530
0717 0  70F7            MDX      A580        LOOP                      8B437540
0718 0  1800            RTE      16                                    8B437550
0719 00 4C18071E        BSC  L  G582,+-     BRANCH ON ZERO            8B437560
071B 00 44000F83        BSI  L  F000        LDD-Q REG INCORRECT       8B437570
071D 0  30C9            DC       /30C9       ERR ID                    8B437580
071E 00 44000FDE   G582 BSI  L  F005        CK LOCK ON ERROR          8B437590
0720 0  70EE            MDX      A580        LOOP                      8B437600
                        ****************************************      8B437610
0721 0  C828       A584 LDD      4583        LD  A=/FFFF  Q=/FFFF      8B437620
0722 0  F028            EOR      N584        ZERO WITH /FFFF           8B437630
0723 00 4C180728        BSC  L  G584,+-     BRANCH ON ZERO            8B437640
0725 00 44000F83        BSI  L  F000        LDD-A REG INCORRECT       8B437650
0727 0  30CA            DC       /30CA       ERR ID                    8B437660
0728 00 44000FB2   G584 BSI  L  F00E        CK LOCK ON ERROR          8B437670
072A 0  70F6            MDX      A584        LOOP                      8B437680
072B 0  18D0            RTE      16          NOW  A=/FFFF  Q=/0000     8B437690
072C 0  F01E            EOR      N584        ZERO WITH /FFFF           8B437700
072D 00 4C180732        BSC  L  G586,+-     BRANCH ON ZERO            8B437710
072F 00 44000F83        BSI  L  F000        LDD-Q REG INCORRECT       8B437720
0731 0  30CB            DC       /30CB       ERR ID                    8B437730
0732 00 44000FDE   G586 BSI  L  F005        CK LOCK ON ERROR          8B437740
0734 0  70EC            MDX      A584        LOOP                      8B437750
                        ****************************************      8B437760
0735 0  C813       A588 LDD      N582        LD  A=/0000  Q=/FFFF      8B437770
0736 00 4C18073B        BSC  L  G588,+-     BRANCH ON ZERO            8B437780
0738 00 44000F83        BSI  L  F000        LDD ODD-A REG FAILED      8B437790
073A 0  30CC            DC       /30CC       ERR ID                    8B437800
073B 00 44000FB2   G588 BSI  L  F00E        CK LOCK ON ERROR          8B437810
073D 0  70F7            MDX      A588        LOOP                      8B437820
073E 0  18D0            RTE      16          NOW  A=/FFFF  Q=/0000     8B437830
073F 00 4C180744        BSC  L  G58A,+-     BRANCH ON ZERO            8B437840
0741 00 44000F83        BSI  L  F000        LDD-ODD-Q REG FAILED      8B437850
0743 0  30CD            DC       /30CD       ERR ID                    8B437860
0744 00 44000FDE   G58A BSI  L  F005        CK LOCK ON ERROR          8B437870
0746 0  70EE            MDX      A588        LOOP                      8B437880
0747 0  7004            MDX      A5C0        EXIT TO NEXT ROUTINE      8B437890
0748    0000            BSS  E                                        8B437900
0748 0  0000       N581 DC       /0000                                 8B437910
0749 0  0000       N582 DC       /0000                                 8B437920
074A 0  FFFF       N583 DC       /FFFF                                 8B437930
074B 0  FFFF       N584 DC       /FFFF                                 8B437940
                        *                                             8B437950
                        *          TEST OF STD OPERATION              8B437960
                        *                                             8B437970
                        ****************************************      8B437980
*************************************************************       8B437990
CORE     DATA OR      *LA- OPER-                                     8B438000
ADDR     INSTRUCTION  *BEL ATION FT OPERANDS + REMARKS  ID+SEQ= AT RIGHT 8B438010
*************************************************************       8B438020
074C 0  C84B       A5C0 LDD      N5C1        LD  A=/0000  Q=/0000      8B438030
074D 0  D84E            STD      N5C5                                  8B438040
074E 0  C04D            LD       N5C5        LD  A=/0000  Q=/0000      8B438050
074F 00 4C180754        BSC  L  G5C0,+-     BRANCH ON ZERO            8B438060
0751 00 44000F83        BSI  L  F000        STD-EA INCORRECT          8B438070
0753 0  30CF            DC       /30CF       ERR ID                    8B438080
0754 00 44000FB2   G5C0 BSI  L  F00E        CK LOCK ON ERROR          8B438090
0756 0  70F5            MDX      A5C0        LOOP                      8B438100
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0757 0  C045          LD      N5C6      LD  /FFFF                    8B438110
0758 00 4C18075D      BSC  L  G5C2,+-   BRANCH ON ZERO                8B438120
075A 00 44000F83      BSI  L  F000      STD-EA+1 INCORRECT             8B438130
075C 0  30CF          DC      /30CF     ERR ID                         8B436140
075D 00 44000FDE  G5C2 BSI  L  F005     CK LOCK ON ERROR               8B438150
075F 0  70EC          MDX     A5C0      LOOP                           8B438160
                      ********************************************     8B438170
0760 0  C037      A5C4 LD     N5C1      LD  /0000                      8B438180
0761 0  D03A          STO     N5C5      STORE  /0000                   8B438190
0762 0  D03A          STO     N5C6      STORE  /0000                   8B438200
0763 0  C836          LDD     N5C3      LD  A=/FFFF   Q=/FFFF          8B438210
0764 0  D837          STD     N5C5      STORE  /FFFF  AND /FFFF        8B438220
0765 0  C036          LD      N5C5      LD  /FFFF                      8B438230
0766 0  F033          EOR     N5C3      ZERO WITH /FFFF                8B438240
0767 00 4C18076C      BSC  L  G5C4,+-   BRANCH ON ZERO                 8B438250
0769 00 44000F83      BSI  L  F000      STD-EA INCORRECT               8B438260
076B 0  3000          DC      /3000     ERR ID                         8B438270
076C 00 44000F82  G5C4 BSI  L  F00E     CK LOCK ON ERROR               8B438280
076E 0  70F1          MDX     A5C4      LOOP                           8B438290
076F 0  C02D          LD      N5C6      LD  /1111                      8B438300
0770 0  F029          EOR     N5C3                                     8B438310
0771 00 4C180776      BSC  L  G5C6,+-   BRANCH ON ZERO                 8B438320
0773 00 44000F83      BSI  L  F000      STD-EA+1 INCORRECT             8B438330
0775 0  3001          DC      /3001     ERR ID                         8B438340
0776 00 44000FDE  G5C6 BSI  L  F005     CK LOCK ON ERROR               8B438350
0778 0  70E7          MDX     A5C4      LOOP                           8B438360
                      ********************************************     8B438370
0779 0  C020      A5C8 LD     N5C3      LD  /FFFF                      8B438380
077A 0  D021          STO     N5C5      STORE  /FFFF                   8B438390
077B 0  D021          STO     N5C6                                     8B438400
077C 0  D021          STO     N5C7                                     8B438410
077D 0  C81A          LDD     N5C1      LD  A=/0000  Q=/0000           8B438420
077E 0  D81E          STD     N5C6      STORE IN N5C6 + N5C7           8B438430
077F 0  C018          LD      N5C1      LD  /0000                      8B438440
0780 0  C01C          LD      N5C6      LD  /0000                      8B438450
0781 00 4C180786      BSC  L  G5C8,+-   BRANCH ON ZERO                 8B438460
0783 00 44000F83      BSI  L  F000      STD-ODD-EA INCORRECT           8B438470
0785 0  3002          DC      /3002     ERR ID                         8B438480
0786 00 44000F82  G5C8 BSI  L  F00E     CK LOCK ON ERROR               8B438490
0788 0  70F0          MDX     A5C8      LOOP                           8B438500
0789 0  C014          LD      N5C7      LD  /FFFF                      8B438510
078A 0  F00F          EOR     N5C3      ZERO WITH /FFFF                8B438520
078B 00 4C180790      BSC  L  G5CA,+-   BRANCH ON ZERO                 8B438530
078D 00 44000F83      BSI  L  F000      STD-ODD-EA+1 LOADED            8B438540
078F 0  3003          DC      /3003     ERR ID                         8B438550
0790 00 44000FDE  G5CA BSI  L  F005     CK LOCK ON ERROR               8B438560
0792 0  70E6          MDX     A5CA      LOOP                           8B438570
0793 0  C006          LD      N5C3      LD  /FFFF                      8B438580
0794 0  D008          STO     N5C6                                     8B438590
0795 0  D008          STO     N5C7                                     8B438600
0796 0  7008          MDX     A600      EXIT TO NEXT ROUTINE           8B438610
0798    0000          BSS  E                                           8B438620
0798 0  0000      N5C1 DC     /0000                                    8B438630
0799 0  0000          DC      /0000                                    8B438640
079A 0  FFFF      N5C3 DC     /FFFF                                    8B438650
079B 0  FFFF          DC      /FFFF                                    8B438660
079C 0  FFFF      N5C5 DC     /FFFF                                    8B438670
079D 0  FFFF      N5C6 DC     /FFFF                                    8B438680
079E 0  FFFF      N5C7 DC     /FFFF                                    8B438690
                      *                                              8B438700
                      *              TEST OF LDX OPERATION           8B438710
                      *                                              8B438720
                      ********************************************** 8B438730
************************************************************************8B438740
CORE    DATA OR     *LA- OPER-                                       8B438750
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B438760
************************************************************************8B438770
079F 00 650007A2  A600 LDX  L1 G600       LD XR 1 WITH ADDR OF G600  8B438780
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07A1 0  7003          MDX     H600                                     8B438790
07A2 00 44000F83  G600 BSI  L  F000      TAG REG BIT 7 FAILED          8B438800
07A4 0  30D4          DC      /30D4     ERR ID                         8B438810
07A5 00 44000FDE  H600 BSI  L  F005     CK LOCK ON ERROR               8B438820
07A7 0  70F7          MDX     A600      LOOP                           8B438830
                      ********************************************     8B438840
07A8 00 660007A6  A602 LDX  L2 G602     LD XR 2 WITH ADDR OF G602      8B438850
07AA 0  7003          MDX     H602                                     8B438860
07AB 00 44000F83  G602 BSI  L  F000      TAG REG BIT 6 FAILED          8B438870
07AD 0  30D5          DC      /30D5     ERR ID                         8B438880
07AE 00 44000FDE  H602 BSI  L  F005     CK LOCK ON ERROR               8B438890
07B0 0  70F7          MDX     A602      LOOP                           8B438900
                      ********************************************     8B438910
07B1 0  6100      A604 LDX    1 0       LD DISP=0 TO XR 1              8B438920
07B2 00 C500081C      LD   L1 N601      LD ADDR OF N601 + XR 1         8B438930
07B4 0  F067          EOR     N601      ZERO WITH ADDR OF N601         8B438940
07B5 00 4C1807BA      BSC  L  G604,+-   BRANCH ON ZERO                 8B438950
07B7 00 44000F83      BSI  L  F000      IX 1 NOT LOADED                8B438960
07B9 0  30D6          DC      /30D6     ERR ID                         8B438970
07BA 00 44000FDE  G604 BSI  L  F005     CK LOCK ON ERROR               8B438980
07BC 0  70F4          MDX     A604      LOOP                           8B438990
                      ********************************************     8B439000
07BD 0  6200      A606 LDX    2 0       LD DISP=0 TO XR 2              8B439010
07BE 0  C05F          LD      N603      LD  /FFFF                      8B439020
07BF 00 C600081C      LD   L2 N601      LD ADDR OF N601 + XR 2         8B439030
07C1 0  F05A          EOR     N601      ZERO WITH ADDR OF N601         8B439040
07C2 00 4C1807C7      BSC  L  G606,+-   BRANCH ON ZERO                 8B439050
07C4 00 44000F83      BSI  L  F000      XR 2 NOT LOADED                8B439060
07C6 0  30D7          DC      /30D7     ERR ID                         8B439070
07C7 00 44000FDE  G606 BSI  L  F005     CK LOCK ON ERROR               8B439080
07C9 0  70F3          MDX     A606      LOOP                           8B439090
                      ********************************************     8B439100
07CA 0  6300      A608 LDX    3 0       LD DISP=0 TO XR 3              8B439110
07CB 0  C052          LD      N603      LD  /FFFF                      8B439120
07CC 00 C700081C      LD   L3 N601      LD ADDR OF N601 + XR 3         8B439130
07CE 0  F04D          EOR     N601      ZERO WITH ADDR OF N601         8B439140
07CF 00 4C1807D4      BSC  L  G608,+-   BRANCH ON ZERO                 8B439150
07D1 00 44000F83      BSI  L  F000      XR 3 NOT LOADED                8B439160
07D3 0  30D8          DC      /30D8     ERR ID                         8B439170
07D4 00 44000FDE  G608 BSI  L  F005     CK LOCK ON ERROR               8B439180
07D6 0  70F3          MDX     A608      LOOP                           8B439190
                      ********************************************     8B439200
07D7 0  61FF      A60A LDX    1 -1      LD XR 1 WITH -1                8B439210
07D8 0  C045          LD      N603      LD  /1111                      8B439220
07D9 00 C500081C      LD   L1 N601      LD ADDR OF N601 + XR 1         8B439230
07DB 0  F03F          EOR     N600      ZERO WITH ADDR OF N600         8B439240
07DC 00 4C1807E1      BSC  L  G60A,+-   BRANCH ON ZERO                 8B439250
07DE 00 44000F83      BSI  L  F000      XR 1 NOT LOADED                8B439260
07E0 0  30D9          DC      /30D9     ERR ID                         8B439270
07E1 00 44000FDE  G60A BSI  L  F005     CK LOCK ON ERROR               8B439280
07E3 0  70F3          MDX     A60A      LOOP                           8B439290
                      ********************************************     8B439300
07E4 0  62FF      A60C LDX    2 -1      LD XR 2 WITH -1                8B439310
07E5 0  C038          LD      N603      LD  /FFFF                      8B439320
07E6 00 C600081C      LD   L2 N601      LD ADDR OF N601 + XR 2         8B439330
07E8 0  F032          EOR     N600      ZERO WITH ADDR OF N600         8B439340
07E9 00 4C1807EE      BSC  L  G60C,+-   BRANCH ON ZERO                 8B439350
07ED 00 44000F83      BSI  L  F000      XR 2 NOT LOADED                8B439360
07ED 0  30DA          DC      /30DA     ERR ID                         8B439370
07EE 00 44000FDE  G60C BSI  L  F005     CK LOCK ON ERROR               8B439380
07F0 0  70F3          MDX     A60C      LOOP                           8B439390
                      ********************************************     8B439400
07F1 0  63FF      A60E LDX    3 -1      LD XR 3 WITH -1                8B439410
07F2 0  C028          LD      N603      LD /FFFF                       8B439420
07F3 00 C700081C      LD   L3 N601      LD ADDR OF N601 + XR 3         8B439430
07F5 0  F025          EOR     N600      ZERO WITH ADDR OF N600         8B439440
07F6 00 4C1807FB      BSC  L  G60E,+-   BRANCH ON ZERO                 8B439450
07F8 00 44000F83      BSI  L  F000      XR 3 NOT LOADED                8B439460
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PROCESSOR-CONTROLLER FUNCTION TEST

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07FA 0  30DB                DC       /30DB       ERR ID                       8B439470
07FB 00 44000FDE      G60E  BSI   L  F005        CK LOCK ON ERROR             8B439480
07FD 0  70F3                MDX      A60E        LOOP                         8B439490
                      ******************************************              8B439500
07FE 00 65000001      B600  LDX  L1 1            LD XR 3 WITH +1              8B439510
0800 0  C01D                LD       N603        LD  /FFFF                    8B439520
0801 00 C500081C            LD   L1 N601         LD ADDR OF N601 + XR 1       8B439530
0803 0  F019                EOR      N602        ZERO WITH ADDR OF N602       8B439540
0804 00 4C180809            BSC   L  J600,+-     BRANCH ON ZERO               8B439550
0806 00 44000F83            BSI   L  F000        LONG FORM LDX-FAILED         8B439560
0808 0  30DC                DC       /30DC       ERR ID                       8B439570
0809 00 44000FDE      J600  BSI   L  F005        CK LOCK ON ERROR             8B439580
080B 0  70F2                MDX      B600        LOOP                         8B439590
                      ******************************************              8B439600
080C 00 6780081E      B602  LDX  I3 N603         LD XR 3 WITH /FFFF           8B439610
080E 0  C010                LD       N604        LD  /0001                    8B439620
080F 00 C700081C            LD   L3 N601         LD ADDR OF N601 + XR 3       8B439630
0811 0  F009                EOR      N600        ZERO WITH ADDR OF N600       8B439640
0812 00 4C180817            BSC   L  J602,+-     BRANCH ON ZERO               8B439650
0814 00 44000F83            BSI   L  F000        INDIRECT LDX FAILED          8B439660
0816 0  30DD                DC       /30DD       ERR ID                       8B439670
0817 00 44000FDE      J602  BSI   L  F005        CK LOCK ON ERROR             8B439680
0819 0  70F2                MDX      B602        LOOP                         8B439690
081A 0  7005                MDX      A640        EXIT TO NEXT ROUTINE         8B439700
081B 0  081B          N600  DC       N600                                     8B439710
081C 0  081C          N601  DC       N601                                     8B439720
081D 0  081D          N602  DC       N602                                     8B439730
081E 0  FFFF          N603  DC       /FFFF                                    8B439740
081F 0  0001          N604  DC       /0001                                    8B439750
                      *                                                       8B439760
                      *                  TEST OF STX OPERATION                8B439770
                      *                                                       8B439780
                      ******************************************              8B439790
***************************************************************************** 8B439800
CORE      DATA OR     *LA- OPER-                                              8B439810
ADDR      INSTRUCTION *BEL ATION FT OPERANDS + REMARKS    ID+SEQ= AT RIGHT    8B439820
***************************************************************************** 8B439830
0820 0  C06D          A640  LD       N644        LD  /FFFF                    8B439840
0821 0  D069                STO      N640        SAVE                         8B439850
0822 0  C0FF          H640  LD       H640        LD /C0FF                     8B439860
0823 0  6867                STX      N640        STORE INST REG AT N640       8B439870
0824 0  F0FD          K640  EOR      H640        CK THAT ACC WAS NOT          8B439880
                      *                          * RESET BY STX               8B439890
0825 00 4C18082D            BSC   L  G640,+-     BRANCH ON ZERO               8B439900
0827 00 44000F83            BSI   L  F000        ACC GONE AFTER STX           8B439910
0829 0  3167                DC       /3167       ERR ID                       8B439920
082A 00 44000FB2            BSI   L  F00E        CK LOCK ON ERROR             8B439930
082C 0  70F3                MDX      A640                                     8B439940
082D 0  C05D          G640  LD       N640        CK THAT STX STORED CORECT    8B439950
082E 0  F05D                EOR      N642                                     8B439960
082F 00 4C180834            BSC   L  G641,+-     BRANCH ON ZERO               8B439970
0831 00 44000F83            BSI   L  F000        I CTR NOT STORED             8B439980
0833 0  30DE                DC       /30DE       ERR ID                       8B439990
0834 00 44000FDE      G641  BSI   L  F005        CK LOCK ON ERROR             8B440000
0836 0  70E9                MDX      A640        LOOP                         8B440010
                      ******************************************              8B440020
0837 0  C056          A642  LD       N644        LD /FFFF                     8B440030
0838 0  D052                STO      N640        SAVE                         8B440040
0839 0  6100                LDX   1  0           LD XR 1 WITH /0000           8B440050
083A 0  6950                STX   1  N640        STORE C(XR 1) AT N640        8B440060
083B 0  C04F                LD       N640        LD C(N640)                   8B440070
083C 00 4C180841            BSC   L  G642,+-     BRANCH ON ZERO               8B440080
083E 00 44000F83            BSI   L  F000        XR 1 NOT STORED              8B440090
0840 0  30DF                DC       /30DF       ERR ID                       8B440100
0841 00 44000FDE      G642  BSI   L  F005        CK LOCK ON ERROR             8B440110
0843 0  70F3                MDX      A642        LOOP                         8B440120
                      ******************************************              8B440130
0844 0  C049          A644  LD       N644        LD /FFFF                     8B440140
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PROCESSOR-CONTROLLER FUNCTION TEST

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0845 0  D045                STO      N640        SAVE                         8B440150
0846 0  6200                LDX   2  0           LD XR 2 WITH /0000           8B440160
0847 0  6A43                STX   2  N640        STORE C(XR 2) AT N640        8B440170
0848 0  C042                LD       N640        LD C(N640)                   8B440180
0849 00 4C18084E            BSC   L  G644,+-     BRANCH ON ZERO               8B440190
084B 00 44000F83            BSI   L  F000        XR 2 NOT STORED              8B440200
084D 0  30E0                DC       /30E0       ERR ID                       8B440210
084E 00 44000FDE      G644  BSI   L  F005        CK LOCK ON ERROR             8B440220
0850 0  70F3                MDX      A644        LOOP                         8B440230
                      ******************************************              8B440240
0851 0  C03C          A646  LD       N644        LD /FFFF                     8B440250
0852 0  D038                STO      N640        SAVE                         8B440260
0853 0  6300                LDX   3  0           LD XR 3 WITH /0000           8B440270
0854 0  6B36                STX   3  N640        STORE C(XR 3) AT N640        8B440280
0855 0  C035                LD       N640        LD C(N640)                   8B440290
0856 00 4C18085B            BSC   L  C646,+-     BRANCH ON ZERO               8B440300
0858 00 44000F83            BSI   L  F000        XR 3 NOT STORED              8B440310
085A 0  30E1                DC       /30E1       ERR ID                       8B440320
085B 00 44000FDE      G646  BSI   L  F005        CK LOCK ON ERRCR             8B440330
085D 0  70F3                MDX      A646        LOOP                         8B440340
                      ******************************************              8B440350
085E 0  C02E          A648  LD       N643        LD /0000                     8B440360
085F 0  D02B                STO      N640        SAVE                         8B440370
0860 0  61FF                LDX   1  -1          LD XR 1 WITH /FFFF           8B440380
0861 0  6929                STX   1  N640        STORE C(XR 1) AT N640        8B440390
0862 0  C028                LD       N640        LD C(N640)                   8B440400
0863 0  F02A                EOR      N644        ZERO WITH /FFFF              8B440410
0864 00 4C180869            BSC   L  G648,+-     BRANCH ON ZERO               8B440420
0866 00 44000F83            BSI   L  F000        XR 1 NOT STORED              8B440430
0868 0  30E2                DC       /30E2       ERR ID                       8B440440
0869 00 44000FDE      G648  BSI   L  F005        CK LOCK ON ERROR             8B440450
086B 0  70F2                MDX      A648        LOOP                         8B440460
                      ******************************************              8B440470
086C 0  C020          A64A  LD       N643        LD /0000                     8B440480
086D 0  D01D                STO      N640        SAVE                         8B440490
086E 0  62FF                LDX   2  -1          LD XR 2 WITH /FFFF           8B440500
086F 0  6A1B                STX   2  N640        STORE C(XR 2) AT N640        8B440510
0870 0  C01A                LD       N640        LD C(N640)                   8B440520
0871 0  F01C                EOR      N644        ZERO WITH /FFFF              8B440530
0872 00 4C180877            BSC   L  G64A,+-     BRANCH ON ZERO               8B440540
0874 00 44000F83            BSI   L  F000        XR 2 NOT STORED              8B440550
0876 0  30E3                DC       /30E3       ERR ID                       8B440560
0877 00 44000FDE      G64A  BSI   L  F005        CK LOCK ON ERROR             8B440570
0879 0  70F2                MDX      A64A        LOOP                         8B440580
                      ******************************************              8B440590
087A 0  C012          A64C  LD       N643        LD /0000                     8B440600
087B 0  D00F                STO      N640        SAVE                         8B440610
087C 0  63FF                LDX   3  -1          LD XR 3 WITH /FFFF           8B440620
087D 0  6B0D                STX   3  N640        STORE C(XR 3) AT N640        8B440630
087E 0  C00C                LD       N640        LD C(N640)                   8B440640
087F 0  F00E                EOR      N644        ZERO WITH /FFFF              8B440650
0880 00 4C180885            BSC   L  G64C,+-     BRANCH ON ZERO               8B440660
0882 00 44000F83            BSI   L  F000        XR 3 NOT STORED              8B440670
0884 0  30E4                DC       /30E4       ERR ID                       8B440680
0885 00 44000FDE      G64C  BSI   L  F005        CK LOCK ON ERROR             8B440690
0887 0  70F2                MDX      A64C        LOOP                         8B440700
0888 0  C004                LD       N643        LD /0000                     8B440710
0889 0  D001                STO      N640        RESTORE N640 TO /0000        8B440720
088A 0  7004                MDX      A660        EXIT TO NEXT ROUTINE         8B440730
088B 0  0000          N640  DC       /0000                                    8B440740
088C 0  0824          N642  DC       K640                                     8B440750
088D 0  0000          N643  DC       /0000                                    8B440760
088E 0  FFFF          N644  DC       /FFFF                                    8B440770
                      ******************************************              8B440780
***************************************************************************** 8B440790
CORE      DATA OR     *LA- OPER-                                              8B440800
ADDR      INSTRUCTION *BEL ATION FT OPERANDS + REMARKS    ID+SEQ= AT RIGHT    8B440810
***************************************************************************** 8B440820
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088F 0  6100        A660  LDX   1 0          LD XR 1 WITH /0000          8B440830
0890 0  6200              LDX   2 0          LD XR 2 WITH /0000          8B440840
0891 0  6300              LDX   3 0          LD XR 3 WITH /0000          8B440850
0892 0  61FF              LDX   1 -1         LD XR 1 WITH /FFFF          8B440860
0893 0  6A44              STX   2 N660       CK FOR DISTRUCTION OF       8B440870
0894 0  C043              LD      N660        OTHER INDEXES              8B440880
0895 00 4C18089A          BSC   L G660,+-    BRANCH ON ZERO              8B440890
0897 00 44000F83          BSI   L F000       XR 2 CHANGED                8B440900
0899 0  3157              DC      /3157      ERR ID                      8B440910
089A 00 44000FB2    G660  BSI   L F00E       CK LOCK ON ERROR            8B440920
089C 0  70F2              MDX     A660       LOOP                        8B440930
089D 0  6B3A              STX   3 N660       STORE C(XR 3) AT N660       8B440940
089E 0  C039              LD      N660       LD C(N660)                  8B440950
089F 00 4C1808A4          BSC   L G661,+-    BRANCH ON ZERO              8B440960
08A1 00 44000F83          BSI   L F000       XR 3 CHANGED                8B440970
08A3 0  3158              DC      /3158      ERR ID                      8B440980
08A4 00 44000FDE    G661  BSI   L F005       CK LOCK ON ERROR            8B440990
08A6 0  70E8              MDX     A660       LOOP                        8B441000
                    ********************************************        8B441010
08A7 0  6100        A662  LDX   1 0          LD XR 1 WITH /0000          8B441020
08A8 0  6200              LDX   2 0          LD XR 2 WITH /0000          8B441030
08A9 0  6300              LDX   3 0          LD XR 3 WITH /000C          8B441040
08AA 0  62FF              LDX   2 -1         LD XR 2 WITH /FFFF          8B441050
08AB 0  692C              STX   1 N660       STORE C(XR 1) AT N660       8B441060
08AC 0  C028              LD      N660       LD C(N660)                  8B441070
08AD 00 4C1808B2          BSC   L G662,+-    BRANCH ON ZERO              8B441080
08AF 00 44000F83          BSI   L F000       XR 1 CHANGED                8B441090
08B1 0  3159              DC      /3159      ERR ID                      8B441100
08B2 00 44000FB2    G662  BSI   L F00E       CK LOCK ON ERROR            8B441110
08B4 0  70F2              MDX     A662       LOOP                        8B441120
08B5 0  6B22              STX   3 N660       STORE C(XR 3 AT N660        8B441130
08B6 0  C021              LD      N660       LD C(N660)                  8B441140
08B7 00 4C1808BC          BSC   L G663,+-    BRANCH ON ZERO              8B441150
08B9 00 44000F83          BSI   L F000       CK LOCK ON ERROR            8B441160
08BB 0  315A              DC      /315A      ERR ID                      8B441170
08BC 00 44000FDE    G663  BSI   L F005       CK LOCK ON ERROR            8B441180
08BE 0  70E8              MDX     A662       LOOP                        8B441190
                    ********************************************        8B441200
08BF 0  6100        A664  LDX   1 0          CK DISTRUCTION OF           8B441210
08C0 0  6200              LDX   2 0           OTHER INDEXES              8B441220
08C1 0  6300              LDX   3 0          XR'S HAVE /0000             8B441230
08C2 0  63FF              LDX   3 -1         LD XR 3 WITH /FFFF          8B441240
08C3 0  6914              STX   1 N660       STORE C(XR 1) AT N660       8B441250
08C4 0  C013              LD      N660       LD C(N660)                  8B441260
08C5 00 4C1808CA          BSC   L G664,+-    BRANCH ON ZERO              8B441270
08C7 00 44000F83          BSI   L F000       XR 1 CHANGED                8B441280
08C9 0  315B              DC      /315B      ERR ID                      8B441290
08CA 00 44000FB2    G664  BSI   L F00E       CK LOCK ON ERROR            8B441300
08CC 0  70F2              MDX     A664       LOOP                        8B441310
08CD 0  6A0A              STX   2 N660       STORE C(XR 2) AT N660       8B441320
08CE 0  C009              LD      N660       LD C(N660)                  8B441330
08CF 00 4C1808D4          BSC   L G665,+-    BRANCH ON ZERO              8B441340
08D1 00 44000F83          BSI   L F000       XR 2 CHANGED                8B441350
08D3 0  315C              DC      /315C      ERR ID                      8B441360
08D4 00 44000FDE    G665  BSI   L F005       CK LOCK ON ERROR            8B441370
08D6 0  70E8              MDX     A664       LOOP                        8B441380
08D7 0  7001              MDX     A670       EXIT TO NEXT ROUTINE        8B441390
08D8 0  0000        N660  DC      0                                      8B441400
                    ********************************************        8B441410
08D9 0  6110        A670  LDX   1 16         LD XR 1 WITH /0010          8B441420
08DA 0  C010              LD      N670       LOAD ONE                    8B441430
08DB 00 4C1808E4    G671  BSC   L G670,+-    NOT BR FOR CORRECT OP       8B441440
08DD 0  1001        G672  SLA     1                                      8B441450
08DE 0  71FF              MDX   1 -1         -1 FROM C(XR 1)             8B441460
08DF 0  70FB              MDX     G671                                   8B441470
08E0 00 44000FDE          BSI   L F005       CK LOCK ON ERROR            8B441480
08E2 0  70F6              MDX     A670       LOOP                        8B441490
08E3 0  7008              MDX     A680       EXIT TO NEXT ROUTINE        8B441500
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08E4 00 44000F83    G670  BSI   L F000       WRONG DECODE OF ZERO ACC    8B441510
08E6 0  3169              DC      /3169      ERR ID                      8B441520
08E7 00 44000FB2          BSI   L F00E       CK LOCK ON ERROR            8B441530
08E9 0  70EF              MDX     A670       LOOP                        8B441540
08EA 0  70F2              MDX     G672                                   8B441550
08EB 0  0001        N670  DC      1                                      8B441560
                    *                                                    8B441570
                    *                TEST OF ADD OPERATION               8B441580
                    *                                                    8B441590
                    ********************************************        8B441600
CORE    DATA OR     *LA- OPER-                                           8B441610
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT  8B441620
                    ********************************************        8B441630
08EC 0  2002        A680  LDS     2          SET CARRY ON                8B441640
08ED 0  C06E              LD      N680       LD /FFFF                    8B441650
08EE 0  806E              A       N681       A  /0000                    8B441660
08EF 00 4C0108F2          BSC   L G680,C     CK FOR OVERFLOW ON          8B441670
08F1 0  7003              MDX     H680       OVERFLOW IS OFF             8B441680
08F2 00 44000F83    G680  BSI   L F000       OVERFLOW IS ON              8B441690
08F4 0  30E5              DC      /30E5      ERR ID                      8B441700
08F5 00 44000FB2    H680  BSI   L F00E       CK LOCK ON ERROR            8B441710
08F7 0  70F4              MDX     A680       LOOP                        8B441720
08F8 0  F063              EOR     N680       CK IF ADD ZERO              8B441730
08F9 00 4C1808FE          BSC   L G682,+-    * CHANGED ACC               8B441740
08FB 00 44000F83          BSI   L F000       ADD 1 AND 0 FAILED          8B441750
08FD 0  30E6              DC      /30E6      ERR ID                      8B441760
08FE 00 44000FDE    G682  BSI   L F005       CK LOCK ON ERROR            8B441770
0900 0  70EB              MDX     A680       LOOP                        8B441780
                    ********************************************        8B441790
0901 0  2000        A684  LDS     0          SET C AND OF OFF            8B441800
0902 0  C059              LD      N680       LD /FFFF                    8B441810
0903 0  805A              A       N682       A  /0001                    8B441820
0904 00 4C020909          BSC   L G684,C     CK IF CARRY OCCURED         8B441830
0906 00 44000F83          BSI   L F000       CARRY NOT ON                8B441840
0908 0  30E7              DC      /30E7      ERR ID                      8B441850
0909 00 44000FB2    G684  BSI   L F00E       CK LOCK ON ERROR            8B441860
090B 0  70F5              MDX     A684       LOOP                        8B441870
090C 00 4C180911          BSC   L G686,+-    BRANCH ON ZERO              8B441880
090E 00 44000F83          BSI   L F000       ADD FFFF+0001 FAILED        8B441890
0910 0  30E8              DC      /30E8      ERR ID                      8B441900
0911 00 44000FDE    G686  BSI   L F005       CK LOCK ON ERROR            8B441910
0913 0  70ED              MDX     A684       LOOP                        8B441920
                    ********************************************        8B441930
0914 0  2000        A688  LDS     0          SET C AND OF OFF            8B441940
0915 0  C046              LD      N680       LD /FFFF                    8B441950
0916 0  8045              A       N680       A  /FFFF                    8B441960
0917 00 4C02091C          BSC   L G688,C     BR ON CARRY                 8B441970
0919 00 44000F83          BSI   L F000       CARRY NOT ON                8B441980
091B 0  30E9              DC      /30E9      ERR ID                      8B441990
091C 00 44000FB2    G688  BSI   L F00E       CK LOCK ON ERROR            8B442000
091E 0  70F5              MDX     A688       LOOP                        8B442010
091F 0  F042              EOR     N687       ZERO WITH /FFFF             8B442020
0920 00 4C180925          BSC   L G68A,+-    BRANCH ON ZERO              8B442030
0922 00 44000F83          BSI   L F000       ADD FFFF+FFFF FAILED        8B442040
0924 0  30FA              DC      /30FA      ERR ID                      8B442050
0925 00 44000FDE    G68A  BSI   L F005       CK LOCK ON ERROR            8B442060
0927 0  70EC              MDX     A688       LOOP                        8B442070
                    ********************************************        8B442080
0928 0  2000        A68C  LDS     0          SET C AND OF OFF            8B442090
0929 0  C035              LD      N683       LD /4000                    8B442100
092A 0  8034              A       N683       A  /4000                    8B442110
092B 00 4C010930          BSC   L G68C,C     BR IF OF NOT ON             8B442120
092D 00 44000F83          BSI   L F000       OVERFLOW NOT ON             8B442130
092F 0  30EB              DC      /30EB      ERR ID                      8B442140
0930 00 44000FB2    G68C  BSI   L F00E       CK LOCK ON ERROR            8B442150
0932 0  70F5              MDX     A68C       LOOP                        8B442160
0933 0  F02C              EOR     N684       ZERO WITH /8000             8B442170
                                                                         8B442180
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0934 00 4C180939          BSC  L  G68E,+-    BRANCH ON ZERO              8B442190
0936 00 44000F83          BSI  L  F000       ADD 4000+4000 FAILED        8B442200
0938 0  30EC              DC        /30EC    ERR ID                      8B442210
0939 00 44000FDE    G68E  BSI  L  F005       CK LOCK ON ERROR            8B442220
093B 0  70EC              MDX       A68C     LOOP                        8B442230
                          ********************************************  8B442240
093C 0  2000        B680  LDS       0        SET C AND OF OFF            8B442250
093D 0  C022              LD        N684     LD /8000                    8B442260
093E 0  8021              A         N684     A  /8000                    8B442270
093F 0  2823              STS       N688     STORE C AND OF COND         8B442280
0940 00 4C180945          BSC  L  J680,+-    BRANCH ON ZERO              8B442290
0942 00 44000F83          BSI  L  F000       ADD 8000+8000 FAILED        8B442300
0944 0  30ED              DC        /30ED    ERR ID                      8B442310
0945 00 44000FB2    J680  BSI  L  F00E       CK LOCK ON ERROR            8B442320
0947 0  70F4              MDX       B680     LOOP                        8B442330
0948 0  C01A              LD        N688     LD C AND OF COND            8B442340
0949 0  F017              EOR       N686     ZERO WITH /0003             8B442350
094A 00 4C180958          BSC  L  J682,+-    BRANCH ON ZERO              8B442360
094C 00 4C040955          BSC  L  K682,E     BR ON NOT EVEN              8B442370
094E 00 44000F83          BSI  L  F000       CARRY NOT ON                8B442380
0950 0  30EF              DC        /30EF    ERR ID                      8B442390
0951 00 44000FDE          BSI  L  F005       CK LOCK ON ERROR            8B442400
0953 0  70E8              MDX       B680     LOOP                        8B442410
0954 0  700F              MDX       A6C0     EXIT TO NEXT ROUTINE        8B442420
0955 00 44000F83    K682  BSI  L  F000       OVERFLOW NOT ON             8B442430
0957 0  30EE              DC        /30EE    ERR ID                      8B442440
0958 00 44000FDE    J682  BSI  L  F005       CK LOCK ON ERROR            8B442450
095A 0  70E1              MDX       B680     LOOP                        8B442460
095B 0  7008              MDX       A6C0     EXIT TO NEXT ROUTINE        8B442470
095C 0  FFFF        N680  DC        /FFFF                                8B442480
095D 0  0000        N681  DC        /0000                                8B442490
095E 0  0001        N682  DC        /0001                                8B442500
095F 0  4000        N683  DC        /4000                                8B442510
0960 0  8000        N684  DC        /8000                                8B442520
0961 0  0003        N686  DC        /0003                                8B442530
0962 0  FFFE        N687  DC        /FFFE                                8B442540
0963 0  0000        N688  DC        /0000                                8B442550
                    *                                                    8B442560
                    *                INDEXING TEST                       8B442570
                    *                                                    8B442580
                    ********************************************         8B442590
************************************************************************ 8B442600
CORE    DATA OR     *LA- OPER-                                           8B442610
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT  8B442620
************************************************************************ 8B442630
0964 0  61FC        A6C0  LDX   1 -4          LD XR 1 WITH -4            8B442640
0965 00 C50009F0          LD    L1 N6C4       LD C(N6C4+XR 1)            8B442650
0967 0  F074              EOR      N6C0       ZERO ACC IF CORRECT OP     8B442660
0968 00 4C200976          BSC  1   H6C0,Z     BR IF NOT ZERO             8B442670
096A 0  697A              STX   1  N6C9       STORE C(XR 1) AT N6C9      8B442680
096B 0  C079              LD       N6C9       GET XR 1 VALUE             8B442690
096C 0  F079              EOR      N6CA       ZERO ACC IF CORRECT        8B442700
096D 00 4C180979          BSC  L   G6C0,+-    BRANCH ON ZERO             8B442710
096F 00 44000F83          BSI  1   F000       XR 1 LOADED WRONG          8B442720
0971 0  30F0              DC       /30F0      ERR ID                     8B442730
0972 00 44000FDE          BSI  L   F005       CK LOCK ON ERROR           8B442740
0974 0  70EF              MDX      A6C0       LOOP                       8B442750
0975 0  7006              MDX      A6C2       EXIT TO NEXT ROUTINE       8B442760
0976 00 44000F83    H6C0  BSI  1   F000       WRONG LOCATION             8B442770
0978 0  30F1              DC       /30F1      ERR ID                     8B442780
0979 00 44000FDE    G6C0  BSI  L   F005       CK LOCK ON ERROR           8B442790
097B 0  70E8              MDX      A6C0       LOOP                       8B442800
                          ********************************************   8B442810
097C 0  6204        A6C2  LDX   2 4           LD XR 2 WITH +4            8B442820
097D 00 C60009F0          LD    L2 N6C4       LD C(N6C4+XR 2)            8B442830
097F 0  F064              EOR      N6C8       ZERO ACC IF CORRECT        8B442840
0980 00 4C20098E          BSC  L   H6C2,Z     BR IF NOT ZERO             8B442850
0982 0  6A62              STX   2  N6C9       STORE XR 2 AT N6C9         8B442860
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0983 0  C061              LD       N6C9       GET XR 2 VALUE             8B442870
0984 0  F062              EOR      N6CB       ZERO ACC IF CORRECT        8B442880
0985 00 4C180991          BSC  L   G6C2,+-    BRANCH ON ZERO             8B442890
0987 00 44000F83          BSI  L   F000       XR 2 LOADED WRONG          8B442900
0989 0  30F2              DC       /30F2      ERR ID                     8B442910
098A 00 44000FDE          BSI  L   F005       CK LOCK ON ERROR           8B442920
098C 0  70EF              MDX      A6C2       LOOP                       8B442930
098D 0  7006              MDX      A6C4       EXIT TO NEXT ROUTINE       8B442940
098E 00 44000F83    H6C2  BSI  L   F000       WRONG LOCATION             8B442950
0990 0  30F3              DC       /30F3      ERR ID                     8B442960
0991 00 44000FDE    G6C2  BSI  L   F005       CK LOCK ON ERROR           8B442970
0993 0  70E8              MDX      A6C2       LOOP                       8B442980
                          ********************************************   8B442990
0994 0  6300        A6C4  LDX   3 0           SET XR 3 TO ZERO           8B44300C
0995 00 C700009E0         LD    L3 N6C4       LD C(N6C4+XR 3)            8B443010
0997 0  F048              EOR      N6C4       ZERO ACC IF CORRECT        8B443020
0998 00 4C2009A5          BSC  L   H6C4,Z     BR IF NOT ZERO             8B443030
099A 0  684A              STX   3  N6C9       STORE XR 3 AT N6C9         8B443040
099B 0  C049              LD       N6C9       LD /0000                   8B443050
099C 00 4C1809A8          BSC  L   G6C4,+-    BRANCH ON ZERO             8B443060
099E 00 44000F83          BSI  L   F000       XR 3 LOADED WRONG          8B443070
09A0 0  30F4              DC       /30F4      ERR ID                     8B443080
09A1 00 44000FDE          BSI  L   F005       CK LOCK ON ERROR           8B443090
09A3 0  70F0              MDX      A6C4       LOOP                       8B443100
09A4 0  7006              MDX      A6C6       EXIT TO NEXT ROUTINE       8B443110
09A5 00 44000F83    H6C4  BSI  L   F000       WRONG LOCATION             8B443120
09A7 0  30F5              DC       /30F5      ERR ID                     8B443130
09A8 00 44000FDE    G6C4  BSI  L   F005       CK LOCK ON ERROR           8B443140
09AA 0  70E9              MDX      A6C4       LOOP                       8B443150
                          ********************************************   8B443160
09AB 0  6301        A6C6  LDX   3 1           SET XR 3 TO +1             8B443170
09AC 00 C700009E0         LD    L3 N6C4       LD C(N6C4+XR 3)            8B443180
09AE 0  F032              EOR      N6C5       ZERO FOR CORRECT OP        8B443190
09AF 00 4C20098D          BSC  L   H6C6,Z     BR IF NOT ZERO             8B443200
09B1 0  6833              STX   3  N6C9       STORE XR 3 AT N6C9         8B443210
09B2 0  C032              LD       N6C9       LD C(N6C9)                 8B443220
09B3 0  F034              EOR      N6CD       ZERO ACC FOR CORRECT OP    8B443230
09B4 00 4C1809C0          BSC  L   G6C6,+-    BRANCH ON ZERO             8B443240
09B6 00 44000F83          BSI  L   F000       XR 3 LOADED WRONG          8B443250
09B8 0  30F6              DC       /30F6      ERR ID                     8B443260
09B9 00 44000FDE          BSI  L   F005       CK LOCK ON ERROR           8B443270
09BB 0  70EF              MDX      A6C6       LOOP                       8B443280
09BC 0  7006              MDX      A6C8       EXIT TO NEXT ROUTINE       8B443290
09BD 00 44000F83    H6C6  BSI  L   F000       WRONG LOCATION             8B443300
09BF 0  30F7              DC       /30F7      ERR ID                     8B443310
09C0 00 44000FDE    G6C6  BSI  L   F005       CK LOCK ON ERROR           8B443320
09C2 0  70E8              MDX      A6C6       LOOP                       8B443330
                          ********************************************   8B443340
09C3 0  63FF        A6C8  LDX   3 -1          SET XR 3 TO -1             8B443350
09C4 00 C76009EA          LD    L3 N6CF       LD C(N6CF+XR 3)            8B443360
09C6 0  F019              EOR      N6C4       ACC NOW ZERO               8B443370
09C7 00 4C2009D5          BSC  L   H6C8,Z     BR IF NOT ZERO             8B443380
09C9 0  6B1D              STX   3  N6C9       STORE XR 3 AT N6C9         8B443390
09CA 0  C01A              LD       N6C9       LD C(N6C9)                 8B443400
09CB 0  F01E              EOR      N6CF       ZERO WITH /FFFF            8B443410
09CC 00 4C1809D8          BSC  L   G6C8,+-    BRANCH ON ZERO             8B443420
09CE 00 44000F83          BSI  L   F000       XR 3-LOADED WRONG          8B443430
09D0 0  30F8              DC       /30F8      ERR ID                     8B443440
09D1 00 44000FDE          BSI  L   F005       CK LOCK ON ERROR           8B443450
09D3 0  70EF              MDX      A6C8       LOOP                       8B443460
09D4 0  7017              MDX      A6D0       EXIT TO NEXT ROUTINE       8B443470
09D5 00 44000F83    H6C8  BSI  L   F000       WRONG LOCATION             8B443480
09D7 0  30F9              DC       /30F9      ERR ID                     8B443490
09D8 00 44000FDE    G6C8  BSI  L   F005       CK LOCK ON ERROR           8B443500
09DA 0  70E8              MDX      A6C8       LOOP                       8B443510
09DB 0  7010              MDX      A6D0       EXIT TO NEXT ROUTINE       8B443520
09DC 0  09DC        N6C0  DC       N6C0                                  8B443530
09DD 0  09DD        N6C1  DC       N6C1                                  8B443540
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09DE 0  09DE        N6C2  DC      N6C2                                  8B443550
09DF 0  09DF        N6C3  DC      N6C3                                  8B443560
09E0 0  09E0        N6C4  DC      N6C4                                  8B443570
09E1 0  09E1        N6C5  DC      N6C5                                  8B443580
09E2 0  09E2        N6C6  DC      N6C6                                  8B443590
09E3 0  09E3        N6C7  DC      N6C7                                  8B443600
09E4 0  09E4        N6C8  DC      N6C8                                  8B443610
09E5 0  0000        N6C9  DC      /0000                                 8B443620
09E6 0  FFFC        N6CA  DC      /FFFC                                 8B443630
09E7 0  0004        N6CB  DC      /0004                                 8B443640
09E8 0  0001        N6CD  DC      /0001                                 8B443650
09E9 0  09E0              DC      N6C4                                  8B443660
09EA 0  FFFF        N6CF  DC      /FFFF                                 8B443670
09EB 0  70D7              MDX     A6C8        LOOP                      8B443680
                    ********************************************        8B443690
********************************************************************* 8B443700
CORE    DATA OR     *LA- OPER-                                          8B443710
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B443720
********** ********************************************************** 8B443730
09EC 00 65000900    A6D0  LDX  L1 N6C1        LD XR 1 WITH ADDRESS      8B443740
                    *                         * OF N6C1                 8B443750
09EE 0  C1FF              LD    1 -1          SHORT FORM INDEXING       8B443760
09EF 0  F0EC              EOR     N6C0        ZERO IF CORRECT           8B443770
09F0 00 4C1809F5          BSC  L  H6D0,+-     BRANCH ON ZERO            8B443780
09F2 00 44000F83          BSI  L  F000        INDEXED LD INST. FAILED   8B443790
09F4 0  315D              DC      /315D       ERR ID                    8B443800
09F5 00 44000FDE    H6D0  BSI  L  F005        CK LOCK ON ERROR          8B443810
09F7 0  70F4              MDX     A6D0        LOOP                      8B443820
                    ********************************************        8B443830
09F8 00 660009DD    A6D2  LDX  L2 N6C1        LD XR 2 WITH ADDRESS      8B443840
                    *                         * OF N6C1                 8B443850
09FA 0  C201              LD    2 1           LD C(OF ADDRESS IN XR 1+1) 8B443860
09FB 0  F0E2              EOR     N6C2        ZERO IF CORRECT           8B443870
09FC 00 4C180A01          BSC  L  H6D2,+-     BRANCH ON ZERO            8B443880
09FE 00 44000F83          BSI  L  F000        INDEXED LD INST. FAILED   8B443890
0A00 0  315E              DC      /315E       ERR ID                    8B443900
0A01 00 44000FDE    H6D2  BSI  L  F005        CK LOCK ON ERROR          8B443910
0A03 0  70F4              MDX     A6D2        LOOP                      8B443920
                    ********************************************        8B443930
0A04 00 67J009DD    A6D3  LDX  L3 N6C1        LD XR 3 WITH ADD OF N6C1  8B443940
0A06 0  C300              LD    3 0           LD C(OF ADD IN XR 3 + 0)  8B443950
0A07 0  F0D5              EOR     N6C1        ZERO IF CORRECT           8B443960
0A08 00 4C180A0D          BSC  L  H6D3,+-     BRANCH ON ZERO            8B443970
0A0A 00 44000F83          BSI  L  F000        INDEXED LD INST. FAILED   8B443980
0A0C 0  315F              DC      /315F       ERR ID                    8B443990
0A0D 00 44000FDE    H6D3  BSI  L  F005        CK LOCK ON ERROR          8B444000
0A0F 0  70F4              MDX     A6D3        LOOP                      8B444010
                    ********************************************        8B444020
                    ********************************************        8B444030
0A10 0  6102        A6D5  LDX  1 2            LD XR 1 WITH +2           8B444040
0A11 0  C0D6              LD      N6CD        LD /0001                  8B444050
0A12 0  1101              SLA   1 1           NOW A=/0004               8B444060
0A13 0  F0D3              EOR     N6C8        NOW A=/0000               8B444070
0A14 00 4C180A19          BSC  L  H6D5,+-     BRANCH ON ZERO            8B444080
0A16 00 44000F83          BSI  L  F000        INDEXED SLA FAILED        8B444090
0A18 0  3163              DC      /3163       ERR ID                    8B444100
0A19 00 44000FDE    H6D5  BSI  L  F005        CK LOCK ON ERROR          8B444110
0A18 0  70F4              MDX     A6D5        LOOP                      8B444120
                    ********************************************        8B444130
0A1C 0  6202        A6D6  LDX  2 2            LD /00004                 8B444140
0A1D 0  C0C9              LD      N6CB        NOW A=/0001               8B444150
0A1E 0  1A01              SRA   2 1           ZERO ACC                  8B444160
0A1F 0  F0C8              EOR     N6CD        ZERO WITH /0001           8B444170
0A20 00 4C180A25          BSC  L  H6D6,+-     BRANCH ON ZERO            8B444180
0A22 00 44000F83          BSI  L  F000        INDEXED SRA FAILED        8B444190
0A24 0  3164              DC      /3164       ERR ID                    8B444200
0A25 00 44000FDE    H6D6  BSI  L  F005        CK LOCK ON ERROR          8B444210
0A27 0  70F4              MDX     A6D6        LOOP                      8B444220
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                    ********************************************        8B444230
                    *                                                   8B444240
                    *                TEST INDEXED BSC                   8B444250
                    *                                                   8B444260
********************************************************************* 8B444270
CORE    DATA OR     *LA- OPER-                                          8B444280
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B444290
********************************************************************* 8B444300
0A28 0  6301        A6F0  LDX    3 1          LD XR 3 WITH +1           8B444310
0A29 0  C00E              LD       N6F1       LD C(OF LABEL N6F1)       8B444320
0A2A 00 4F000A2D          BSC  L3 N6F0        BR TO C(N6F0+XR 3)        8B444330
0A2C 0  3000              WAIT                INDEXED BSC FAILED        8B444340
0A2D 0  3000        N6F0  WAIT                INDEXED BSC FAILED        8B444350
0A2E 0  F009              EOR      N6F1       CK FOR DISTROYED ACC      8B444360
0A2F 00 4C180A34          BSC  L   H6F0,+-    BRANCH ON ZERO            8B444370
0A31 00 44000F83          BSI  L   F000       ACC DISTROYED             8B444380
0A33 0  3165              DC       /3165      ERR ID                    8B444390
0A34 00 44000FDE    H6F0  BSI  L   F005       CK LOCK ON ERROR          8B444400
0A36 0  70F1              MDX      A6F0       LOOP                      8B444410
0A37 0  7001              MDX      A6F1       EXIT TO NEXT ROUTINE      8B444420
0A38 0  0A38        N6F1  DC       N6F1                                 8B444430
                    ********************************************        8B444440
0A39 0  6201        A6F1  LDX    2 1          LD XR 2 WITH +1           8B444450
0A3A 00 4E800A3D          BSC  I2 N6F2        BR TO N6F2+1 INDIRECT     8B444460
0A3C 0  7005              MDX      H6F1       BSC FAILED                8B444470
0A3D 0  7004        N6F2  MDX      H6F1       BSC FAILED                8B444480
0A3E 0  0A41              DC       N6F3                                 8B444490
0A3F 0  7002              MDX      H6F1       BSC FAILED                8B444500
0A40 0  7001              MDX      H6F1       BSC FAILED                8B444510
0A41 0  7003        N6F3  MDX      H6F2                                 8B444520
0A42 00 44000F83    H6F1  BSI  L   F000       BSC DID NOT BRANCH        8B444530
0A44 0  3166              DC       /3166      ERR ID                    8B444540
0A45 00 44000FDE    H6F2  BSI  L   F005       CK LOCK ON ERROR          8B444550
0A47 0  70F1              MDX      A6F1       LOOP                      8B444560
                    ********************************************        8B444570
                    *                                                   8B444580
                    *            TEST OF SUBTRACT OPERATION             8B444590
                    *                                                   8B444600
                    ********************************************        8B444610
0A48 0  2000        A700  LDS      0          SET C AND OF OFF          8B444620
0A49 0  C066              LD       N700       LD /0000                  8B444630
0A4A 0  9066              S        N701       S /0001 A NOW /FFFF       8B444640
0A4B 0  2866              STS      N702       STORE CARRY IND. TO N702  8B444650
0A4C 0  F066              EOR      N703       ZERO ACC IF CORRECT       8B444660
0A4D 00 4C180A52          BSC  L   G700,+-    BRANCH ON ZERO            8B444670
0A4F 00 44000F83          BSI  L   F000       0000 MINUS 0001 FAILED    8B444680
0A51 0  30FA              DC       /30FA      ERR ID                    8B444690
0A52 00 44000FB2    G700  BSI  L   F00F       CK LOCK ON ERROR          8B444700
0A54 0  70F3              MDX      A700       LOOP                      8B444710
0A55 0  C05C              LD       N702       LD CARRY INDICATION       8B444720
0A56 0  F05D              EOR      N704       ZERO IF CORRECT           8B444730
0A57 00 4C180A5C          BSC  L   G702,+-    BRANCH ON ZERO            8B444740
0A59 00 44000F83          BSI  L   F000       CARRY NOT ON              8B444750
0A5B 0  30FB              DC       /30FB      ERR ID                    8B444760
0A5C 00 44000FDE    G702  BSI  L   F005       CK LOCK ON ERROR          8B444770
0A5E 0  70E9              MDX      A700       LOOP                      8B444780
                    ********************************************        8B444790
0A5F 0  2000        A704  LDS      0          SET C AND OF OFF          8B444800
0A60 0  C04F              LD       N700       LD /0000                  8B444810
0A61 0  9051              S        N703       S /FFFF                   8B444820
0A62 0  284F              STS      N702       STORE CARRY ON CONDITION  8B444830
0A63 0  F04D              EOR      N701       ZERO WITH /0001           8B444840
0A64 00 4C180A69          BSC  L   G704,+-    BRANCH ON ZERO            8B444850
0A66 00 44000F83          BSI  L   F000       0000 MINUS FFFF FAILED    8B444860
0A68 0  30FC              DC       /30FC      ERR ID                    8B444870
0A69 00 44000FB2    G704  BSI  L   F00E       CK LOCK ON ERROR          8B444880
0A6B 0  70F3              MDX      A704       LOOP                      8B444890
0A6C 0  C045              LD       N702       LD CARRY COND FROM N702   8B444900
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0A6D 0  F046                 EOR     N704       ZERO ACC IF CORRECT          8B444910
0A6E 00 4C180A73             BSC  L  G706,+-    BRANCH ON ZERO               8B444920
0A70 00 44000F83             BSI  L  F000       CARRY NOT SET                8B444930
0A72 0  30FD                 DC      /30FD      ERR ID                       8B444940
0A73 00 44000FDE        G706 BSI  L  F005       CK LOCK ON ERROR             8B444950
0A75 0  70E9                 MDX     A704       LOOP                         8B444960
                        ***********************************************      8B444970
*************************************************************************** 8B444980
CORE     DATA OR        *LA- OPER-                                           8B444990
ADDR     INSTRUCTION *BEL ATION FT OPERANDS + REMARKS    ID+SEQ= AT RIGHT 8B445000
*************************************************************************** 8B445010
0A76 0  2000            A708 LDS     0          SET C AND OF OFF             8B445020
0A77 0  C03D                 LD      N705       LD /8000                     8B445030
0A78 0  9028                 S       N701       S  /0001                     8B445040
0A79 0  2838                 STS     N702       SAVE C + OF CONDITION        8B445050
0A7A 0  F03C                 EOR     N707       ZERO ACC IF CORRECT OP       8B445060
0A7B 00 4C180A80             BSC  L  G708,+-    BRANCH ON ZERO               8B445070
0A7D 00 44000F83             BSI  L  F000       8000 MINU  0001 FAILED       8B445080
0A7F 0  30FE                 DC      /30FE      ERR ID                       8B445090
0A80 00 44000FB2        G708 BSI  L  F00E       CK LOCK ON ERROR             8B445100
0A82 0  70F3                 MDX     A708       LOOP                         8B445110
0A83 0  C02E                 LD      N702       LD STORE CARRY CONDITION     8B445120
0A84 0  F02C                 EOR     N701       ZERO IF CORRECT              8B445130
0A85 00 4C180A8A             BSC  L  G70A,+-    BRANCH ON ZERO               8B445140
0A87 00 44000F83             BSI  L  F000       OVERFLOW NOT SET             8B445150
0A89 0  30FF                 DC      /30FF      ERR ID                       8B445160
0A8A 00 44000FDE        G70A BSI  L  F005       CK LOCK ON ERROR             8B445170
0A8C 0  70E9                 MDX     A708       LOOP                         8B445180
                        ***********************************************      8B445190
0A8D 0  2000            A70C LDS     0          SET C AND OF OFF             8B445200
0A8E 0  C021                 LD      N700       LD /0000                     8B445210
0A8F 0  9025                 S       N705       S  /8000                     8B445220
0A90 0  2821                 STS     N702       STORE C + OF CONDITION       8B445230
0A91 0  F023                 EOR     N705       ZERO ACC IF CORRECT          8B445240
0A92 00 4C180A97             BSC  L  G70C,+-    BRANCH ON ZERO               8B445250
0A94 00 44000F83             BSI  L  F000       0000 MINUS 8000 FAILED       8B445260
0A96 0  3100                 DC      /3100      ERR ID                       8B445270
0A97 00 44000FB2        G70C BSI  L  F00E       CK LOCK ON ERROR             8B445280
0A99 0  70F3                 MDX     A70C       LOOP                         8B445290
0A9A 0  C017                 LD      N702       LD CON CF C+OF               8B445300
0A9B 0  F01A                 EOR     N706       ZERO ACC IF CORRECT          8B445310
0A9C 00 4C180AAC             BSC  L  G70E,+-    BRANCH ON ZERO               8B445320
0A9E 0  C013                 LD      N702       LD CON OF C + OF             8B445330
0A9F 0  E011                 AND     N701       AND IN /0001                 8B445340
0AA0 00 4C200AA9             BSC  L  J70E,Z     BR IF NOT ZERO               8B445350
0AA2 00 44000F83             BSI  L  F000       OVERFLOW NOT ON              8B445360
0AA4 0  3101                 DC      /3101      ERR ID                       8B445370
0AA5 00 44000FDE             BSI  L  F005       CK LOCK ON ERROR             8B445380
0AA7 0  70E5                 MDX     A70C       LOOP                         8B445390
0AA8 0  700F                 MDX     A740       EXIT TO NEXT ROUTINE         8B445400
0AA9 00 44000F83        J70E BSI  L  F000       CARRY NOT ON                 8B445410
0AAB 0  3102                 DC      /3102      ERR ID                       8B445420
0AAC 00 44000FDE        G70E BSI  L  F005       CK LOCK ON ERROR             8B445430
0AAE 0  70DE                 MDX     A70C       LOOP                         8B445440
0AAF 0  7008                 MDX     A740       EXIT TO NEXT ROUTINE         8B445450
0AB0 0  0000            N700 DC      /0000                                   8B445460
0AB1 0  0001            N701 DC      /0001                                   8B445470
0AB2 0  0000            N702 DC      /0000                                   8B445480
0AB3 0  FFFF            N703 DC      /FFFF                                   8B445490
0AB4 0  0002            N704 DC      /0002                                   8B445500
0AB5 0  8000            N705 DC      /8000                                   83445510
0AB6 0  0003            N706 DC      /0003                                   8B445520
0AB7 0  7FFF            N707 DC      /7FFF                                   8B445530
                        *                                                    8B445540
                        *                 TEST OF ADD DOUBLE                 8B445550
                        *                                                    8B445560
                        ***********************************************      8B445570
*************************************************************************** 8B445580
```



```
CORE     DATA OR        *LA- OPER-                                           83445590
ADDR     INSTRUCTION *BEL ATION FT OPERANDS + REMARKS    ID+SEQ= AT RIGHT 8B445600
*************************************************************************** 8B445610
0AB8 0  2000            A740 LDS     0          SET C AND OF OFF             8B445620
0AB9 00 CC000B80             LDD  L  N742       LD A=/FFFF  Q=/FFFF          8B445630
0ABB 00 8C000B82             AD   L  N744       A    /0000    /0000          8B445640
0ABD 00 2C000B7E             STS  L  N740       STORE CON. OF C + OF         8B445650
0ABF 00 F4000B80             EOR  L  N742                                    8B445660
0AC1 00 4C180AC6             BSC  L  G740,+-    BRANCH ON ZERO               8B445670
0AC3 00 44000F83             BSI  L  F000       AD FFFF+0000 A FAILED        9B445680
0AC5 0  3103                 DC      /3103      ERR ID                       8B445690
0AC6 00 44000FB2        G740 BSI  L  F00E       CK LOCK ON ERROR             8B445700
0AC8 0  70EF                 MDX     A740       LOOP                         8B445710
0AC9 0  18D0                 RTE     16                                      83445720
0ACA 00 F4000B80             EOR  L  N742                                    8B445730
0ACC 00 4C180AD1             BSC  L  G742,+-    BR ON ZERO                   8B445740
0ACE 00 44000F83             BSI  L  F000       AD FFFF+0000 Q FAILED        8B445750
0AD0 0  3104                 DC      /3104      ERR ID                       8B445760
0AD1 00 44000FB2        G742 BSI  L  F00E       CK LOCK ON ERROR             8B445770
0AD3 0  70E4                 MDX     A740       LOOP                         8B445780
0AD4 00 C4000B7E             LD   L  N740       CONDITION OF C + OF          8B445790
0AD6 00 4C180AE4             BSC  L  G744,+-    BRANCH ON ZERO               8B445800
0AD8 00 4C040AE1             BSC  L  H744,E     BR IF NOT EVEN               8B445810
0ADA 00 44000F83             BSI  L  F000       CARRY ON                     8B445820
0ADC 0  3105                 DC      /3105      ERR ID                       8B445830
0ADD 00 44000FDE             BSI  L  F005       CK LOCK ON ERROR             8B445840
0ADF 0  70D8                 MDX     A740       LOOP                         8B445850
0AE0 0  7003                 MDX     G744                                    8B445860
0AE1 00 44000F83        H744 BSI  L  F000       OVFLO ON                     8B445870
0AE3 0  3106                 DC      /3106      ERR ID                       8B445880
0AE4 00 44000FDE        G744 BSI  L  F005       CK LOCK ON ERROR             8B445890
0AE6 0  70D1                 MDX     A740       LOOP                         8B445900
                        ***********************************************      8B445910
0AE7 0  2000            A746 LDS     0          SET C AND OF OFF             8B445920
0AE8 00 CC000B84             LDD  L  N746       LD  A=/0000  Q=/0001         8B445930
0AEA 00 8C000B80             AD   L  N742       A     /FFFF    /FFFF         8B445940
0AEC 00 2C000B7E             STS  L  N740       STORE COND OF C AND OF       8B445950
0AEE 00 4C180AF3             BSC  L  G746,+-    BRANCH ON ZERO               8B445960
0AF0 00 44000F83             BSI  L  F000       AD 0000+FFFF A FAILED        8B445970
0AF2 0  3107                 DC      /3107      ERR ID                       8B445980
0AF3 00 44000FB2        G746 BSI  L  F00E       CK LOCK ON ERROR             8B445990
0AF5 0  70F1                 MDX     A746       LOOP                         8B446000
0AF6 0  1800                 RTE     16         INTERCHANGE A AND Q          8B446010
0AF7 00 4C180AFC             BSC  L  G748,+-    BRANCH ON ZERO               8B446020
0AF9 00 44000F83             BSI  L  F000       AD 0001+FFFF Q FAILED        8B446030
0AFB 0  3108                 DC      /3108      ERR ID                       8B446040
0AFC 00 44000FB2        G748 BSI  L  F00E       CK LOCK ON ERROR             8B446050
0AFE 0  70E8                 MDX     A746       LOOP                         8B446060
0AFF 00 C4000B7E             LD   L  N740       LD COND OF C AND OF          8B446070
0B01 00 F4000B86             EOR  L  N748       CHECK FOR CARRY              8B446080
0B03 00 4C180B11             BSC  L  G74A,+-    ZERO= C AND OF OK            8B446090
0B05 00 4C040B0E             BSC  L  H74A,E     CHECK FOR OVERFLOW (B15)     8B446100
0B07 00 44000F83             BSI  L  F000       CARRY NOT ON                 8B446110
0B09 0  3109                 DC      /3109      ERR ID                       8B446120
0B0A 00 44000FDE             BSI  L  F005       CK LOCK ON ERROR             8B446130
0B0C 0  70DA                 MDX     A746       LOOP                         8B446140
0B0D 0  7003                 MDX     G74A                                    8B446150
0B0E 00 44000F83        H74A BSI  L  F000       OVFLO ON                     8B446160
0B10 0  310A                 DC      /310A      ERR ID                       8B446170
0B11 00 44000FDE        G74A BSI  L  F005       CK LOCK ON ERROR             8B446180
0B13 0  70D3                 MDX     A746       LOOP                         8B446190
                        ***********************************************      8B446200
*************************************************************************** 8B446210
                                                                             8B446220
CORE     DATA OR        *LA- OPER-                                           
ADDR     INSTRUCTION *BEL ATION FT OPERANDS + REMARKS    ID+SEQ= AT RIGHT 8B446230
*************************************************************************** 8B446240
0B14 0  2000            A74C LDS     0          SET C AND OF OFF             8B446250
0B15 0  C86A                 LDD     N742       LD A=/FFFF  Q=/FFFF          8B446260
```

PROCESSOR-CONTROLLER FUNCTION TEST

```
0B16 0  8869            AD      N742     A  /FFFF      /FFFF          8B446270
0B17 0  2866            STS     N740     STORE C AND OF COND          8B446280
0B18 0  F067            EOR     N742     ZERO WITH /FFFF              8B446290
0B19 00 4C180B1E        BSC  L  G74C,+-  BRANCH ON ZERO               8B446300
0B1B 00 44000F83        BSI  L  F000     AD FFFF+FFFF ACC FAILED      8B446310
0B1D 0  310B            DC      /310B    ERR ID                       8B446320
0B1E 00 44000FB2   G74C BSI  L  F00E     CK LOCK ON ERROR             8B446330
0B20 0  70F3            MDX     A74C     LOOP                         8B446340
0B21 0  18D0            RTE     16       INTERCHANGE A AND Q          8B446350
0B22 0  F065            EOR     N74A     ZERO WITH /FFFF              8B446360
0B23 00 4C180B28        BSC  L  G74E,+-  BRANCH ON ZERO               8B446370
0B25 00 44000F83        BSI  L  F000     AD FFFF+FFFF Q FAILED        8B446380
0B27 0  310C            DC      /310C    ERR ID                       8B446390
0B28 00 44000FB2   G74E BSI  L  F00E     CK LOCK ON ERROR             8B446400
0B2A 0  70E9            MDX     A74C     LOOP                         8B446410
0B2B 0  C052            LD      N740     CONDITION OF C AND OF        8B446420
0B2C 0  F059            EOR     N748     CHECK FOR OVERFLOW           8B446430
0B2D 00 4C180B3B        BSC  L  J740,+-  BRANCH ON ZERO               8B446440
0B2F 00 4C040B38        BSC  L  K740,E   CHECK FOR CARRY              8B446450
0B31 00 44000F83        BSI  L  F000     CARRY NOT ON                 8B446460
0B33 0  310E            DC      /310E    ERR ID                       8B446470
0B34 00 44000FDE        BSI  L  F005     CK LOCK ON ERROR             8B446480
0B36 0  700D            MDX     A74C     LOOP                         8B446490
0B37 0  7003            MDX     J740                                  8B446500
0B38 00 44000F83   K740 BSI  L  F000     OVFLO ON                     8B446510
0B3A 0  310D            DC      /310D    ERR ID                       8B446520
0B3B 00 44000FDE   J740 BSI  L  F005     CK LOCK ON ERROR             8B446530
0B3D 0  70D6            MDX     A74C     LOOP                         8B446540
                   *******************************************        8B446550
0B3E 0  2000       B742 LDS     0        SET C AND OF OFF             8B446560
0B3F 0  C84A            LDD     N74C     LD  A=/FFFF  Q=/7FFF         8B446570
0B40 0  883F            AD      N742     A  /FFFF   /FFFF             8B446580
0B41 0  283C            STS     N740     STORE CONDITION OF C + OF    8B446590
0B42 0  F03D            EOR     N742                                  8B446600
0B43 00 4C180B48        BSC  L  J742,+-  BRANCH ON ZERO               8B446610
0B45 00 44000F83        BSI  L  F000     AD FFFF+FFFF A FAILED        8B446620
0B47 0  310F            DC      /310F    ERR ID                       8B446630
0B48 00 44000FB2   J742 BSI  L  F00E     CK LOCK ON ERROR             8B446640
0B4A 0  70F3            MDX     B742     LOOP                         8B446650
0B4B 0  18D0            RTE     16       INTERCHANGE A AND Q          8B446660
0B4C 0  F03C            EOR     N748                                  8B446670
0B4D 00 4C180B52        BSC  L  J744,+-  BRANCH ON ZERO               8B446680
0B4F 00 44000F83        BSI  L  F000     AD /7FFF+FFFF Q /FAILED      8B446690
0B51 0  3110            DC      /3110    ERR ID                       8B446700
0B52 00 44000FB2   J744 BSI  L  F00E     CK LOCK ON ERROR             8B446710
0B54 0  70E9            MDX     B742     LOOP                         8B446720
0B55 0  C02E            LD      N740     LD C AND OF CONDITION        8B446730
0B56 0  F02F            EOR     N748     ZERO IF CARRY WAS ON         8B446740
0B57 00 4C180B65        BSC  L  J746,+-  BRANCH ON ZERO               8B446750
0B59 00 4C040B62        BSC  L  K746,E   CHECK FOR CARRY              8B446760
0B5B 00 44000F83        BSI  L  F000     CARRY NOT ON                 8B446770
0B5D 0  3112            DC      /3112    ERR ID                       8B446780
0B5E 00 44000FDE        BSI  L  F005     CK LOCK ON ERROR             8B446790
0B60 0  700D            MDX     B742     LOOP                         8B446800
0B61 0  7003            MDX     J746                                  8B446810
0B62 00 44000F83   K746 BSI  L  F000     OVFLO ON                     8B446820
0B64 0  3111            DC      /3111    ERR ID                       8B446830
0B65 00 44000FDE   J746 BSI  L  F005     CK LOCK ON ERROR             8B446840
0B67 0  70D6            MDX     B742     LOOP                         8B446850
                   *******************************************        8B446860
*****************************************************************     8B446870
CORE    DATA OR    *LA- OPER-                                         8B446880
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS  ID+SEQ= AT RIGHT 8B446890
*****************************************************************     8B446900
0B68 0  C81B       B747 LDD     N746     LD  A=/0000  Q=/0001         8B446910
0B69 0  881B            AD      N747     A   /0001    /0001           8B446920
0B6A 0  F01A            EOR     N747     ZERO ACC IF CORRECT OP       8B446930
0B6B 00 4C180B70      . BSC  L  J748,+-  BRANCH ON ZERO               8B446940
```


PROCESSOR-CONTROLLER FUNCTION TEST

```
0B6D 00 44000F83        BSI  L  F000     AD-ODD A REG FAILED          8B446950
0B6F 0  3113            DC      /3113    ERR ID                       8B446960
0B70 00 44000FB2   J748 BSI  L  F00E     CK LOCK ON ERROR             8B446970
0B72 0  70F5            MDX     B747     LOOP                         8B446980
0B73 0  18D0            RTE     16       NOW  A=/0002  Q=/0000        8B446990
0B74 0  F011            EOR     N748     ZERO ACC IF CORRECT OP       8B447000
0B75 00 4C180B7A        BSC  L  J74A,+-  BRANCH ON ZERO               8B447010
0B77 00 44000F83        BSI  L  F000     AD-ODD Q REG FAILED          8B447020
0B79 0  3114            DC      /3114    ERR ID                       8B447030
0B7A 00 44000FDE   J74A BSI  L  F005     CK LOCK ON ERROR             8B447040
0B7C 0  70EB            MDX     B747     LOOP                         8B447050
0B7D 0  700E            MDX     A780     EXIT TO NEXT ROUTINE         8B447060
0B7E 0  0000       N740 DC      /0000                                 8B447070
0B80    0000            BSS  E                                        8B447080
0B80 0  FFFF       N742 DC      /FFFF                                 8B447090
0B81 0  FFFF            DC      /FFFF                                 8B447100
0B82 0  0000       N744 DC      /0000                                 8B447110
0B83 0  0000            DC      /0000                                 8B447120
0B84 0  0000       N746 DC      /0000                                 8B447130
0B85 0  0001       N747 DC      /0001                                 8B447140
0B86 0  0002       N748 DC      /0002                                 8B447150
0B87 0  0000            DC      /0000                                 8B447160
0B88 0  FFFE       N74A DC      /FFFE                                 8B447170
0B89 0  7FFE       N74B DC      /7FFE                                 8B447180
0B8A 0  FFFF       N74C DC      /FFFF                                 8B447190
0B8B 0  7FFF            DC      /7FFF                                 8B447200
                   *                                                  8B447210
                   *                     TEST SUB DOUBLE              8B447220
                   *                                                  8B447230
                   *******************************************        8B447240
0B8C 0  2000       A780 LDS     0        SET C AND OF OFF             8B447250
0B8D 0  C868            LDD     N782     LD  A=/0000  Q=/0000         8B447260
0B8E 0  9869            SD      N784     S   /0000    /0001           8B447270
0B8F 0  2864            STS     N780     STORE C AND OF CONDITION     8B447280
0B90 0  F069            EOR     N786     ZERO WITH /FFFF              8B447290
0B91 00 4C180B96        BSC  L  G780,+-  BRANCH ON ZERO               8B447300
0B93 00 44000F83        BSI  L  F000     SD 0000-0000 ACC FAILED      8B447310
0B95 0  3115            DC      /3115    ERR ID                       8B447320
0B96 00 44000FB2   G780 BSI  L  F00E     CK LOCK ON ERROR             8B447330
0B98 0  70F3            MDX     A780     LOOP                         8B447340
0B99 0  18D0            RTE     16       NOW  A=/FFFF   Q=/0000       8B447350
0B9A 0  F05F            EOR     N786     ZERO WITH /FFFF              8B447360
0B9B 00 4C180BA0        BSC  L  G782,+-  BR ON ZERO                   8B447370
0B9D 00 44000F83        BSI  L  F000     SD 0000-0001 Q FAILED        8B447380
0B9F 0  3116            DC      /3116    ERR ID                       8B447390
0BA0 00 44000FB2   G782 BSI  L  F00E     CK LOCK ON ERROR             8B447400
0BA2 0  70E9            MDX     A780     LOOP                         8B447410
0BA3 0  C050            LD      N780     LD C AND OF CONDITION        8B447420
0BA4 0  F057            EOR     N788     ZERO IF CARRY WAS ON         8B447430
0BA5 00 4C180BB3        BSC  L  G784,+-  BRANCH ON ZERO               8B447440
0BA7 00 4C040BB0        BSC  L  H784,E   CHECK FOR CARRY              8B447450
0BA9 00 44000F83        BSI  L  F000     CARRY NOT ON                 8B447460
0BAB 0  3117            DC      /3117    ERR ID                       8B447470
0BAC 00 44000FDE        BSI  L  F005     CK LOCK ON ERROR             8B447480
0BAE 0  700D            MDX     A780     LOOP                         8B447490
0BAF 0  7003            MDX     G784                                  8B447500
0BB0 00 44000F83   H784 BSI  L  F000     OVFLO ON                     8B447510
0BB2 0  3118            DC      /3118    ERR ID                       8B447520
0BB3 00 44000FDE   G784 BSI  L  F005     CK LOCK ON ERROR             8B447530
0BB5 0  70D6            MDX     A780     LOOP                         8B447540
                   *******************************************        8B447550
*****************************************************************     8B447560
CORE    DATA OR    *LA- OPER-                                         8B447570
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS  ID+SEQ= AT RIGHT 8B447580
*****************************************************************     8B447590
0BB6 0  2000       A786 LDS     0        SET C AND OF OFF             8B447600
0BB7 0  C83E            LDD     N782     LD  A=/0000  Q=/0000         8B447610
0BB8 0  9841            SD      N786      /FFFF   /FFFF               8B447620
```

PROCESSOR-CONTROLLER FUNCTION TEST

```
08B9 00 4C180B8E        BSC  L  G786,+-     BRANCH ON ZERO                  8B447630
08BB 00 44000F83        BSI  L  F000        SD 0000-FFFF A FAILED           8B447640
08BD 0  3119            DC      /3119       ERR ID                          8B447650
08BE 00 44000FB2  G786  BSI  L  F00E        CK LOCK ON ERROR                8B447660
08C0 0  70F5            MDX     A786        LOOP                            8B447670
08C1 0  18D0            RTE     16          NOW A=/0001  Q=/0000            8B447680
08C2 0  F036            EOR     N785        ZERO WITH /0001                 8B447690
08C3 00 4C180BC8        BSC  L  G788,+-     BRANCH ON ZERO                  8B447700
08C5 00 44000F83        BSI  L  F000        SD 0000-FFFF Q FAILED           8B447710
08C7 0  311A            DC      /311A       ERR ID                          8B447720
08C8 00 44000FDE  G788  BSI  L  F005        CK LOCK ON ERROR                8B447730
08CA 0  70EB            MDX     A786        LOOP                            8B447740
                        ****************************************            8B447750
08CB 0  C832      A78A  LDD     N78A        LD  A=/0000  Q=/C000            8B447760
08CC 0  982D            SD      N786        S  /FFFF   /FFFF                8B447770
08CD 00 4C180BD2        BSC  L  G78A,+-     BRANCH ON ZERO                  8B447780
08CF 00 44000F83        BSI  L  F000        SD 0000-FFFF A FAILED           8B447790
08D1 0  311B            DC      /311B       ERR ID                          8B447800
08D2 00 44000FB2  G78A  BSI  L  F00E        CK LOCK ON ERROR                8B447810
08D4 0  70F6            MDX     A78A        LOOP                            8B447820
08D5 0  18D0            RTE     16          NOW  A=/C001  Q=/0000           8B447830
08D6 0  F029            EOR     N78D        ZERO WITH /C001                 8B447840
08D7 00 4C180BDC        BSC  L  G78C,+-     BRANCH ON ZERO                  8B447850
08D9 00 44000F83        BSI  L  F000        SD C000-FFFF Q FAILED           8B447860
08DB 0  311C            DC      /311C       ERR ID                          8B447870
08DC 00 44000FDE  G78C  BSI  L  F005        CK LOCK ON ERROR                8B447880
08DE 0  70EC            MDX     A78A        LOOP                            8B447890
                        ****************************************            8B447900
08DF 0  C816      A78E  LDD     N782        LD  A=/0000  Q=/0000            8B447910
08E0 0  981A            SD      N787        S  /FFFF   /FFFF                8B447920
08E1 00 4C180BE6        BSC  L  G78E,+-     BRANCH ON ZERO                  8B447930
08E3 00 44000F83        BSI  L  F000        SD-ODD A FAILED                 8B447940
08E5 0  311D            DC      /311D       ERR ID                          8B447950
08E6 00 44000FB2  G78E  BSI  L  F00E        CK LOCK ON ERROR                8B447960
08E8 0  70F6            MDX     A78E        LOOP                            8B447970
08E9 0  18D0            RTE     16          NOW  A=/0001  Q=/0000           8B447980
08EA 0  F00E            EOR     N785        ZERO WITH /0001                 8B447990
08EB 00 4C180BF0        BSC  L  H780,+-     BRANCH ON ZERO                  8B448000
08ED 00 44000F83        BSI  L  F000        SD-ODD Q FAILED                 8B448010
08EF 0  311E            DC      /311E       ERR ID                          8B448020
08F0 00 44000FDE  H780  BSI  L  F005        CK LOCK ON ERROR                8B448030
08F2 0  70EC            MDX     A78E        LOOP                            8B448040
08F3 0  700D            MDX     A7C0        EXIT TO NEXT ROUTINE            8B448050
08F4 0  0000      N780  DC      /0000                                       8B448060
08F6    0000            BSS  E                                              8B448070
08F6 0  0000      N782  DC      /0000                                       8B448080
08F7 0  0000            DC      /0000                                       8B448090
08F8 0  0000      N784  DC      /0000                                       8B448100
08F9 0  0001      N785  DC      /0001                                       8B448110
08FA 0  FFFF      N786  DC      /FFFF                                       8B448120
08FB 0  FFFF      N787  DC      /FFFF                                       8B448130
08FC 0  0002      N788  DC      /0002                                       8B448140
08FD 0  0000            DC      /0000                                       8B448150
08FE 0  0000      N78A  DC      /0000                                       8B448160
08FF 0  C000            DC      /C000                                       8B448170
0C00 0  C001      N78D  DC      /C001                                       8B448180
                        *                                                   8B448190
                        *              TEST OF MULTIPLY OPERATION           8B448200
                        *                                                   8B448210
                        ********************************************        8B448220
************************************************************************  8B448230
CORE    DATA OR     *LA- OPER-                                              8B448240
ADDR    INSTRUCTION *ReL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT     8B448250
************************************************************************  8B448260
0C01 0  C04F      A7C0  LD      N7C0        LD  /5555                       8B448270
0C02 0  A04F            M       N7C1        M  /2AAA                        8B448280
0C03 0  F04F            EOR     N7C2        ZERO WITH  /0E38                8B448290
0C04 00 4C180C09        BSC  L  G7C0,+-     BRANCH ON ZERO                  8B448300
```


PROCESSOR-CONTROLLER FUNCTION TEST

```
0C06 00 44000F83        BSI  L  F000        M  /5555X/2AAA ACC FAILED     8B448310
0C08 0  311F            DC      /311F       ERR ID                          8B448320
0C09 00 44000FB2  G7C0  BSI  L  F00E        CK LOCK ON ERROR                8B448330
0C0B 0  70F5            MDX     A7C0        LOOP                            8B448340
0C0C 0  18D0            RTE     16          NOW  A=/9C72  Q=/0000           8B448350
0C0D 0  F046            EOR     N7C3        ZERO WITH /9C72                 8B448360
0C0E 00 4C180C13        BSC  L  G7C2,+-     BRANCH ON ZERO                  8B448370
0C10 00 44000F83        BSI  L  F000        MULT 5555X2AAA Q FAILED         8B448380
0C12 0  3120            DC      /3120       ERR ID                          8B448390
0C13 00 44000FDE  G7C2  BSI  L  F005        CK LOCK ON ERROR                8B448400
0C15 0  70EB            MDX     A7C0        LOOP                            8B448410
                        ****************************************            8B448420
0C16 0  C03E      A7C4  LD      N7C4        LD  /FFFF                       8B448430
0C17 0  A03D            M       N7C4        M  /FFFF                        8B448440
0C18 00 4C180C1D        BSC  L  G7C4,+-     BRANCH ON ZERO                  8B448450
0C1A 00 44000F83        BSI  L  F000        M /FFFFX/FFFF ACC FAILED        8B448460
0C1C 0  3121            DC      /3121       ERR ID                          8B448470
0C1D 00 44000FB2  G7C4  BSI  L  F00E        CK LOCK ON ERROR                8B448480
0C1F 0  70F6            MDX     A7C4        LOOP                            8B448490
0C20 0  18D0            RTE     16          NOW  A=/0001  Q=/0000           8B448500
0C21 0  F034            EOR     N7C5        ZERO WITH /0001                 8B448510
0C22 00 4C180C27        BSC  L  G7C6,+-     BRANCH ON ZERO                  8B448520
0C24 00 44000F83        BSI  L  F000        M /FFFFX/FFFF Q REG FAILED      8B448530
0C26 0  3122            DC      /3122       ERR ID                          8B448540
0C27 00 44000FDE  G7C6  BSI  L  F005        CK LOCK ON ERROR                8B448550
0C29 0  70EC            MDX     A7C4        LOOP                            8B448560
                        ****************************************            8B448570
0C2A 0  C02C      A7C8  LD      N7C6        LD  /0000                       8B448580
0C2B 0  A029            M       N7C4        M  /FFFF                        8B448590
0C2C 00 4C180C31        BSC  L  G7C8,+-     BRANCH ON ZERO                  8B448600
0C2E 00 44000F83        BSI  L  F000        M /FFFFX/0000 ACC FAILED        8B448610
0C30 0  3123            DC      /3123       ERR ID                          8B448620
0C31 00 44000FB2  G7C8  BSI  L  F00E        CK LOCK ON ERROR                8B448630
0C33 0  70F6            MDX     A7C8        LOOP                            8B448640
0C34 0  18D0            RTE     16          NOW  A=/0000  Q=/0000           8B448650
0C35 00 4C180C3A        BSC  L  G7CA,+-     BRANCH ON ZERO                  8B448660
0C37 00 44000F83        BSI  L  F000        M /FFFFX/0000 Q REG FAILED      8B448670
0C39 0  3124            DC      /3124       ERR ID                          8B448680
0C3A 00 44000FDE  G7CA  BSI  L  F005        CK LOCK ON ERROR                8B448690
0C3C 0  70ED            MDX     A7C8        LOOP                            8B448700
                        ****************************************            8B448710
0C3D 0  C017      A7CC  LD      N7C4        LD  /FFFF                       8B448720
0C3E 0  A018            M       N7C6        M  /0000                        8B448730
0C3F 00 4C180C44        BSC  L  G7CC,+-     BRANCH ON ZERO                  8B448740
0C41 00 44000F83        BSI  L  F000        M /0000X/FFFF ACC FAILED        8B448750
0C43 0  3125            DC      /3125       ERR ID                          8B448760
0C44 00 44000FB2  G7CC  BSI  L  F00E        CK LOCK ON ERROR                8B448770
0C46 0  70F6            MDX     A7CC        LOOP                            8B448780
0C47 0  18D0            RTE     16          NOW  A=/0000  Q=/0000           8B448790
0C48 00 4C180C4D        BSC  L  G7CE,+-     BRANCH ON ZERO                  8B448800
0C4A 00 44000F83        BSI  L  F000        M /0000X/FFFF Q REG FAILED      8B448810
0C4C 0  3126            DC      /3126       ERR ID                          8B448820
0C4D 00 44000FDE  G7CE  BSI  L  F005        CK LOCK ON ERROR                8B448830
0C4F 0  70ED            MDX     A7CC        LOOP                            8B448840
0C50 0  7007            MDX     A800        EXIT TO NEXT ROUTINE            8B448850
0C51 0  5555      N7C0  DC      /5555                                       8B448860
0C52 0  2AAA      N7C1  DC      /2AAA                                       8B448870
0C53 0  0E38      N7C2  DC      /0E38                                       8B448880
0C54 0  9C72      N7C3  DC      /9C72                                       8B448890
0C55 0  FFFF      N7C4  DC      /FFFF                                       8B448900
0C56 0  0001      N7C5  DC      /0001                                       8B448910
0C57 0  0000      N7C6  DC      /0000                                       8B448920
                        *                                                   8B448930
                        *              TEST OF DIVIDE OPERATION             8B448940
                        *                                                   8B448950
                        ********************************************        8B448960
************************************************************************  8B448970
CORE    DATA OR     *LA- OPER-                                              8B448980
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ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B448990
*************************************************************************** 8B449000
0C58 0  2000        A800  LDS     0          SET C AND OF OFF              8B449010
0C59 00 CC000CF6          LDD   L N802       LD  A=/400C  Q=/7FFF          8B449020
0C5B 00 AC000D06          D     L N812       D  /8000                      8B449030
0C5D 00 2C000CF5          STS   L N800       STORE C AND OF CONDITION      8B449040
0C5F 00 F4000D06          EOR   L N812       ZERO WITH /8000               8B449050
0C61 00 4C180C66          BSC   L G800,+-    BR ON ZERO                    8B449060
0C63 00 44000F83          BSI   L F000       OVD-A-REG INCORRECT           8B449070
0C65 0  3127              DC        /3127    ERR ID                        8B449080
0C66 00 44000FB2    G800  BSI   L F00E       CK LOCK ON ERROR              8B449090
0C68 0  70EF              MDX       A800     LOOP                          8B449100
0C69 0  18D0              RTE       16       NOW  A=/7FFF  Q=/0000         8B449110
0C6A 00 F4000D05          EOR   L N811       ZERO WITH /7FFF               8B449120
0C6C 00 4C180C71          BSC   L G802,+-    BRANCH ON ZERO                8B449130
0C6E 00 44000F83          BSI   L F000       OVD-Q REG INCORRECT           8B449140
0C70 0  3128              DC        /3128    ERR ID                        8B449150
0C71 00 44000FB2    G802  BSI   L F00E       CK LOCK ON ERROR              8B449160
0C73 0  70E4              MDX       A800     LOOP                          8B449170
0C74 00 C4000CF5          LD    L N800       LD /0000                      8B449180
0C76 00 4C180C84          BSC   L G804,+-    BRANCH ON ZERO                8B449190
0C78 00 4C040C81          BSC   L H804,E     BR ON NOT EVEN                8B449200
0C7A 00 44000F83          BSI   L F000       CARRY ON                      8B449210
0C7C 0  3129              DC        /3129    ERR ID                        8B449220
0C7D 00 44000FDE          BSI   L F005       CK LOCK ON ERROR              8B449230
0C7F 0  70D8              MDX       A800     LOOP                          8B449240
0C80 0  7006              MDX       A806     EXIT TO NEXT ROUTINE          8B449250
0C81 00 44000F83    H804  BSI   L F000       OVFLO ON                      8B449260
0C83 0  312A              DC        /312A    ERR ID                        8B449270
0C84 00 44000FDE    G804  BSI   L F005       CK LOCK ON ERROR              8B449280
0C86 0  70D1              MDX       A800     LOOP                          8B449290
                          ********************************************    8B449300
0C87 0  C870        A806  LDD       N804     LD  A=/1C71  Q=/BBE3          8B449310
0C88 00 AC000D07          D     L N813       D  /5555                      8B449320
0C8A 0  286A              STS       N800     STORE C AND OF CONDITION      8B449330
0C8B 00 F4000D07          EOR   L N813       ZERO WITH /5555               8B449340
0C8D 00 4C180C92          BSC   L G806,+-    BRANCH ON ZERO                8B449350
0C8F 00 44000F83          BSI   L F000       DVD-A REG INCORRECT           8B449360
0C91 0  3128              DC        /312B    ERR ID                        8B449370
0C92 00 44000FB2    G806  BSI   L F00E       CK LOCK ON ERROR              8B449380
0C94 0  70F2              MDX       A806     LOOP                          8B449390
0C95 0  18D0              RTE       16       NOW  A=/BBE3  Q=/0000         8B449400
0C96 00 F4000D08          EOR   L N816       ZERO WITH /2DAA               8B449410
0C98 00 4C180C9D          BSC   L G808,+-    BRANCH ON ZERO                8B449420
0C9A 00 44000F83          BSI   L F000       DVD-Q REG INCORRECT           8B449430
0C9C 0  312C              DC        /312C    ERR ID                        8B449440
0C9D 00 44000FB2    G808  BSI   L F00E       CK LOCK ON ERROR              8B449450
0C9F 0  70E7              MDX       A806     LOOP                          8B449460
0CA0 0  C054              LD        N800     LD C AND OF CONDITION         8B449470
0CA1 00 4C180CAF          BSC   L G80A,+-    BRANCH ON ZERO                8B449480
0CA3 00 4C040CAC          BSC   L H80A,E     BR IF NOT EVEN                8B449490
0CA5 00 44000F83          BSI   L F000       CARRY ON                      8B449500
0CA7 0  312D              DC        /312D    ERR ID                        8B449510
0CA8 00 44000FDE          BSI   L F005       CK LOCK ON ERROR              8B449520
0CAA 0  700C              MDX       A806     LOOP                          8B449530
0CAB 0  7006              MDX       A80C     EXIT TO NEXT ROUTINE          8B449540
0CAC 00 44000F83    H80A  BSI   L F000       OVFLO ON                      8B449550
0CAE 0  312E              DC        /312E    ERR ID                        8B449560
0CAF 00 44000FDE    G80A  BSI   L F005       CK LOCK ON ERROR              8B449570
0CB1 0  70D5              MDX       A806     LOOP                          8B449580
                          ********************************************    8B449590
*************************************************** ********************* 8B449600
CORE    DATA OR     *LA- OPER-                                            8B449610
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B449620
*************************************************************************** 8B449630
0CB2 0  2000        A80C  LDS     0          SET C AND OF OFF              8B449640
0CB3 0  C846              LDD       N806     SET  A=/0000  Q=/0001         8B449650
0CB4 0  A84D              D         N80E     D  /0000                      8B449660
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0CB5 00 4C010CBA          BSC   L G80C,O     BRANCH ON OVERFLOW            8B449670
0CB7 00 44000F83          BSI   L F000       DVD BY 0-OVRFLW OFF           8B449680
0CB9 0  312F              DC        /312F    ERR ID                        8B449690
0CBA 00 44000FDE    G80C  BSI   L F005       CK LOCK ON ERROR              8B449700
0CBC 0  70F5              MDX       A80C     LOOP                          8B449710
                          ********************************************    8B449720
0CBD 0  2000        A80E  LDS     0          SET C AND OF OFF              8B449730
0CBE 0  C83D              LDD       N808     LD  A=/4000  Q=/0000          8B449740
0CBF 0  A83B              D         N807     D  /0001                      8B449750
0CC0 00 4C010CC5          BSC   L G80E,O     BRANCH ON OVERFLOW            8B449760
0CC2 00 44000F83          BSI   L F000       DVD-BY 1-OVRFLW OFF           8B449770
0CC4 0  3130              DC        /3130    ERR ID                        8B449780
0CC5 00 44000FDE    G80E  BSI   L F005       CK LOCK ON ERROR              8B449790
0CC7 0  70F5              MDX       A80E     LOOP                          8B449800
                          ********************************************    8B449810
0CC8 0  2000        B800  LDS     0          SET C AND OF OFF              8B449820
0CC9 0  C834              LDD       N80A     LD  A=/A000  Q=/0000          8B449830
0CCA 0  A831              D         N808     D  /4000                      8B449840
0CCB 00 4C010CD0          BSC   L J800,O     BRANCH ON OVERFLOW            8B449850
0CCD 00 44000F83          BSI   L F000       DVD/4000-OVRFLW OFF           8B449860
0CCF 0  3131              DC        /3131    ERR ID                        8B449870
0CD0 00 44000FDE    J800  BSI   L F005       CK LOCK ON ERROR              8B449880
0CD2 0  70F5              MDX       B800     LOOP                          8B449890
                          ********************************************    8B449900
0CD3 0  2000        B802  LDS     0          SET C AND OF OFF              8B449910
0CD4 0  C82B              LDD       N80C     LD  A=/C000  Q=/0000          8B449920
0CD5 0  A830              D         N812     D  /8000                      8B449930
0CD6 00 4C010CDB          BSC   L J802,O     BR ON OF                      8B449940
0CD8 00 44000F83          BSI   L F000       DVD/8000-OVRFLW OFF           8B449950
0CDA 0  3132              DC        /3132    ERR ID                        8B449960
0CDB 00 44000FDE    J802  BSI   L F005       CHECK LOOP SWITCH             8B449970
0CDD 0  70F5              MDX       B802     LOOP                          8B449980
                          ********************************************    8B449990
0CDE 0  2000        B804  LDS     0          SET C AND OF OFF              8B450000
0CDF 0  C822              LDD       N80E     LD  A=/0000  Q=/FFFF          8B450010
0CE0 0  A81A              D         N807     D  /0001                      8B450020
0CE1 00 4C010CE6          BSC   L J804,O     BR ON OF                      8B450030
0CE3 00 44000F83          BSI   L F000       DVD/0001-OVRFLW OFF           8B450040
0CE5 0  3133              DC        /3133    ERR ID                        8B450050
0CE6 00 44000FDE    J804  BSI   L F005       CK LOCK ON ERROR              8B450060
0CE8 0  70F5              MDX       B804     LOOP                          8B450070
                          ********************************************    8B450080
0CE9 0  2000        B806  LDS     0          SET C AND OF OFF              8B450090
0CEA 0  C819              LDD       N810     LD  A=/FFFF  Q=/7FFF          8B450100
0CEB 0  A80F              D         N807     D  /0001                      8B450110
0CEC 00 4C010CF1          BSC   L J806,O     BR ON OF                      8B450120
0CEE 00 44000F83          BSI   L F000       DVD/0001-OVRFLW OFF           8B450130
0CF0 0  3134              DC        /3134    ERR ID                        8B450140
0CF1 00 44000FDE    J806  BSI   L F005       CK LOCK ON ERROR              8B450150
0CF3 0  70F5              MDX       B806     LOOP                          8B450160
0CF4 0  7023              MDX       B807     EXIT TO NEXT ROUTINE          8B450170
0CF5 0  0000        N800  DC        /0000                                  8B450180
0CF6    0000              BSS   E                                          8B450190
0CF6 0  4000        N802  DC        /4000                                  8B450200
0CF7 0  7FFF              DC        /7FFF                                  8B450210
0CF8 0  1C71        N804  DC        /1C71                                  8B450220
0CF9 0  BBE3              DC        /BBE3                                  8B450230
0CFA 0  0000        N806  DC        /0000                                  8B450240
0CFB 0  0001        N807  DC        /0001                                  8B450250
0CFC 0  4000        N808  DC        /4000                                  8B450260
0CFD 0  0000              DC        /0000                                  8B450270
0CFE 0  A000        N80A  DC        /A000                                  8B450280
0CFF 0  0000              DC        /0000                                  8B450290
0D00 0  C000        N80C  DC        /C000                                  8B450300
0D01 0  0000              DC        /0000                                  8B450310
0D02 0  0000        N80E  DC        /0000                                  8B450320
0D03 0  FFFF        N80F  DC        /FFFF                                  8B450330
0D04 0  FFFF        N810  DC        /FFFF                                  8B450340
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0005 0  7FFF        N811  DC      /7FFF                                  8B450350
0006 0  8000        N812  DC      /8000                                  8B450360
0007 0  5555        N813  DC      /5555                                  8B450370
0008 0  2DAA        N816  DC      /2DAA                                  8B450380
0009 0  C000        N817  DC      /C000                                  8B450390
000A 0  6100        N818  DC      /6100                                  8B450400
000B 0  0000              DC      /0000                                  8B450410
000C 0  8000        N819  DC      /8000                                  8B450420
000D 0  0000              DC      /0000                                  8B450430
000E 0  0002        N820  DC      /0002                                  8B450440
000F 0  0000        N821  DC      0                                      8B450450
0010 0  2001              DC      /2001                                  8B450460
0011 0  4000              DC      /4000                                  8B450470
0012 0  C000              DC      /C000                                  8B450480
0013 0  8000        N822  DC      /8000                                  8B450490
0014 0  FFFF        N823  DC      /FFFF                                  8B450500
0015 0  FFFF              DC      /FFFF                                  8B450510
0016    0000              BSS  E  0                                      8B450520
0016 0  0000        N824  DC      0                                      8B450530
0017 0  0000              DC      0                                      8B450540
                    ********************************************         8B450550
********************************************************************** 8B450560
CORE    DATA OR     *LA- OPER-                                          8B450570
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B450580
********************************************************************** 8B450590
0018 0  2000        B807  LDS     0          SET C AND OF OFF            8B450600
0019 0  C8F0              LOD     N818       LD  A=/6100  Q=/0000        8B450610
001A 0  A8EE              D       N817       D  /C000                    8B450620
001B 00 4C010D20          BSC  L  J808,C     BR ON OF                    8B450630
001D 00 44000F83          BSI  L  F000       OVERFLOW OFF                8B450640
001F 0  316A              DC      /316A      ERR ID                      8B450650
0020 00 44000FDE    J808  BSI  L  F005       CK LOCK ON ERROR            8B450660
0022 0  70F5              MDX     B807       LOOP                        8B450670
                    ********************************************         8B450680
0023 0  2000        B808  LDS     0          SET C AND OF OFF            8B450690
0024 0  C8E7              LOD     N819       LD  A=/8000  Q=/0000        8B450700
0025 0  A8DD              D       N80F       D  /FFFF                    8B450710
0026 00 4C010D2B          BSC  L  J809,C     BR ON OF                    8B450720
0028 00 44000F83          BSI  L  F000       OVERFLOW OFF                8B450730
002A 0  316B              DC      /316B      ERR ID                      8B450740
002B 00 44000FDE    J809  BSI  L  F005       CK LOCK ON ERROR            8B450750
002D 0  70F5              MDX     B808       LOOP                        8B450760
                    ********************************************         8B450770
002E 0  2000        B809  LDS     0          SET C AND OF OFF            8B450780
002F 0  C8E4              LDD     N823       LD  A=/FFFF  Q=/FFFF        8B450790
0030 0  A8DD              D       N820       D  /0002                    8B450800
0031 00 4C010D34          BSC  L  J815,C     BR ON OF                    8B450810
0033 0  7003              MDX     J810       OVERFLOW OFF                8B450820
0034 00 44000F83    J815  BSI  L  F000                                   8B450830
0036 0  316C              DC      /316C      ERR ID                      8B450840
0037 00 44000FDE    J810  BSI  L  F005       CK LOCK ON ERROR            8B450850
0039 0  70F4              MDX     B809       LOOP                        8B450860
                    ********************************************         8B450870
                    ********************************************         8B450880
                    *                                                    8B450890
                    *                                                    8B450900
                    *                MULTIPLY-DIV TEST (B810)            8B450910
                    *                                                    8B450920
                    *                                                    8B450930
                    *                THIS TEST TAKES 4 NUMBERS           8B450940
                    *                /8000, /C000, /4000 AND             8B450950
                    *                /2001 AND MULTIPLIES AND            8B450960
                    *                DIVIDES THE RESULT OF THE           8B450970
                    *                MULT.PLICATION BY ALL               8B450980
                    *                VALUES OF NEGATIVE AND              8B450990
                    *                POSITIVE NUMBERS.  THIS             8B451000
                    *                PROCEDURE IS REPETED                8B451010
                    *                UNTIL ALL FOUR NUMBERS              8B451020
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                    *                HAVE BEEN USED.                     8B451030
                    *                                                    8B451040
                    *          STEP1 SET MULTIPLICAND AND                8B451050
                    *                DIVISOR TO LARGEST NEG.             8B451060
                    *                NUMBER.                             8B451070
                    *          STEP2 TAKE ONE OF FOUR NUMBERS            8B451080
                    *                AND USE IT AS THE                   8B451090
                    *                MULTIPLIER                          8B451100
                    *          STEP3 MULTIPLY                            8B451110
                    *          STEP4 STORE RESULTS IN SYMBOLIC           8B451120
                    *                LOCATION N824                       8B451130
                    *          STEP5 DIVIDE                              8B451140
                    *          STEP6 CHECK RESULT                        8B451150
                    *          STEP7 INCREMENT MULTIPLICAND              8B451160
                    *                AND DIVISOR BY 1.                   8B451170
                    *          STEP8 GO TO STEP 2 IF ALL                 8B451180
                    *                VALUES HAVE NOT BEEN                8B451190
                    *                USED AS MULTIPLICANDS AND           8B451200
                    *                DIVISORS.                           8B451210
                    *          STEP9 SET UP FOR NEXT ONE OF 4            8B451220
                    *                MULTIPLIERS.                        8B451230
                    *          STEP10 GO TO STEP 2 IF ALL 4              8B451240
                    *                 NUMBERS HAVE NOT BEEN              8B451250
                    *                 USED.                              8B451260
                    *                                                    8B451270
                    *                                                    8B451280
                    *                                                    8B451290
                    *  NOTE -- THREE WORD LOCATIONS ARE AVAILABLE FOR    8B451300
                    *          MANUAL INSERTION OF ANY VALUE DESIRED.    8B451310
                    *          THEY ARE AT LABEL ADDRESS N821+1, N821+2  8B451320
                    *          AND N821+3.                               8B451330
                    *                                                    8B451340
                    *  CAUTION **  DO NOT CHANGE THE WORD AT LABEL       8B451350
                    *              LOCATION N822 ( /8000).               8B451360
                    *                                                    8B451370
********************************************************************** 8B451380
CORE    DATA OR     *LA- OPER-                                          8B451390
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B451400
********************************************************************** 8B451410
003A 0  6104              DX   1 4           LD XR 1 WITH /0004          8B451420
003B 00 0C000FEC    J814  XIO  L  F003       CK BYPASS MPY/DIV SW        8B451430
003D 00 C4000FF0          LD   L  Z000       LD SWITCH SETTINGS          8B451440
003F 0  1808              SRA     8          SHIFT BIT 7 TO BIT POS 15   8B451450
0040 0  4804              BSC     E          SK IF BIT 15=0              8B451460
0041 0  7028              MDX     A840       SW BIT 6 ON (BYPASS)        8B451470
0042 0  C0D0              LD      N822       CONST /8000                 8B451480
0043 0  D0CB              STO     N821       STORE /8000 AT N821         8B451490
0044 0  C0CA        J811  LD      N821       LD C(N821)  /8000           8B451500
0045 00 A5000D0F          M    L1 N821                                   8B451510
0047 0  D8CE              STD     N824       STORE A AND Q               8B451520
0048 0  2000              LDS     0          SET C AND OF OFF            8B451530
0049 0  A8C5              D       N821       D  /8000                    8B451540
004A 00 F5000D0F          EOR  L1 N821       ZERO WITH /8000             8B451550
004C 00 4C180D51          BSC  L  J812,+-    BRANCH ON ZERO              8B451560
004E 00 44000F83          BSI  L  F000       ACC NOT ZERO                8B451570
0050 0  316D              DC      /316D      ERR ID                      8B451580
0051 00 44000FB2    J812  BSI  L  F00E       CK LOCK ON ERROR            8B451590
0053 0  70F0              MDX     J811       LOOP ON MPL/DIV             8B451600
0054 0  18D0              RTE     16         NOW  A=/0000  Q=/0000       8B451610
0055 00 4C180D5A          BSC  L  J813,+-    BRANCH ON ZERO              8B451620
0057 00 44000F83          BSI  L  F000       REMAINDER IN Q REG          8B451630
0059 0  316E              DC      /316E      ERR ID                      8B451640
005A 00 44000FB2    J813  BSI  L  F00E       CK LOCK ON ERROR            8B451650
005C 0  70E7              MDX     J811       LOOP ON MPL/DIV             8B451660
005D 0  C0B1        J816  LD      N821       LD /8000                    8B451670
005E 0  809C              A       N807       ADD ONE                     8B451680
005F 0  D0AF              STO     N821                                   8B451690
0060 00 4C180D5D          BSC  L  J816,+-    BRANCH ON ZERO              8B451700
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0062 0  F080          EOR     N822                                    8B451710
0063 00 4C200044      BSC  L  J811,Z     BR IF NOT ZERO               8B451720
0065 0  71FF          MDX     1 -1                                    8B451730
0066 0  7004          MDX     J814       LOOP TO CK SWITCHES          8B451740
0067 00 44000FDE      BSI  L  F005       CK LOCK ON ERROR             8B451750
0069 0  7000          MDX     B810       LOOP                         8B451760
                      ****************************************       8B451770
                      *                                              8B451780
                      *          TEST OF MDX OPERATION               8B451790
                      *                                              8B451800
                      ****************************************       8B451810
006A 0  6100          A840  LDX    1 0          LD XR 1 WITH ZERO    8B451820
006B 0  71FF          MDX    1 -1               SK IF SIGN CHANGES   8B451830
006C 0  3000          WAIT                      MDX FAILED TO SKIP   8B451840
006D 0  696E          STX    1 N840             STORE C(XR 1) AT N840 8B451850
006E 0  C06D          LD       N840             LD VALUE OF XR 1     8B451860
006F 0  F06D          EOR      N841             ZERO ACC WITH /FFFF  8B451870
0070 00 4C180D75      BSC  L   G840,+-          BRANCH ON ZERO       8B451880
0072 00 44000F83      BSI  L   F000             MDX XR 1 FAILED      8B451890
0074 0  3135          DC       /3135            ERR ID               8B451900
0075 00 44000FDE      G840  BSI  L  F005        CK LOCK ON ERROR     8B451910
0077 0  70F2          MDX      A840             LOOP                 8B451920
                      ****************************************       8B451930
0078 0  C069          A842  LD       N845       LD WITH ADDR OF      8B451940
                      *                         * LABEL N844         8B451950
0079 00 74010DDE      MDX  L   N842,1           BR TO LABEL ADDR N842 +1 8B451960
007B 0  F066          EOR      N845                                   8B451970
007C 00 4C180081      BSC  L   H842,+-          BRANCH ON ZERO       8B451980
007E 00 44000F83      BSI  L   F000             ACC DISTROYED AFTER MDX 8B451990
0080 0  316F          DC       /316F            ERR ID               8B452000
0081 0  C05C          H842  LD       N842       LD  A=/3000          8B452010
0082 0  F060          EOR      N846             ACC NOW /0001        8B452020
0083 00 4C180D88      BSC  L   G842,+-          BRANCH ON ZERO       8B452030
0085 00 44000F83      BSI  L   F000             ADD TO MEM FAILED    8B452040
0087 0  3136          DC       /3136            ERR ID               8B452050
0088 0  C057          G842  LD       N843       LD  /3000            8B452060
0089 0  0054          STO      N842                                   8B452070
008A 00 44000FDE      BSI  L   F005             CK LOCK ON ERROR     8B452080
008C 0  70EB          MDX      A842             LOOP                 8B452090
                      ****************************************       8B452100
********************************************************************** 8B452110
CORE    DATA OR     *LA- OPER-                                        8B452120
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B452130
********************************************************************** 8B452140
008D 00 6600FFFE      A844  LDX   L2 -2          LD XR 2 WITH -2      8B452150
008F 00 76000001      MDX   L2 1                ADD ONE TO XR 2      8B452160
0091 0  644A          STX    2 N840             STORE XR 2           8B452170
0092 0  C049          LD       N840             LD WITH XR 2 VALUE   8B452180
0093 0  F049          EOR      N841             ZERO ACC WITH /FFFF  8B452190
0094 00 4C180D99      BSC  L   G844,+-          BRANCH ON ZERO       8B452200
0096 00 44000F83      BSI  L   F000             MDX LONG XR 2 FAILED 8B452210
0098 0  3137          DC       /3137            ERR ID               8B452220
0099 00 44000FDE      G844  BSI  L  F005        CK LOCK ON ERROR     8B452230
009B 0  70F1          MDX      A844             LOOP                 8B452240
                      ****************************************       8B452250
009C 0  63FF          A846  LDX    3 -1         LD XR 3 WITH -1      8B452260
009D 0  7301          MDX    3 1                ADD ONE TO XR 3      8B452270
009E 0  7001          MDX      G846             DID NOT SK ON MDX    8B452280
009F 0  7003          MDX      H846                                  8B452290
00A0 00 44000F83      G846  BSI  L  F000        XR 3 NO SKIP AT 0    8B452300
00A2 0  3138          DC       /3138            ERR ID               8B452310
00A3 00 44000FDE      H846  BSI  L  F005        CK LOCK ON ERROR     8B452320
00A5 0  70F6          MDX      A846             LOOP                 8B452330
                      ****************************************       8B452340
00A6 0  61FF          A848  LDX    1 -1         LD XR 1 WITH -1      8B452350
00A7 0  7104          MDX    1 4                ADD 4 TO XR 1        8B452360
00A8 0  7001          MDX      G848             DID NOT SK ON MDX    8B452370
00A9 0  7003          MDX      H848                                  8B452380
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00AA 00 44000F83      G848  BSI  L  F000        SIGN CHANGE-NO SKIP  8B452390
00AC 0  3139          DC       /3139            ERR ID               8B452400
00AD 00 44000FDE      H848  BSI  L  F005        CK LOCK ON ERROR     8B452410
00AF 0  70F6          MDX      A848             LOOP                 8B452420
                      ****************************************       8B452430
00B0 00 6500FFFE      A849  LDX   L1 -2          LD XR 1 WITH -2      8B452440
00B2 0  C0FF          H849  LD       H849                            8B452450
00B3 00 75800DE2            MDX   I1 N845                           8B452460
00B5 0  6926                STX    1 N840      STORE C(XR 1) AT N840 8B452470
00B6 0  F0F9                EOR      H849                            8B452480
00B7 00 4C180DBC            BSC  L   K849,+-   BRANCH ON ZERO       8B452490
00B9 00 44000F83            BSI  L   F000      ACC GONE AFTER MDX INDEXED 8B452500
00BB 0  3168                DC       /3168     ERR ID               8B452510
00BC 0  C01F          K849  LD       N840      LD VALUE OF XR 1 AFTER 8B452520
                      *                        * MDX OP             8B452530
00BD 0  F01F                EOR      N841      ZERO ACC WITH /FFFF  8B452540
00BE 00 4C180DC3            BSC  L   G849,+-   BRANCH ON ZERO       8B452550
00C0 00 44000F83            BSI  L   F000      INDIRECT MDX FAILED  8B452560
00C2 0  313A                DC       /313A     ERR ID               8B452570
00C3 00 44000FDE      G849  BSI  L  F005        CK LOCK ON ERROR     8B452580
00C5 0  70EA                MDX      A849      LOOP                 8B452590
                      ****************************************       8B452600
00C6 00 74000DDA      A84A  MDX    1 N84A,0     TEST SKIP IF ZERO    8B452610
00C8 0  7001                MDX      G84A      BYPASS IF CORRECT OP 8B452620
00C9 0  7003                MDX      H84A                           8B452630
00CA 00 44000F83      G84A  BSI  L   F000       MDX L  FAILED TO SKIP 8B452640
00CC 0  3171                DC       /3171     ERR ID               8B452650
00CD 00 44000FDE      H84A  BSI  L   F005       CK LOCK ON ERROR     8B452660
00CF 0  70F6                MDX      A84A      LOOP                 8B452670
                      ****************************************       8B452680
00D0 00 7400CDDB      A85A  MDX  L   N85A,0     TEST NON SKIP        8B452690
00D2 0  7003                MDX      H85A                           8B452700
00D3 00 44000F83            BSI  L   F000      MDX L  SKIPED        8B452710
00D5 0  3172                DC       /3172     ERR ID               8B452720
00D6 00 44000FDE      H85A  BSI  L   F005       CK LOCK ON ERROR     8B452730
00D8 0  70F7                MDX      A85A      LOOP                 8B452740
00D9 0  700A                MDX      A880      EXIT TO NEXT ROUTINE 8B452750
00DA 0  0000          N84A  DC       0         CONSTANT ZERO        8B452760
00DB 0  0001          N85A  DC       1         NON ZERO CONSTANT    8B452770
                      ****************************************       8B452780
********************************************************************** 8B452790
CORE    DATA OR     *LA- OPER-                                        8B452800
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B452810
********************************************************************** 8B452820
00DC 0  0000          N840  DC       /0000                           8B452830
00DD 0  FFFF          N841  DC       /FFFF                           8B452840
00DE 0  3000          N842  WAIT                ADD TO MEM FAILED    8B452850
00DF 0  3000                WAIT                ADD TO MEM FAILED    8B452860
00E0 0  3000          N843  WAIT                ADD TO MEM FAILED    8B452870
00E1 0  0001          N844  DC       /0001                           8B452880
00E2 0  00E1          N845  DC       N844                            8B452890
00E3 0  3001          N846  DC       /3001                           8B452900
                      *                                              8B452910
                      *          TEST OF SLC OPERATION               8B452920
                      *                                              8B452930
                      ****************************************       8B452940
00E4 0  610A          A880  LDX    1 10         LD XR 1 WITH +10     8B452950
00E5 00 CC000EDE            LDD  L   N882       LD  A=/0000  Q=/FFFF 8B452960
00E7 0  2002                LDS      2          SET C ON             8B452970
00E8 0  1140                SLCA   1 0          NOW  A=/0000  Q=/FFFF 8B452980
00E9 00 6D000EDC            STX   L1 N880       STORE C(XR 1)        8B452990
00EB 0  2812                STS      G881       STORE CARRY CONDITION 8B453000
00EC 00 4C180DF1            BSC  L   G880,+-    BRANCH ON ZERO       8B453010
00EE 00 44000F83            BSI  L   F000       ACC NOT=ZERO         8B453020
00F0 0  313B                DC       /313B      ERR ID               8B453030
00F1 00 44000FB2      G880  BSI  L   F00E       CK LOCK ON ERROR     8B453040
00F3 0  70F0                MDX      A880       LOOP                 8B453050
00F4 00 C4000EDC            LD   L   N880       LD PREVIOUS C(XR 1)  8B453060
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0DF6 00 4C180DFB          BSC  L  G882,+-     BRANCH ON ZERO                    8B453070
0DF8 00 44000F83          BSI  L  F000        XR 1 NOT=ZERO                     8B453080
0DFA 0  313C              DC      /313C       ERR ID                            8B453090
0DFB 00 44060FB2    G882  BSI  L  F00E       CK LOCK ON ERROR                  8B453100
0DFD 0  70E6              MDX     A880        LOOP                              8B453110
0DFE 0  2000        G881  LDS     0           SAVED BY STS ABOVE                8B453120
0DFF 0  4802              BSC     C           SK IF CARRY OFF                   8B453130
0E00 0  7004              MDX     G883        CARRY ON                          8B453140
0E01 00 44000FDE          BSI  L  F005        CK LOCK ON ERROR                  8B453150
0E03 0  70E0              MDX     A880        LOOP                              8B453160
0E04 0  7006              MDX     A884        EXIT TO NEXT ROUTINE              8B453170
0E05 00 44000F83    G883  BSI  L  F000        CARRY ON (SHOULD NOT BE)          8B453180
0E07 0  3160              DC      /3160       ERR ID                            8B453190
0E08 00 44000FDE          BSI  L  F005        CK LOCK ON ERROR                  8B453200
0E0A 0  7009              MDX     A880        LOOP                              8B453210
                ********************************************                    8B453220
0E0B 00 65800FF3    A884  LDX  11 N887       LD XR 1 WITH /FFDO                8B453230
0E0D 00 CC000FF0          LDD  L  N884        LD  A=/0001  Q=/0010              8B453240
0E0F 0  2000              LDS     0           SET C AND OF OFF                  8B453250
0E10 0  1140              SLCA 1  0           ACC NOW /8000                     8B453260
0E11 0  2818              STS     G885        STORE C AND OF CONDITION          8B453270
0E12 00 F4000EF2          EOR  L  N886        ZERO WITH /8000                   8B453280
0E14 00 4C180E19          BSC  L  G884,+-     BRANCH ON ZERO                    8B453290
0E16 00 44000F83          BSI  L  F000        ACC NOT=/8000                     8B453300
0E18 0  313D              DC      /313D       ERR ID                            8B453310
0E19 00 44000FB2    G884  BSI  L  F00E       CHECK LOOP SWITCH                 8B453320
0E1B 0  70EF              MDX     A884        LOOP                              8B453330
0E1C 00 6D000EDC          STX  L1 N880        STORE C(XR 1) AT N880             8B453340
0E1E 00 C4000EDC          LD   L  N880        LD C(N880)                        8B453350
0E20 00 F4000EEA          EOR  L  N88E        ZERO WITH /FF01                   8B453360
0E22 00 4C180E27          BSC  L  G886,+-     BRANCH ON ZERO                    8B453370
0E24 00 44000F83          BSI  L  F000        XR-1 NOT FF01                     8B453380
0E26 0  313E              DC      /313E       ERR ID                            8B453390
0E27 00 44000FB2    G886  BSI  L  F00E       CK LOCK ON ERROR                  8B453400
0E29 0  70E1              MDX     A884        LOOP                              8B453410
0E2A 0  2000        G885  LDS     0           SAVED BY ST  ABOVE                8B453420
0E2B 0  4802              BSC     C           SK IF CARRY OFF                   8B453430
0E2C 0  7003              MDX     G887                                          8B453440
0E2D 00 4C000F83          BSC  L  F000        CARRY OFF ( SHOULD BE ON)         8B453450
0E2F 0  3161              DC      /3161       ERR ID                            8B453460
0E30 00 44000FDE    G887  BSI  L  F005        CK LOCK ON ERROR                  8B453470
0E32 0  70D8              MDX     A884        LOOP                              8B453480
                ********************************************                    8B453490
**************************************************************************      8B453500
CORE     DATA OR      *LA- OPER-                                                8B453510
ADDR     INSTRUCTION  *BEL ATION FT OPERANDS + REMARKS    ID+SEQ= AT RIGHT      8B453520
**************************************************************************      8B453530
0E33 00 65600EE1    A88C  LDX  11 N885       LD XR 1 WITH /0010                8B453540
0E35 00 CC000EE2          LDD  L  N886        LD  A= /8000  Q=/FFDO             8B453550
0E37 0  1140              SLCA 1  0           ACC NOW /8000                     8B453560
0E38 00 F4000FE2          EOR  L  N886        ZERO WITH /8000                   8B453570
0E3A 00 4C180E3F          BSC  L  G888,+-     BRANCH ON ZERO                    8B453580
0E3C 00 44000F83          BSI  L  F000        ACC NOT=8000                      8B453590
0E3E 0  313F              DC      /313F       ERR ID                            8B453600
0E3F 00 44000FB2    G88B  BSI  L  F00E       CK LOCK ON ERROR                  8B453610
0E41 0  70F1              MDX     A888        LOOP                              8B453620
0E42 00 6D000EDC          STX  L1 N880        STORE C(XR 1) IN N880             8B453630
0E44 00 C4000EDC          LD   L  N880        LD  C(N880)                       8B453640
0E46 00 F4000EE1          EOR  L  N885        ZERO WITH /0010                   8B453650
0E48 00 4C180E4D          BSC  L  G88A,+-     BRANCH ON ZERO                    8B453660
0E4A 00 44000F83          BSI  L  F000        XR 1 NOT=0010                     8B453670
0E4C 0  3140              DC      /3140       ERR ID                            8B453680
0E4D 00 44000FDE    G88A  BSI  L  F005        CK LOCK ON ERROR                  8B453690
0E4F 0  70F3              MDX     A888        LOOP                              8B453700
                ********************************************                    8B453710
0F50 0  6110        A889  LDX     1 16        LD XR 1 WITH /0010                8B453720
0F51 0  6210              LDX     2 16        LD XR 2 WITH /0010                8B453730
0F52 0  6310              LDX     3 16        LD XR 3 WITH /0010                8B453740
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0E53 00 C4000EE0          LD   L  N884        LD  A=/0001                       8B453750
0E55 0  1041              SLCA    1           ACC NOW /0002                     8B453760
0E56 00 F4000EE7          EOR  L  N888        ZERO WITH /0002                   8B453770
0E58 00 4C180E5D          BSC  L  G889,+-     BRANCH ON ZERO                    8B453780
0E5A 00 44000F83          BSI  L  F000        NON INDEXED SLCA FAILED           8B453790
0E5C 0  3162              DC      /3162       ERR ID                            8B453800
0E5D 00 44000FDE    G889  BSI  L  F005        CK LOCK ON ERROR                  8B453810
0E5F 0  70F0              MDX     A889        LOOP                              8B453820
                ********************************************                    8B453830
0E60 0  6110        A88A  LDX     1 16        LD XR 1 WITH /0010                8B453840
0E61 0  6210              LDX     2 16        LD XR 2 WITH /0010                8B453850
0E62 0  6310              LDX     3 16        LD XR 3 WITH /0010                8B453860
0E63 00 CC000EDE          LDD  L  N882        LD  A=/0000  Q=/FFFF              8B453870
0E65 0  10CF              SLC     15          NOW  A-/7FFF  C=/1000             8B453880
0E66 00 F4000EEB          EOR  L  N88F        ZERO WITH /7FFF                   8B453890
0E68 00 4C180E6B          BSC  L  G88S,+-     NON INDEXED SLC FAILED            8B453900
0E6A 0  3173              DC      /3173       ERR ID                            8B453910
0E6B 00 44000FDE    G88B  BSI  L  F005        CK LOCK ON ERROR                  8B453920
0E6D 0  70F2              MDX     A88A        LOOP                              8B453930
                ********************************************                    8B453940
                ********************************************                    8B453950
0E6E 00 65800EE8    A88C  LDX  11 N88C       LD XR 1 WITH /0020                8B453960
0E70 0  C873              LDD     N88S        LD  A=/0000  Q=/0000              8B453970
0E71 0  11C0              SLC  1  0           ACC NOW A=/0000  Q=/0000           8B453980
0E72 00 4C180E77          BSC  L  G88C,+-     BRANCH ON ZERO                    8B453990
0E74 00 44000F83          BSI  L  F000        ACC NOT=0000                      8B454000
0E76 0  3141              DC      /3141       ERR ID                            8B454010
0E77 00 44000FB2    G88C  BSI  L  F00E       CK LOCK ON ERROR                  8B454020
0E79 0  70F4              MDX     A88C        LOOP                              8B454030
0E7A 0  18D0              RTE     16          ACC NOW  A=/0000  Q=/0000         8B454040
0E7B 00 4C180E80          BSC  L  G88E,+-     BRANCH ON ZERO                    8B454050
0E7D 00 44000F83          BSI  L  F000        Q REG NOT=0000                    8B454060
0E7F 0  3142              DC      /3142       ERR ID                            8B454070
0E80 00 44000FB2    C88E  BSI  L  F00E       CK LOCK ON ERROR                  8B454080
0E82 0  70EB              MDX     A88C        LOOP                              8B454090
0E83 0  6958              STX  1  N880        STORE C(XR 1) IN N880             8B454100
0E84 0  C057              LD      N880        LD C(N880)                        8B454110
0E85 00 4C180ERA          BSC  L  J880,+-     BRANCH ON ZERO                    8B454120
0E87 00 44000F83          BSI  L  F000        XR 1 NOT=0000                     8B454130
0E89 0  3143              DC      /3143       ERR ID                            8B454140
0E8A 00 44000FDE    J880  BSI  L  F005        CK LOCK ON ERROR                  8B454150
0E8C 0  70E1              MDX     A88C        LOOP                              8B454160
                ********************************************                    8B454170
**************************************************************************      8B454180
CORE     DATA OR      *LA- OPER-                                                8B454190
ADDR     INSTRUCTION  *BEL ATION FT OPERANDS + REMARKS    ID+SEQ= AT RIGHT      8B454200
**************************************************************************      8B454210
0E8D 00 65800EE9    B882  LDX  11 N88D       LD XR 1 WITH /FFDF                8B454220
0E8F 0  C856              LDD     N88A        LD  A=/0000  Q=/0002              8B454230
0E90 0  11C0              SLC  1  0           NOW A=/0000  Q=/0000              8B454240
0E91 0  F050              EOR     N886        ZERO WITH /8000                   8B454250
0E92 00 4C180E97          BSC  L  J882,+-     BRANCH ON ZERO                    8B454260
0E94 00 44000F83          BSI  L  F000        ACC NOT=/8000                     8B454270
0E96 0  3144              DC      /3144       ERR ID                            8B454280
0E97 00 44000FB2    J882  BSI  L  F00E       CK LOCK ON ERROR                  8B454290
0E99 0  70F3              MDX     B882        LOOP                              8B454300
0E9A 0  18D0              RTE     16          NOW  A=/0000  Q=/8000             8B454310
0E9B 00 4C180EA0          BSC  L  J884,+-     BRANCH ON ZERO                    8B454320
0E9D 00 44000F83          BSI  L  F000        Q REG NOT=0000                    8B454330
0E9F 0  3145              DC      /3145       ERR ID                            8B454340
0EA0 00 44000FB2    J884  BSI  L  F00E       CK LOCK ON ERROR                  8B454350
0EA2 0  70EA              MDX     B882        LOOP                              8B454360
0EA3 0  6938              STX  1  N880        STORE C(XR 1) AT N880             8B454370
0EA4 0  C037              LD      N880        LD C(N880)                        8B454380
0EA5 00 F4000EEA          EOR  L  N88E        ZERO WITH /FF01                   8B454390
0EA7 00 4C180EAC          BSC  L  J886,+-     BRANCH ON ZERO                    8B454400
0EA9 00 44000F83          BSI  L  F000        XR-1 NOT FF01                     8B454410
0EAB 0  3146              DC      /3146       ERR ID                            8B454420
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0FAC 00 44000FDE   J886  BSI  L  F005       CK LOCK ON ERROR          8B454430
0FAE 0  70DE             MDX     B882       LOOP                      8B454440
                         ***************************************      8B454450
0FAF 0  C836       B884  LDD     N88A       LD  A=/0000  Q=/0002     8B454460
0FB0 0  611F             LDX  1  31         LD XR 1 WITH /001F        8B454470
0FB1 0  11C0             SLC  1  0          NOW A=/8000  Q=/0000      8B454480
0FB2 0  4802             BSC     C          SK IF CARRY OFF           8B454490
0FB3 0  7003             MDX     J887       CARRY ON                  8B454500
0FB4 00 44000F83         BSI  L  F000       CARRY NOT ON              8B454510
0FB6 0  3147             DC      /3147      ERR ID                    8B454520
0FB7 00 44000FB2   J887  BSI  L  F00E       CK LOCK ON ERROR          8B454530
0FB9 0  70F5             MDX     B884       LOOP                      8B454540
0FBA 0  F027             EOR     N886       ZERO WITH /8000           8B454550
0FBB 00 4C180EC0         BSC  L  J888,+-    BRANCH ON ZERO            8B454560
0FBD 00 44000F83         BSI  L  F000       ACC NOT EQUAL 8000        8B454570
0FBF 0  3148             DC      /3148      ERR ID                    8B454580
0FC0 00 44000FB2   J888  BSI  L  F00E       CK LOCK ON ERROR          8B454590
0FC2 0  70EC             MDX     B884       LOOP                      8B454600
0FC3 00 6D000EDC         STX  L1 N880       STORE XR 1 WITH C(N880)   8B454610
0FC5 0  C016             LD      N880       LD C(N880)                8B454620
0FC6 0  F019             EOR     N884       ZERO WITH /0001           8B454630
0FC7 00 4C180ECC         BSC  L  J889,+-    BRANCH ON ZERO            8B454640
0FC9 00 44000F83         BSI  L  F000       XR 1 NOT EQUAL 0001       8B454650
0FCB 0  3149             DC      /3149      ERR ID                    8B454660
0FCC 00 44000FDE   J889  BSI  L  F005       CK LOCK ON ERROR          8B454670
0FCE 0  70E0             MDX     B884       LOOP                      8B454680
                         ***************************************      8B454690
0FCF 0  611C       B885  LDX  1  28         LD XR 1 WITH /001C        8B454700
0FD0 0  C815             LDD     N88A       LD  A=/0000  Q=/0002      8B454710
0FD1 0  1100             SLA  1  0          NOW A=/2000  Q=/0000      8B454720
0FD2 0  4802             BSC     C          SKIP IF CARRY OFF         8B454730
0FD3 0  7001             MDX     J88A                                 8B454740
0FD4 0  7003             MDX     J88B                                 8B454750
0FD5 00 44000F83   J88A  BSI  L  F000       CARRY IS ON               8B454760
0FD7 0  314A             DC      /314A      ERR ID                    8B454770
0FD8 00 44000FDE   J88B  BSI  L  F005       CK LOCK ON ERROR          8B454780
0FDA 0  70F4             MDX     B885       LOOP                      8B454790
0FDB 0  7010             MDX     B8A0       EXIT TO NEXT ROUTINE      8B454800
0FDC 0  0000       N880  DC      /0000                                8B454810
0FDE    0000             BSS  E                                       8B454820
0FDE 0  0000       N882  DC      /0000                                8B454830
0FDF 0  FFFF             DC      /FFFF                                8B454840
0FE0 0  0001       N884  DC      /0001                                8B454850
0FE1 0  0010       N885  DC      /0010                                8B454860
0FE2 0  8000       N886  DC      /8000                                8B454870
0FE3 0  FFD0       N887  DC      /FFD0                                8B454880
0FE4 0  0000       N888  DC      /0000                                8B454890
0FE5 0  0000             DC      /0000                                8B454900
0FE6 0  0000       N88A  DC      /0000                                8B454910
0FE7 0  0002       N88B  DC      /0002                                8B454920
0FE8 0  0020       N88C  DC      /0020                                8B454930
0FE9 0  FFDF       N88D  DC      /FFDF                                8B454940
0FEA 0  FF01       N88E  DC      /FF01                                8B454950
0FEB 0  7FFF       N88F  DC      /7FFF                                8B454960
                         ***************************************      8B454970
                         ***************************************      8B454980
                         *                                            8B454990
                         *          TEST COMPARE INSTRUCTION          8B455000
                         *                                            8B455010
                         *    A = ACCUMULATOR                         8B455020
                         *    Q = ACCUMULATOR EXTENTION               8B455030
                         *    M = WORD BEING COMPARED                 8B455040
                         *    M+1 = 2ND WORD ON DCM                   8B455050
                         *                                            8B455060
                         *         THE 1800 HAS A COMPARE INSTRUCTION 8B455070
                         *         BUT THE 1130 DOES NOT. THIS ROUTINE 8B455080
                         *         DETERMINES WHICH MACHINE IS BEING  8B455090
                         *         TESTED BEFORE ATTEMPTING A COMPARE 8B455100
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                         *          INSTRUCTION.                      8B455110
                         *                                            8B455120
                         *          INDEX REGISTERS ARE HARDWARE IN 1800 8B455130
                         *          AND CORE STORAGE LOCATIONS IN 1130. 8B455140
                         *                                            8B455150
*********************************************************************** 8B455160
CORE    DATA OR    *LA- OPER-                                         8B455170
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B455180
*********************************************************************** 8B455190
0EEC 0  1810       B8A0  SRA     16         CK FOR 1130 OR 1800       8B455200
0EED 00 D4000001         STO  L  /0001      STORE /0000 AT ADDR /0001 8B455210
0EEF 0  61FF             LDX  1  -1         LD XR 1 WITH /FFFF        8B455220
0EF0 00 C4000001         LD   L  /0001      LD C(/0001)               8B455230
0EF2 00 4C200F76         BSC  L  W8C0,Z     BRANCH IF 1130            8B455240
0EF4 0  C075             LD      N8A2       LD C(N8A2)  /4000         8B455250
0EF5 0  B072             CMP     N8A0       A GREATER THAN M          8B455260
0EF6 0  7004             MDX     J8A0       A GREATER THAN M          8B455270
0EF7 0  1000             SLA     0          A LESS THAN M             8B455280
0EF8 00 44000F83         BSI  L  F000       A GREATER THAN M FAILED   8B455290
0EFA 0  314B             DC      /314B      ERR ID                    8B455300
0EFB 00 44000FB2   J8A0  BSI  L  F00E       CK LOCK ON ERROR          8B455310
0EFD 0  70EE             MDX     B8A0       LOOP                      8B455320
0EFE 0  F06B             EOR     N8A2       ZERO WITH /4000           8B455330
0EFF 00 4C180F07         BSC  L  B8A1,+-    BRANCH ON ZERO            8B455340
0F01 00 44000F83         BSI  L  F000       ACC CHANGED ERROR         8B455350
0F03 0  314C             DC      /314C      EPR ID                    8B455360
0F04 00 44000FDE         BSI  L  F005       CK LOCK ON ERROR          8B455370
0F06 0  70E5             MDX     B8A0       LOOP                      8B455380
                         ***************************************      8B455390
0F07 0  C060       B8A1  LD      N8A0       N8A0 =/0000               8B455400
0F08 0  B060             CMP     N8A1       N8A1 =/1000               8B455410
0F09 0  7001             MDX     J8A2       A LESS THAN M FAILED      8B455420
0F0A 0  7003             MDX     J8A1       A LESS THAN M             8B455430
0F0B 00 44000F83   J8A2  BSI  L  F000       A LESS THAN M FAILED      8B455440
0F0D 0  314D             DC      /314D      ERR ID                    8B455450
0F0E 00 44000FDE   J8A1  BSI  L  F005       CK LOCK ON ERROR          8B455460
0F10 0  70F6             MDX     B8A1       LOOP                      8B455470
                         ***************************************      8B455480
0F11 0  C056       B8A2  LD      N8A0       N8A0 =/0000               8B455490
0F12 0  B058             CMP     N8A3       N8A3 =/2000               8B455500
0F13 0  7001             MDX     J8A4       A LESS THAN M FAILED      8B455510
0F14 0  7003             MDX     J8A3       A LESS THAN M             8B455520
0F15 00 44000F83   J8A4  BSI  L  F000       A LESS THAN M FAILED      8B455530
0F17 0  314E             DC      /314E      ERR ID                    8B455540
0F18 00 44000FDE   J8A3  BSI  L  F005       CK LOCK ON ERROR          8B455550
0F1A 0  70F6             MDX     B8A2       LOOP                      8B455560
                         ***************************************      8B455570
0F1B 0  C04C       B8A3  LD      N8A0       N8A0 =/0000               8B455580
0F1C 0  804D             CMP     N8A2       N8A2 =/4000               8B455590
0F1D 0  7001             MDX     J8A6       A LESS THAN M FAILED      8B455600
0F1E 0  7003             MDX     J8A5       A LESS THAN M             8B455610
0F1F 00 44000F83   J8A6  BSI  L  F000       A LESS THAN M FAILED      8B455620
0F21 0  314F             DC      /314F      ERR ID                    8B455630
0F22 00 44000FDE   J8A5  BSI  L  F005       CK LOCK ON ERROR          8B455640
0F24 0  70F6             MDX     B8A3       LOOP                      8B455650
                         ***************************************      8B455660
0F25 0  C046       B8A4  LD      N8A4       LD /8000                  8B455670
0F26 0  8041             CMP     N8A0       COMPARE C(N8A0) /0000     8B455680
0F27 0  7001             MDX     J8A8       A LESS THAN M FAILED      8B455690
0F28 0  7003             MDX     J8A7       A LESS THAN M             8B455700
0F29 00 44000F83   J8A8  BSI  L  F000       A LESS THAN M FAILED      8B455710
0F2B 0  3150             DC      /3150      ERR ID                    8B455720
0F2C 00 44000FDE   J8A7  BSI  L  F005       CK LOCK ON ERROR          8B455730
0F2E 0  70F6             MDX     B8A4       LOOP                      8B455740
                         ***************************************      8B455750
0F2F 0  C039       B8A5  LD      N8A1       LD /1000                  8B455760
0F30 0  8038             CMP     N8A1       CMP /1000                 8B455770
0F31 0  7002             MDX     J8AA       A EQUAL M FAILED          8B455780
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0F32 0  7001            MDX     J8AA        A EQUAL M FAILED            8B455790
0F33 0  7003            MDX     J8A9        A=M                         8B455800
0F34 00 44000F83  J8AA  BSI  L  F000        A=M FAILED                  8B455810
0F36 0  3151            DC      /3151       ERR ID                      8B455820
0F37 00 44000FDE  J8A9  BSI  L  F005        CK LOCK ON ERROR            8B455830
0F39 0  70F5            MDX     B8A5        LOOP                        8B455840
                  ********************************************          8B455850
                  *                                                     8B455860
                  *                TEST DOUBLE COMPARE                  8B455870
                  *                                                     8B455880
************************************************************************8B455890
CORE    DATA OR     *LA- OPER-                                          8B455900
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B455910
************************************************************************8B455920
0F3A 0  C835      B8C0  LDD     N8C6        LD  A=/8000  Q=/0001        8B455930
0F3B 0  B832            DCM     N8C5        AQ GREATER THAN M, M+1      8B455940
0F3C 0  7003            MDX     J8C0                                    8B455950
0F3D 0  1000            SLA     0           NO-OP                       8B455960
0F3E 0  4044            BSI     F000        FAILED A,Q NOT GREATER      8B455970
0F3F 0  3152            DC      /3152       ERR ID                      8B455980
0F40 00 44000FB2  J8C0  BSI  L  F00E        CK LOCK ON ERROR            8B455990
0F42 0  70F7            MDX     B8C0        LOOP                        8B456000
0F43 0  F02C            EOR     N8C6        ZERO WITH /8000             8B456010
0F44 00 4C180F48        BSC  L  J8C1,+-     BRANCH ON ZERO              8B456020
0F46 0  403C            BSI     F000        ACC CHANGED                 8B456030
0F47 0  3153            DC      /3153       ERR ID                      8B456040
0F48 00 44000FB2  J8C1  BSI  L  F00E        CK LOCK ON ERROR            8B456050
0F4A 0  70EF            MDX     B8C0        LOOP                        8B456060
0F4B 0  1800            RTE     16          NOW A=/0001  Q=/0000        8B456070
0F4C 0  F024            EOR     N8C6+1      ZERO WITH /0001             8B456080
0F4D 00 4C180F51        BSC  L  J8C2,+-     BRANCH ON ZERO              8B456090
0F4F 0  4033            BSI     F000        Q REG CHANGED               8B456100
0F50 0  3154            DC      /3154       ERR ID                      8B456110
0F51 00 44000FDE  J8C2  BSI  L  F005        CK LOCK ON ERROR            8B456120
0F53 0  70E6            MDX     B8C0        LOOP                        8B456130
                  ********************************************          8B456140
0F54 0  C81D      B8C1  LDD     N8C7        LD  A=/0000  Q=/8000        8B456150
0F55 0  B81E            DCM     N8C8        A,Q LESS THAN M, M+1        8B456160
0F56 0  7001            MDX     J8C3        A,Q GREATER THAN M,M+1      8B456170
0F57 0  7002            MDX     J8C4        A,Q LESS THAN M,M+1         8B456180
0F58 0  402A      J8C3  BSI     F000        FAILED A,Q GREATER          8B456190
0F59 0  3155            DC      /3155       ERR ID                      8B456200
0F5A 00 44000FDE  J8C4  BSI  L  F005        CK LOCK ON ERROR            8B456210
0F5C 0  70F7            MDX     B8C1        LOOP                        8B456220
                  ********************************************          8B456230
0F5D 0  C814      B8C2  LDD     N8C7        LD  A=/0000  Q=/8000        8B456240
0F5E 0  B813            DCM     N8C7        A,Q EQUQL M,M+1             8B456250
0F5F 0  7002            MDX     J8C5        A,Q GREATER                 8B456260
0F60 0  7001            MDX     J8C5        A,Q LESS                    8B456270
0F61 0  7012            MDX     J8C6        A,Q = M,M+1                 8B456280
0F62 0  4020      J8C5  BSI     F000        A,Q = M,M+1 FAILED          8B456290
0F63 0  3156            DC      /3156       ERR ID                      8B456300
0F64 00 44000FDE  J8C6  BSI  L  F005        CK LOCK ON ERROR            8B456310
0F66 0  70F6            MDX     B8C2        LOOP                        8B456320
0F67 0  700E            MDX     W8C0        EXIT TO NEXT ROUTINE        8B456330
0F68    0000            BSS  E  0           8B456340
0F68 0  0000      N8A0  DC      /0000       8B456350
0F69 0  1000      N8A1  DC      /1000       8B456360
0F6A 0  4000      N8A2  DC      /4000       8B456370
0F6B 0  2000      N8A3  DC      /2000       8B456380
0F6C 0  8000      N8A4  DC      /8000       8B456390
0F6E    0000            BSS  E  0           8B456400
0F6F 0  8000      N8C5  DC      /8000       8B456410
0F6F 0  0000            DC      /0000       8B456420
0F70 0  8000      N8C6  DC      /8000       8B456430
0F71 0  0001            DC      /0001       8B456440
0F72 0  0000      N8C7  DC      /0000       8B456450
0F73 0  8000            DC      /8000       8B456460
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0F74 0  0000      N8C8  DC      /0000                                   8B456470
0F75 0  8001            DC      /8001                                   8B456480
                        ********************************************    8B456490
                        ********************************************    8B456500
************************************************************************8B456510
CORE    DATA OR     *LA- OPER-                                          8B456520
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B456530
************************************************************************8B456540
0F76 0  0809      W8C0  XIO     N8C1        READ SWITCHES               8B456550
0F77 0  C00A            LD      N8C3        LD SW BITS                  8B456560
0F78 0  1804            SRA     4           PLACE SW 11 AT BIT 15 POS.  8B456570
0F79 0  4804            BSC     E           IS SWITCH 11 ON             8B456580
0F7A 0  7002            MDX     W8C4        SWITCH 11 ON                8B456590
0F7B 0  C003            LD      Z020        SWITCH 11 IS OFF-WAIT       8B456600
0F7C 0  3003      X007  DC      /3003       PROGRAM FINISHED            8B456610
0F7D 00 4C000154  W8C4  BSC  L  A140                                    8B456620
0F7F 0  0003      Z020  DC      /0003                                   8B456630
0F80    0000            BSS  E              8B456640
0F80 0  0F82      N8C1  DC      N8C3        8B456650
0F81 0  0240      N8C2  DC      /0240       EQUAL /3A00 IN 1130         8B456660
0F82 0  0000      N8C3  DC      /0000                                   8B456670
                  *                                                     8B456680
                  *                                                     8B456690
                  ********************************************          8B456700
                  *                                                     8B456710
                  *              ERROR CONTROL ROUTINE                  8B456720
                  *                                                     8B456730
0F83 0  0000      F000  DC      0           REENTER ADDRESS             8B456740
0F84 0  2816            STS     F00X        SAVE STATUS                 8B456750
0F85 0  D063            STO     U000        SAVE A REG                  8B456760
0F86 0  18D0            RTE     16                                      8B456770
0F87 0  D062            STO     U001        SAVE Q REG                  8B456780
0F88 0  0863            XIO     F003        READ SWITCHES               8B456790
0F89 0  C066            LD      Z000        LD SW READINGS              8B456800
0F8A 0  1807            SRA     7           PLACE SW 8 AT BIT POS 15    8B456810
0F8B 0  4804            BSC     E           CK LOOP ON INSTRUCTION      8B456820
0F8C 0  7012            MDX     F00A        * BEING TESTED SW           8B456830
0F8D 00 C4800F83        LD   I  F000        GET WAIT ERROR ID           8B456840
0F8F 0  D00C            STO     F002        STORE ERROR ID AT F002      8B456850
0F90 0  C0F2            LD      F000        GET RETURN ADDR             8B456860
0F91 0  D01F            STO     U00B        STORE AT U00B               8B456870
0F92 0  805C            A       U006        ADD ONE                     8B456880
0F93 0  D0EF            STO     F000        STORE NEW RETURN ADDRESS    8B456890
0F94 0  C05B      F00L  LD      Z000        CK BYPASS EPROR SW          8B456900
0F95 0  1801            SRA     1           PLACE SW 14 AT BIT POS 15   8B456910
0F96 0  4804            BSC     E           SKIP IF SW 14 OFF           8B456920
0F97 0  700D            MDX     F00F        CK FOR 8 OR 12 ON ALSO      8B456930
0F98 0  C051            LD      U001        RESTORE REG AND WAIT        8B456940
0F99 0  18D0            RTE     16          PLACE IN Q REG              8B456950
0F9A 0  C04E            LD      U000        RESTORE A REG               8B456960
0F9B 0  2000      F00X  LDS     0           RESTORE C AND OF IND.       8B456970
0F9C 0  3000      F002  WAIT    0           ERROR WAIT  B REG           8B456980
                  *                         * SHOWS ERROR ID            8B456990
0F9D 00 4C800F83  F00B  BSC  I  F000        EXIT FROM ROUTINE           8B457000
                  *                         * C(F000)IS NOW ONE         8B457010
                  *                         * GREATER THAN AT THE       8B457020
                  *                         * BEGINNING OF ROUTINE      8B457030
                  *                                                     8B457040
                  *                                                     8B457050
                  *                                                     8B457060
                  *                   LOOP ON INSTRUCTION BEING         8B457070
                  *                   * TESTED                          8B457080
                  *                                                     8B457090
************************************************************************8B457100
CORE    DATA OR     *LA- OPER-                                          8B457110
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B457120
************************************************************************8B457130
0F9F 0  C0E3      F00A  LD      F000        GET RETURN ADDR AT F000     8B457140
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OFA0 0  D010            STO     U00B    STORE RETURN ADDRESS        8B457150
OFA1 0  800D            A       U003    ADD 3                       8B457160
OFA2 0  D0E0            STO     F000    UPDATE RETURN ADDRESS       8B457170
OFA3 00 4C800F83        BSC  I  F000    BR TO UPDATAD ADDRESS       8B457180
                *                       CK FOR SW 8 OR 12           8B457190
OFA5 0  1802    F00F    SRA     2       PLACE SW 12 AT BIT POS 15   8B457200
OFA6 0  4804            BSC     F       SKIP IF SW 12 OFF           8B457210
OFA7 0  70F5            MDX     F00B    BR TO EXIT IF SW 12 ON      8B457220
OFA8 0  1804            SRA     4       PLACE SW 8 AT BIT POS 15    8B457230
OFA9 0  4804            BSC     E       SKIP IF SW 8 OFF            8B457240
OFAA 0  70F2            MDX     F00B    BR TO EXIT IF SW 8 ON       8B457250
OFAB 0  C044            LD      Z000    LD SWITCH READINGS          8B457260
OFAC 0  0000            DC              IMPROPER BIT SWS, 14 ON     8B457270
OFAD 0  083E            XIO     F003    *WITHOUT 8 OR 12 ON         8B457280
OFAE 0  70E5            MDX     F00L                                8B457290
OFAF 0  0003    U003    DC      3       CONSTANT 3                  8B457300
OFB0 0  FFFD    U00A    DC      -3      CONSTANT -3                 8B457310
OFB1 0  0000    U00B    DC      0       ERROR CCCURED CONTROL       8B457320
                *                                                   8B457330
                ********************************************      8B457340
                *                                                   8B457350
                *                LOCK ON ERROR RT                   8B457360
                *                                                   8B457370
*********************************************************************8B457380
CORE    DATA OR     *LA- OPER-                                      8B457390
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B457400
*********************************************************************8B457410
OFB2 0  0000    F00E    DC      0       CONTAINS RETURN ADDRESS     8B457420
OFB3 0  281A            STS     F00H    SAVE REGS  C AND OF         8B457430
OFB4 0  D040            STO     U00X            ACCUMULATOR         8B457440
OFB5 0  1800            RTE     16                                  8B457450
OFB6 0  D03F            STO     U00X+1          ACC EXTENTION       8B457460
                *                                                   8B457470
                ********************************************      8B457480
                *  SET UP FOR RESTART                         *    8B457490
                *                                             *    8B457500
                *  TO RESTART -- PRESS STOP, RESET AND START. *    8B457510
                *                                             *    8B457520
OFB7 0  C03F            LD      RST1    LD /6004                    8B457530
                *                                             *    8B457540
OFB8 00 D4000000        STO  L  /0000   STO IN WORD ZERO            8B457550
                *                                             *    8B457560
OFBA 0  C03D            LD      RST2    LD /4C00                    8B457570
                *                                             *    8B457580
OFBB 00 D4000004        STO  L  /0004   STO IN WORD FOUR            8B457590
                *                                             *    8B457600
OFBD 0  C03B            LD      RST2+1  LD /012C                    8B457610
                *                                             *    8B457620
OFBE 00 D4000005        STO  L  /0005   STO IN WORD FIVE            8B457630
                *                                             *    8B457640
                ********************************************      8B457650
OFC0 0  082B            XIO     F003    READ SWITCHES               8B457660
OFC1 0  C02E            LD      Z000    CK LOOP ON INST BEING       8B457670
OFC2 0  1807            SRA     7       * TESTED SW                 8B457680
OFC3 0  4804            BSC     E       SKIP IF EVEN                8B457690
OFC4 0  700A            MDX     F008    EXIT TO LOOP INST           8B457700
OFC5 0  C0EB            LD      U008    CK IF ERROR HAS             8B457710
OFC6 0  4820            BSC     Z       * OCCURRED                  8B457720
OFC7 0  7009            MDX     F009                                8B457730
OFC8 0  C0E9    F00K    LD      F00E    GOT RETURN ADDR             8B457740
OFC9 0  8025            A       U006    ADD ONE                     8B457750
OFCA 0  D0E7            STO     F00E    STORE RETURN ADDRESS        8B457760
OFCB 0  C02A            LD      U00X+1  RESTORE REGS                8B457770
OFCC 0  18D0            RTE     16                                  8B457780
OFCD 0  C027            LD      U00X                                8B457790
OFCE 0  2000    F00H    LDS     0       SET C AND OF OFF            8B457800
OFCF 00 4C800FB2 F008   BSC  I  F00E    BR TO RETURN ADDRESS        8B457810
OFD1 0  C01E    F009    LD      Z000    CHECK LOCK ON ERROR SW      8B457820
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OFD2 0  1803            SRA     3       SHIFT BIT 12 TO POS 15      8B457830
OFD3 0  4804            BSC     E       SKIP IF OFF                 8B457840
OFD4 0  7003            MDX     F00C    ERROR SW (B 12) ON          8B457850
OFD5 0  1810            SRA     16      RESET ERROR OCCURRED        8B457860
OFD6 0  D00A            STO     U00B    * CONTROL                   8B457870
OFD7 0  70F0            MDX     F00K    BR TO GET RETURN ADDRESS    8B457880
OFD8 0  C0D9    F00C    LD      F00E    GOT ADDR                    8B457890
OFD9 0  80D6            A       U00A    ADD MINUS THREE             8B457900
OFDA 0  F0D6            EOR     U00B    COMPARE TO ERR CONTR        8B457910
                *                       * ADDR                      8B457920
OFDB 0  4820            BSC     Z       SKIP ON ZERO                8B457930
OFDC 0  70EB            MDX     F00K    BR TO GET RETURN ADDRESS    8B457940
OFDD 0  70F1            MDX     F008    EXIT                        8B457950
                *                                                   8B457960
                ********************************************      8B457970
                *                       CK LOOP RT SW RT            8B457980
                *                                                   8B457990
*********************************************************************8B458000
CORE    DATA OR     *LA- OPER-                                      8B458010
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B458020
*********************************************************************8B458030
OFDE 0  00C0            F005    DC      0       WILL CONTAIN RETURN ADDR 8B458040
OFDF 0  080C            XIO     F003    READ SWS - PLACE IN LABFL   8B458050
                *                       * ADDRESS Z000              8B458060
OFE0 0  C00F            LD      Z000    CK LOOP ROUTINE SW          8B458070
OFE1 0  1805            SRA     5       CHECK FOR BIT 11            8B458080
OFE2 0  4804            BSC     E       NO SKIP FOR LOOP            8B458090
OFE3 0  7003            MDX     F00G    LOOP ROUTINE SWITCH ON      8B458100
OFE4 0  C0F9            LD      F005    LD RETURN ADDRESS           8B458110
OFE5 0  D0CC            STO     F00E    SAVE FOR LOCK ON ERROR RTN  8B458120
OFE6 0  70CC            MDX     F00E+1  BR TO SAVE REGISTERS        8B458130
OFE7 00 4C800FDE F00G   BSC  I  F005    BR TO MAIN PROGRAM          8B458140
                *                       * RETURN ADDRESS            8B458150
OFE9 0  0000    U000    DC      /0000   A REG SAVED HERE            8B458160
OFEA 0  0000    U001    DC      /0000   Q REG SAVED HERE            8B458170
OFEC    0000            BSS  E                                      8B458180
OFEC 0  0FF0    F003    DC      Z000                                8B458190
OFED 0  0240    F004    DC      /0240   EQUAL /3A00 IN 1130         8B458200
OFEE 0  0002    U004    DC      /0002                               8B458210
OFEF 0  0001    U006    DC      /0001                               8B458220
OFF0 0  0000    Z000    DC      /0000   SW READING STORED HERE      8B458230
OFF1 0  0001            DC      /0001                               8B458240
OFF2    0000            BSS  E                                      8B458250
OFF2 0  0000    U008    DC      /0000                               8B458260
OFF3 0  0000    U009    DC      /0000                               8B458270
OFF4 0  0240    F007    DC      /0240   EQUAL /3A00 IN 1130         8B458280
OFF5    0002    U00X    BSS     2       SAVED FOR A+Q STORAGE       8B458290
OFF7 0  6004    RST1    LDX     /0004                               8B458300
OFF8 00 4C00012E RST2   BSC  L  A080                                8B458310
OFFA    012D            END     X000                                8B458320
```

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
A0C0	013F	300F,3010,3011,3012,013A
A080	012E	3004,3005,3006,3007,3008,3009,300A,300B,300C,300D, 300E,0FF8
A1C0	01EB	303D,303E,01E9
A1D0	01F5	303F,3040,3041,3042,3043,3044,3045,01F2
A1E0	0214	3046,3047,0210
A1F0	0220	3048,3049,021D
A100	014C	3013,3014,3015
A140	0154	3016,3017,3018,3019,301A,301B,301C,301D,301E,301F, 3020,3021,3022,3023,3024,3025,3026,3027,3028,3029, 302E,0F7D
A180	01A0	302A,3028,302C,302D,302F,3030,3031,3032,3033,3034, 3035,3036,3037,3038,3039,303A,303B,303C,019E
A2CC	0337	3072,0341
A2C0	0319	306F,0312,0322
A2C4	0323	3070,022C
A2C8	032D	3071,0336
A200	022D	304A,3048,304C,304D,304E,304F,3050,3051,3052,3053, 3054,3055,3056,3057,3058,3059,305A,305B,305C,305D, 305E,305F,0229
A240	0270	3060,3061,3062,3063,3064,026B
A280	02D9	306A,028B,02C8,02E2
A281	02E3	306B,02ED
A282	02EE	306C,02F8
A283	02F9	306D,0303
A284	0304	306E,0311
A3C0	03DD	3080,3081,03D6,03E9,03F3
A3C4	03F4	3082,3083,0407,0410
A300	0345	3073,0342,034E
A302	034F	3074,0359
A304	035A	3075,0364
A340	0368	3076,3077,0365,0373,037D
A38C	03BD	307E,307F,03CB,03D5
A380	0381	3078,3079,037E,038B,0395
A384	0396	307A,307B,039F,03A8
A388	03A9	307C,307D,03B2,03BC
A4CC	05AC	30A8,30A9,05B8,05C1
A4C0	0566	30A1,0562,0570
A4C2	0571	30A2,30A3,30A4,30A5,0571,0574,0582,058B,0595
A4C8	0596	30A6,30A7,05A2,05AB
A400	0419	3084,3085,3086,0411,0426,042E,0439
A408	043A	3087,3088,3089,0448,0450,0459
A44A	0500	3099,309A,3098,050C,0515,051F
A440	04C4	3093,3094,3095,04BC,04CF,04D7,04E0
A444	04E1	3096,3097,3098,04ED,04F6,04FF
A480	0549	309F,0542,0554
A482	0555	30A0,0561
A5C0	074C	30CE,30CF,0747,0756,075F
A5C4	0760	30D0,30D1,076E,0778
A5C8	0779	30D2,30D3,0788,0792
A50A	0600	30AF,30B0,3170,060B,0612
A50C	061D	30B1,30B2,061C,0629,0630
A50E	0631	30B3,30B4,062A,063D,0644
A500	05C8	30AA,05C2,05D2
A502	05D3	30AB,05DD
A504	05DE	30AC,30AD,05E9,05F4
A508	05F5	30AE,05FF
A54A	06C1	30C0,30C1,06B9,06CA,06D2
A54C	06D3	30C2,30C3,06CB,06DC,06E4
A54E	06E5	30C4,30C5,06DD,06EE,06F6
A54F	06F7	30C6,30C7,06EF,0701,0709
A540	0663	30B7,30B8,30B9,0654,065B,066F,0676,0686
A544	0687	30BA,30BB,0670,0692,0699
A546	069C	30BC,30BD,0693,069A,06A7,06AE
A548	06AF	30BE,30BF,06A8,06B8,06C0

A580	070F	30C8,30C9,0702,070A,0717,0720
A584	0721	30CA,30CB,072A,0734
A588	0735	30CC,30CD,073D,0746
A6C0	0964	30F0,30F1-0954,095B,0974,0978
A6C2	097C	30F2,30F3,0975,098C,0993
A6C4	0994	30F4,30F5,098D,09A3,09AA
A6C6	09AB	30F6,30F7,09A4,09BB,09C2
A6C8	09C3	30F8,30F9,09BC,09D3,09DA,09EB
A6D0	09EC	315D,09D4,09DB,09F7
A6D2	09F8	315E,0A03
A6D3	0A04	315F,0A0F
A6D5	0A10	3163,0A1B
A6D6	0A1C	3164,0A27
A6F0	0A28	3165,0A36
A6F1	0A39	3166,0A37,0A47
A60A	07D7	30D9,07E3
A60C	07E4	30DA,07F0
A60E	07F1	30DB,07FD
A600	079F	30D4,0796,07A7
A602	07A8	30D5,07B0
A604	07B1	30D6,07BC
A606	07BD	30D7,07C9
A608	07CA	30D8,07D6
A64A	086C	30E3,0879
A64C	087A	30E4,0887
A640	0820	30DE,3167,081A,082C,0836
A642	0837	30DF,0843
A644	0844	30E0,0850
A646	0851	30E1,085D
A648	085E	30E2,086B
A660	088F	3157,3158,088A,089C,08A6
A662	08A7	3159,315A,0884,088E
A664	08BF	315B,315C,08CC,08D6
A670	08D9	3169,08D7,08E2,08E9
A68C	0928	30EB,30EC,0932,093B
A680	08EC	30E5,30E6,08E3,08F7,0900
A684	0901	30E7,30E8,090B,0913
A688	0914	30E9,30EA,091E,0927
A7CC	0C3D	3125,3126,0C46,0C4F
A7C0	0C01	311F,3120,0BF3,0C0B,0C15
A7C4	0C16	3121,3122,0C1F,0C29
A7C8	0C2A	3123,3124,0C33,0C3C
A70C	0A8D	3100,3101,3102,0A99,0AA7,0AAE
A700	0A48	30FA,30FB,0A54,0A5E
A704	0A5F	30FC,30FD,0A68,0A75
A708	0A76	30FE,30FF,0A82,0A8C
A74C	0814	310B,310C,310D,310E,0B20,0B2A,0B36,0B3D
A740	0AB8	3103,3104,3105,3106,0AA8,0AAF,0AC8,0AD3,0ADF,0AE6
A746	0AE7	3107,3108,3109,310A,0AF5,0AFE,0B0C,0B13
A78A	0BCB	311B,311C,0BD4,0BDE
A78E	0BDF	311D,311E,0BE8,0BF2
A780	0B8C	3115,3116,3117,3118,0B7D,0B98,0BA2,0BAE,0BB5
A786	0BB6	3119,311A,0BC0,0BCA
A80C	0CB2	312F,0CAB,0CBC
A80E	0CBD	3130,0CC7
A800	0C58	3127,3128,3129,312A,0C50,0C68,0C73,0C7F,0C86
A806	0C87	312B,312C,312D,312E,0C80,0C94,0C9F,0CAA,0CB1
A84A	0DC6	3171,0DCF
A840	0D6A	3135,0D41,0D77
A842	0D78	3136,316F,0D8C
A844	0D8D	3137,0D98
A846	0D9C	3138,0DA5
A848	0DA6	3139,0DAF
A849	0DB0	313A,3168,0DC5
A85A	0DD0	3172,0DD8
A88A	0E60	3173,0E6D
A88C	0E6E	3141,3142,3143,0E79,0E82,0E8C
A880	0DE4	313B,313C,3160,0DD9,0DF3,0DFD,0E03,0E0A

A884	0F06	3130,313F,3161,0F04,0F1B,0E29,0E32
A888	0E33	313F,3140,0E41,0E4F
A889	0F50	3162,0E5F
A900	0482	3065,3066,3067,3068,3069
B40A	0497	3090,3091,3092,04AA,0482,04BB
B400	045A	308A,308B,30BC,0465,046E,0477
B406	0478	308D,308E,308F,0484,048D,0496
B440	0520	309C,309D,309E,0530,0538,0541
B500	0645	30B5,30B6,043E,0653,065A
B600	07FE	30DC,0808
B602	080C	30DD,0819
B680	093C	30ED,30EE,30EF,0947,0953,095A
B742	0B3E	310F,3110,3111,3112,0B4A,0B54,0B60,0B67
B747	0B68	3113,3114,0B72,0B7C
B8A0	0EEC	314B,314C,0EDB,0EFD,0F06
B8A1	0F07	314D,0EFF,0F10
B8A2	0F11	314E,0F1A
B8A3	0F1B	314F,0F24
B8A4	0F25	3150,0F2E
B8A5	0F2F	3151,0F39
B8C0	0F3A	3152,3153,3154,0F42,0F4A,0F53
B8C1	0F54	3155,0F5C
B8C2	0F5D	3156,0F66
B800	0CC8	3131,0CD2
B802	0CD3	3132,0CDD
B804	0CDE	3133,0CE8
B806	0CE9	3134,0CF3
B807	0D18	316A,0CF4,0D22
B808	0D23	316B,0D2D
B809	0D2E	316C,0D39
B810	0D3A	316D,316F,0D69
B882	0E8D	3144,3145,3146,0E99,0EA2,0EAE
B884	0EAF	3147,3148,3149,0EB9,0EC2,0ECE
B885	0ECF	314A,0EDA
F00A	0F9F	0F8C
F00B	0F9D	0FA7,0FAA
F00C	0FD8	0FD4
F00E	0FB2	0371,0389,03B0,03C9,03E7,0405,0424,042C,0446,044E, 0463,046C,0482,048B,04A8,0480,04CD,04D5,04EB,04F4, 050A,0513,052E,0536,0580,0589,05A0,05B6,05E7,0609, 0610,0660,0674,0715,0728,0738,0754,076C,0786,082A, 0B9A,0BB2,0BCA,0BE7,0BF5,0709,091C,0930,0945,0A52, 0A59,0A80,0A97,0AC6,0AD1,0AF3,0AFC,0B1E,0B28,0B48, 0B52,0B70,0B96,0BA0,0BBE,0BD2,0BE6,0C09,0C1D,0C31, 0C44,0C66,0C71,0C92,0C9D,0D51,0D5A,0DF1,0DFB,0E19, 0E27,0E3F,0E77,0E80,0E97,0FA0,0E87,0EC0,0EFB,0F40, 0F48,0FC8,0FCA,0FCF,0FD8,0FE5,0FE6
F00F	0FA5	0F97
F00G	0FE7	0FE3
F00H	0FCE	0FB3
F00K	0FC8	0FD7,0FDC
F00L	0F94	0FAE
F00X	0F9B	0F84
F000	0F83	3174,02DD,02E8,02F3,02FE,030C,031D,0327,0331,033C, 0349,0354,035F,036E,0378,0386,0390,039A,03A3,03AD, 03B7,03C6,03D0,03E4,03EE,0402,040B,0421,0429,0434, 0443,0448,0454,0460,0469,0472,047F,0488,0491,04A5, 04AD,0486,04CA,04D2,04DB,04E8,04F1,04FA,0507,0510, 051A,0528,0533,053C,054F,055C,056B,0577,057D,0586, 0590,0590,05A6,05B3,05BC,05CD,05D8,05E4,05EF,05FA, 0606,060D,0617,0624,062B,0638,063F,064E,0655,066A, 0671,0681,068D,0694,06A2,06A9,06B3,06BB,06C5,06CD, 06D7,06DF,06E9,06F1,06FB,0704,0712,0718,0725,072F, 0738,0741,0751,075A,0769,0773,0783,078D,07A2,07AB, 07B7,07C4,07D1,07DE,07E8,07F8,0806,0814,0827,0831, 083E,0848,0858,0866,0874,0882,0897,08A1,08AF,0889, 08C7,08D1,08E4,08F2,08FB,0906,090E,0919,0922,092D, 0936,0942,094E,0955,096F,0976,0987,098E,099E,09A5,

		09B6,09BD,09CE,09D5,09F2,09FE,0A0A,0A16,0A22,0A31, 0A42,0A4F,0A59,0A66,0A70,0A7D,0A87,0A94,0AA2,0AA9, 0AC3,0ACE,0ADA,0AE1,0AF0,0AF9,0B07,0B0E,0B18,0B25, 0B31,0B38,0B45,0B4F,0B5B,0B62,0B6D,0B77,0B93,0B9D, 0BA9,0BB0,0BBB,0BC5,0BCF,0BD9,0BE3,0BED,0C06,0C10, 0C1A,0C24,0C2E,0C37,0C41,0C4A,0C63,0C6E,0C7A,0C81, 0C8F,0C9A,0CA5,0CAC,0CB7,0CC2,0CCD,0CD8,0CE3,0CEE, 0D10,0D2B,0D34,0D4E,0D57,0D72,0D7E,0D85,0D96,0DA0, 0DAA,0DB9,0DC0,0DCA,0DD3,0DEE,0DF8,0E05,0E16,0E24, 0F2D,0E3C,0E4A,0E5A,0E74,0E7D,0F87,0E94,0E9D,0EA9, 0FB4,0EBD,0EC9,0ED5,0EF8,0F01,0F0B,0F15,0F1F,0F29, 0F34,0F3E,0F46,0F4F,0F58,0F62,0F8D,0F90,0F93,0F9D, 0F9F,0FA2,0FA3
F002	0F9C	0F8F
F003	0FFC	0D3B,0F88,0FAD,0FC0,0FDF
F004	0FED	029A,02AA
F005	0FDE	02E0,02EB,02F6,0301,030F,0320,032A,0334,033F,034C, 0357,0362,037B,0393,039D,03A6,03BA,03D3,03F1,040E, 0437,0457,0475,0494,04B9,04DE,04FD,051D,053F,0552, 055F,056E,0593,05A9,05BF,05D9,05DB,05F2,05FD,061A, 0627,062E,063B,0642,0651,0658,0684,0690,0697,06A5, 06AC,06B6,06BE,06C8,06D0,06DA,06E2,06EC,06F4,06FF, 0707,071E,0732,0744,075D,0776,0790,07A5,07AE,07BA, 07C7,07D4,07E1,07EE,07FB,0809,0817,0834,0841,084E, 085B,0869,0877,0885,08A4,08BC,08D4,08E0,08FE,0911, 0925,0939,0951,0958,0972,0979,098A,0991,09A1,09AB, 09B9,09C0,09D1,09D8,09F5,0A01,0A0D,0A19,0A25,0A34, 0A45,0A5C,0A73,0A8A,0AA5,0AAC,0ADD,0AE4,0B0A,0B11, 0B34,0B3B,0B5E,0B65,0B7A,0BAC,0BB3,0BC8,0BDC,0BF0, 0C13,0C27,0C3A,0C4D,0C7D,0CP4,0CAB,0CAF,0CBA,0CC5, 0CD0,0CDB,0CE6,0CF1,0D20,0D2B,0D37,0D67,0D75,0D8A, 0D99,0DA3,0DAD,0DC3,0DCD,0DD6,0E01,0E08,0E30,0E4D, 0E5D,0E6B,0E8A,0EAC,0ECC,0ED8,0F04,0F0E,0F18,0F22, 0F2C,0F37,0F51,0F5A,0F64,0FE4,0FE7
F007	0FF4	029C,02AC
F008	0FCF	0FC4,0FDD
F0C9	0FD1	0FC7
F902	02CA	02AE,02C1
F903	02CB	0297,02A7,02B7
F904	02CC	02CC
F911	02CD	0282,0286
F912	02CE	0283,0285,02CD
F913	02CF	0284
F915	02D0	0280,02B3
F916	02D1	028C
F917	02D2	02AF,02C2,02CA
F918	02D3	0289,028D
F919	02D4	0296
F920	02D5	02A6,02B8
F922	02D6	029E,02BB
F923	02D8	029F,02A0,02A3,02BC
G0C1	0144	0141
G0C2	0147	0145
G080	0130	012E
G081	0133	0130
G082	0138	0133
G083	013A	0138
G084	0138	0138
G14A	0181	017F
G14B	0185	0183
G14C	0189	0187
G14D	018D	018B
G14E	0191	018F
G14F	0195	0193
G140	015A	0158
G141	015D	015B
G142	0161	015F
G143	0165	0163

G144	0169	0167
G145	016D	016B
G146	0171	016F
G147	0175	0173
G148	0179	0177
G149	017D	017B
G150	0199	0197
G18A	01D0	01CE
G18B	01D4	01D2
G18C	01D8	01D6
G18D	01DC	01DA
G18E	01E0	01DE
G18F	01E4	01E2
G181	01AC	01AA
G182	01B0	01AE
G183	01B4	01B2
G184	01B8	01B6
G185	01BC	01BA
G186	01C0	01BE
G187	01C4	01C2
G188	01C8	01C6
G189	01CC	01CA
C2CC	033F	033A
G2C0	0320	031B
G2C4	032A	0325
G2C8	0334	032F
G20A	025D	0259
G20B	0267	0265
G20C	026B	026F
G20D	0262	0260
G200	0231	022D
G201	023B	0232
G202	023A	0236
G203	023E	023A
G204	0242	0240
G205	0247	0243
G206	024F	024D
G207	0254	0252
G208	024B	0247
G209	0258	0256
G280	02E0	02DB
G281	02EB	02E6
G282	02F6	02F1
G283	0301	02FC
G284	030F	030A
G3C0	03E7	03E2
G3C2	03F1	03EC
G3C4	0405	0400
G3C6	040E	0409
G300	034C	0347
G302	0357	0352
G304	0362	035D
G340	0371	036C
G342	0376	0376
G38A	03BA	03B5
G38C	03C9	03C4
G38E	03D3	03CE
G380	0389	0384
G382	0393	038E
G384	039D	0398
G386	03A6	03A1
G388	03B0	03AB
G4CA	05A9	05A4
G4CC	05B6	05B1
G4CD	05BF	05BA
G4C0	056E	0569
G4C2	0580	057C
G4C4	0589	0585

G4C6	0593	058E
G4C8	05A0	059B
G40C	0446	0442
G40E	0457	0452
G400	042C	0427
G404	0424	041F
G406	0437	0432
G407	0443	0440
G408	044E	0449
G44A	0513	050E
G44C	0507	0504
G44D	050A	0506
G44E	051D	0518
G440	04D5	04D0
G442	04CD	04C8
G443	04DE	04D9
G444	04F4	04EF
G446	04E8	04E5
G447	04EB	04E7
G448	04FD	04F8
G480	0552	054D
G482	055F	055A
G5CA	0790	078B
G5C0	0754	074F
G5C2	075D	0758
G5C4	076C	0767
G5C6	0776	0771
G5C8	0786	0781
G50A	0613	0602,060C
G50C	0623	061F
G50E	0638	0634
C500	05D0	05CC
G502	05DB	05D7
G504	05E4	05E2
G505	05E7	05E3
G506	05EF	05ED
G507	05F2	05EE
G508	05FA	05F8
G54A	06CC	06C2
G54C	06DE	06D4
G54E	06F0	06E6
G54F	0703	06F8
G540	0678	0666,0677
G542	068A	067F
G544	069B	0689
G546	06A1	069D
G548	06BA	06B0
G58A	0744	073F
G580	0715	0710
G582	071E	0719
G584	0728	0723
G586	0732	072D
G588	073B	0736
G6C0	0979	096D
G6C2	0991	0985
G6C4	09A8	099C
G6C6	09C0	09B4
G6C8	09D8	09CC
G60A	07E1	07DC
G60C	07EE	07E9
G60E	07FB	07F6
G600	07A2	079F
G602	07AB	07A8
G604	07BA	07B5
G606	07C7	07C2
G608	07D4	07CF
G64A	0877	0872
G64C	0885	0880

G640	082D	0825
G641	0834	082F
G642	0841	083C
G644	084E	0849
G646	0858	0856
G648	0869	0864
G660	089A	0895
G661	08A4	089F
G662	08B2	08AD
G663	08BC	08B7
G664	08CA	08C5
G665	08D4	08CF
G670	08E4	08DB
G671	08DB	08DF
G672	08DD	08EA
G68A	0925	0920
G68C	0930	0928
G68E	0939	0934
G680	08F2	08EF
G682	08FE	08F9
G684	0909	0904
G686	0911	090C
G688	091C	0917
G7CA	0C3A	0C35
G7CC	0C44	0C3F
G7CE	0C4D	0C48
G7C0	0C09	0C04
G7C2	0C13	0C0E
G7C4	0C1D	0C18
G7C6	0C27	0C22
G7C8	0C31	0C2C
G70A	0A8A	0A85
G70C	0A97	0A92
G70E	0AAC	0A9C
G700	0A52	0A4D
G702	0A5C	0A57
G704	0A69	0A64
G706	0A73	0A6E
G708	0A80	0A7B
G74A	0811	0803, 080D
G74C	081E	0819
G74E	0828	0823
G740	0AC6	0AC1
G742	0AD1	0ACC
G744	0AE4	0AD6, 0AE0
G746	0AF3	0AEE
G748	0AFC	0AF7
G78A	0B02	08CD
G78C	08DC	08D7
G78E	08E6	08E1
G780	0B96	0B91
G782	08A0	089B
G784	08B3	08A5, 08AF
G786	08BE	08B9
G788	08C8	08C3
G78A	0CAF	0CA1
G78C	0CBA	0C85
G78E	0CC5	0CC0
G800	0C66	0C61
G802	0C71	0C6C
G804	0C84	0C76
G806	0C92	0C8D
G808	0C9D	0C98
G84A	0DCA	0DC8
G840	0D75	0D70
G842	0D88	0D83
G844	0D99	0D94
G846	0DA0	0D9E

G848	0DAA	0DA8
G849	0DC3	0DBE
G88A	0E4D	0E48
G88B	0E68	0E68
G88C	0E77	0E72
G88E	0E80	0E7B
G880	0DF1	0DEC
G881	0DFE	0DE8
G882	0DF8	0DF6
G883	0E05	0E00
G884	0E19	0E14
G885	0E2A	0E11
G886	0E27	0E22
G887	0E30	0E2C
G888	0E3F	0E3A
G889	0E5D	0E58
G900	02AE	02A1, 02B5
G901	02A6	0295
G902	029E	02A5
G903	02BB	02C0
G904	02C1	02B9, 02B0, 02C6
H4C2	057D	057A
H4C3	057A	0575
H4C4	0586	0583
H40A	04B0	04AB
H40D	04A8	04A3
H40E	0489	0484
H400	046C	0467
H402	0463	045E
H404	0475	0470
H405	0482	047E
H406	0488	0486
H407	047F	047C
H408	0494	048F
H440	0536	0531
H443	052E	0529
H444	053F	053A
H50A	0606	0604
H50B	0617	0615
H50C	0624	0621
H50E	0642	0636
H508	05FD	05F9
H54A	0600	06C4
H54C	06E2	06D6
H54E	06F4	06E8
H54F	0707	06FA
H540	066A	0668
H544	068D	068B
H546	06A9	06A0
H548	068E	06B2
H6C0	0976	0968
H6C2	098E	0980
H6C4	09A5	0998
H6C6	09BD	09AF
H6C8	09D5	09C7
H6D0	09F5	09F0
H6D2	0A01	09FC
H6D3	0A0D	0A08
H6D5	0A19	0A14
H6D6	0A25	0A20
H6F0	0A34	0A2F
H6F1	0A42	0A3C, 0A3D, 0A3F, 0A40
H6F2	0A45	0A41
H600	07A5	07A1
H602	07AE	07AA
H640	0822	0822, 0824
H680	08F5	08F1
H74A	0B0E	0B05

H744	0AE1	0AD8
H780	0BF0	0BEB
H784	0BB0	0BA7
H80A	0CAC	0CA3
H804	0C81	0C78
H84A	0DCD	0DC9
H842	0D81	0D7C
H846	0DA3	0D9F
H848	0DAD	0DA9
H849	0DB2	0DB2,0DB6
H85A	0DD6	0DD2
J50A	060D	0605
J50C	062B	0622
J50E	063F	0637
J540	0671	0669
J544	0694	068C
J546	06AC	069F
J600	0809	0804
J602	0817	0812
J680	0945	0940
J682	0958	094A
J70E	0AA9	0AA0
J74A	0B7A	0B75
J740	0B3B	0B2D,0B37
J742	0B48	0B43
J744	0B52	0B4D
J746	0B65	0B57,0B61
J748	0B70	0B6B
J8AA	0F34	0F31,0F32
J8A0	0EFB	0EF6
J8A1	0F0E	0F0A
J8A2	0F0B	0F09
J8A3	0F18	0F14
J8A4	0F15	0F13
J8A5	0F22	0F1E
J8A6	0F1F	0F1D
J8A7	0F2C	0F28
J8A8	0F29	0F27
J8A9	0F37	0F33
J8C0	0F40	0F3C
J8C1	0F48	0F44
J8C2	0F51	0F4D
J8C3	0F58	0F56
J8C4	0F5A	0F57
J8C5	0F62	0F5F,0F60
J8C6	0F64	0F61
J800	0CD0	0CCB
J802	0CDB	0CD6
J804	0CE6	0CE1
J806	0CF1	0CEC
J808	0D20	0D1B
J809	0D2B	0D26
J810	0D37	0D33
J811	0D44	0D53,0D5C,0D63
J812	0D51	0D4C
J813	0D5A	0D55
J814	0D3B	0D66
J815	0D34	0D31
J816	0D5D	0D60
J88A	0ED5	0ED3
J88B	0ED8	0ED4
J880	0E8A	0E85
J882	0E97	0E92
J884	0EA0	0E9B
J886	0EAC	0EA7
J887	0EB7	0EB3
J888	0EC0	0EBB
J869	0ECC	0EC7

K50B	061A	0616
K50C	062E	0623
K640	0824	088C
K682	0955	094C
K740	0B38	0B2F
K746	0B62	0B59
K849	0DBC	0DB7
N1C0	01F3	01EB
N1C1	01F4	01EE
N1D0	0211	01FB,01FC,01FF,0207
N1D1	0212	01F5,01F8,0208
N1D2	0213	0204,020D
N1E0	021E	0218,021A,021E
N1E1	021F	0214
N1F0	022A	022C
N1F1	022B	0224,0226,022B
N1F2	022C	0220
N100	0143	014C,014F
N140	019F	0154
N180	01EA	01A0,01A4
N2C0	0343	0319,031A,0323,032E
N2C2	0344	0324,032D,0337,0338,0339
N200	026C	0231,025D
N201	026D	0258
N202	026E	0262
N203	026F	0267
N240	0271	0271,0275
N241	0273	0270,0274
N242	027C	027F
N243	027D	0278,027E
N280	0313	02D9
N281	0314	02E3,0304
N282	0315	02E5,0309
N283	0316	02EE
N284	0317	02F0,02F9
N285	0318	02FB
N3C0	0412	03DF
N3C1	0413	03DD
N3C2	0414	03F6
N3C3	0415	03F4
N3C4	0416	03E1
N3C5	0417	03EB
N3C6	0418	03FF
N300	0366	0345,0346,034F
N302	0367	0350,0351,035A,035B,035C
N340	037F	0368
N341	0380	036A,0375
N380	03D7	0381
N381	03D8	0383,038D
N382	03D9	0396
N383	03DA	03A9,03BD
N384	03DB	03B4
N385	03DC	03CD
N4C0	05C3	0567,0568,0573,058C,0597,0599,05AD,05AF
N4C1	05C4	058D
N4C2	05C5	0598,05A3,05AE,05B9
N4C3	05C6	059A
N4C4	05C7	05B0
N400	04BD	0419,041C,0430
N401	04BE	0499
N402	04BF	047A
N403	04C0	045C,0485
N404	04C1	0466
N405	04C2	043A,045A,0478,0497
N406	04C3	043D
N440	0543	04C4,0520
N441	0544	04C6,04E3,0502,0522
N442	0545	04E1,04EE

N443	0546	0500
N444	0547	050D
N445	0548	0517
N480	0563	0549,0557
N481	0564	054B,0555,0559
N482	0565	054A,054C,0556,0558
N5C1	0798	074C,0760,077D,077F
N5C3	079A	0763,0766,0770,0779,078A,0793
N5C5	079C	074D,074E,0761,0764,0765,077A
N5C6	079D	0757,0762,076F,0778,077E,0780,0794
N5C7	079E	077C,0789,0795
N500	065C	05C9,0601,0613,0633
N501	065D	05D4
N502	065E	05DF
N503	065F	05F6,0646
N504	0660	061E
N505	0661	0649,064A
N506	0662	064B
N507	05EA	05E0
N540	070B	0664,06AF
N541	070C	0679,067B
N542	070D	067D,0687,06C1,06D3
N543	070E	069C
N581	0748	070F
N582	0749	0735
N583	074A	0721
N584	074B	0722,072C
N6CA	09E6	096C
N6CB	09E7	0984,0A13,0A1D
N6CD	09E8	0983,0A11,0A1F
N6CF	09EA	09C4,09CB
N6C0	09DC	0967,09DC,09EF
N6C1	09DD	09DD,09EC,09F8,0A04,0A07
N6C2	09DE	09DE,09FB
N6C3	09DF	09DF
N6C4	09E0	0965,097D,0995,0997,09AC,09C6,09E0,09E9
N6C5	09E1	09AE,09E1
N6C6	09E2	09E2
N6C7	09E3	09E3
N6C8	09E4	097F,09E4
N6C9	09E5	096A,096B,0982,0983,099A,099B,09B1,09B2,09C9,09CA
N6F0	0A2D	0A2A
N6F1	0A38	0A29,0A2E,0A38
N6F2	0A3D	0A3A
N6F3	0A41	0A3E
N600	081B	07DB,07E8,07F5,0811,081B
N601	081C	07B2,07B4,07BF,07C1,07CC,07CE,07D9,07E6,07F3,0801, 080F,081C
N602	081D	0803,081D
N603	081E	07BE,07CB,07D8,07F5,07F2,0800,080C
N604	081F	080E
N640	088B	0821,0823,082D,0838,083A,083B,0845,0847,0848,0852, 0854,0855,085F,0861,0862,086D,086F,0870,087B,087D, 087E,0889
N642	089C	082E
N643	088D	085E,086C,087A,0888
N644	088E	0820,0837,0844,0851,0863,0871,087F
N660	08D8	0893,0894,089D,089E,08AB,08AC,08B5,08B6,08C3,08C4, 08CD,08CE
N670	08EB	08DA
N680	095C	08ED,08F8,0902,0915,0916
N681	0950	08EE
N682	095E	0903
N683	095F	0929,092A
N684	0960	0933,093D,093F
N686	0961	0949
N687	0962	091F
N688	0963	093F,0948

N7C0	0C51	0C01
N7C1	0C52	0C02
N7C2	0C53	0C03
N7C3	0C54	0C0D
N7C4	0C55	0C16,0C17,0C28,0C3D
N7C5	0C56	0C21
N7C6	0C57	0C2A,0C3E
N700	0AB0	0A49,0A60,0A8E
N701	0AB1	0A4A,0A63,0A78,0A84,0A9F
N702	0AB2	0A48,0A55,0A62,0A6C,0A79,0A83,0A9C,0A9A,0A9E
N703	0AB3	0A4C,0A61
N704	0AB4	0A56,0A6D
N705	0AB5	0A77,0A8F,0A91
N706	0AB6	0A9B
N707	0AB7	0A7A
N74A	0B88	0B22
N74B	0B89	0B4C
N74C	0B8A	0B3F
N740	0B7E	0ABD,0AD4,0AEC,0AFF,0B17,0B2B,0B41,0B55
N742	0B80	0A89,0ABF,0ACA,0AEA,0B15,0B16,0B18,0B40,0B42
N744	0B82	0A8B
N746	0B84	0AE8,0B68
N747	0B85	0B69,0B6A
N748	0B86	0B01,0B2C,0B56,0B74
N78A	0BFE	0BCB
N78D	0C00	0BD6
N780	0BF4	0B8F,0BA3
N782	0BF6	0B8D,0BB7,0BDF
N784	0BF8	0B8E
N785	0BF9	0BC2,0BEA
N786	0BFA	0B90,0B9A,0BB8,0BCC
N787	0BFB	0BF0
N768	0BFC	0BA4
N8A0	0F68	0EF5,0F07,0F11,0F18,0F26
N8A1	0F69	0F08,0F2F,0F30
N8A2	0F6A	0EF4,0EFE,0F1C
N8A3	0F6B	0F12
N8A4	0F6C	0F25
N8C1	0F80	0F76
N8C2	0F81	0298,02A8
N8C3	0F82	0F77,0F80
N8C5	0F6E	0F3B
N8C6	0F70	0F3A,0F43,0F4C
N8C7	0F72	0F54,0F5D,0F5E
N8C8	0F74	0F55
N80A	0CFE	0CC9
N80C	0D00	0CD4
N80E	0D02	0CB4,0CDF
N80F	0D03	0D25
N800	0CF5	0C5D,0C74,0C8A,0CA0
N802	0CF6	0C59
N804	0CF8	0C87
N806	0CFA	0CB3
N807	0CFB	0CBF,0CE0,0CE8,0D5E
N808	0CFC	0CBE,0CCA
N810	0D04	0CEA
N811	0D05	0C6A
N812	0D06	0C5B,0C5F,0CD5
N813	0D07	0C88,0C8B
N816	0D08	0C96
N817	0D09	0D1A
N818	0D0A	0D19
N819	0D0C	0D24
N820	0D0E	0D30
N821	0D0F	0D43,0D44,0D45,0D49,0D4A,0D5D,0D5F
N822	0D13	0D42,0D62
N823	0D14	0D2F
N824	0D16	0D47

PROCESSOR-CONTROLLER FUNCTION TEST

N84A	0DDA	0DC6
N840	0DDC	0D6D,0D6E,0D91,0D92,0D85,0D8C
N841	0DDD	0D6F,0D93,0D8D
N842	0DDE	0D79,0D81,0D89
N843	0DE0	0D88
N844	0DE1	0DE2
N845	0DE2	0D78,0D7B,0D83
N846	0DE3	0D82
N85A	0DDB	0DD0
N86A	0EE6	0E8F,0EAF,0ED0
N88B	0EE7	0E56
N88C	0EE8	0E6E
N86D	0EE9	0E8D
N88E	0EEA	0E20,0EA5
N88F	0EEB	0E66
N880	0EDC	0DE9,0DF4,0E1C,0E1E,0E42,0E44,0E83,0E84,0EA3,0EA4, 0EC3,0EC5
N882	0EDE	0DE5,0E63
N884	0EE0	0E0D,0E53,0CC6
N885	0EE1	0E33,0E46
N886	0EE2	0E12,0E35,0E38,0E91,0EBA
N887	0EE3	0E08
N888	0EE4	0E70
RST1	0FF7	0FB7
RST2	0FF8	0FBA,0FBD
S501	0655	0648
S503	0658	064C
U00A	0FB0	0FD9
U00B	0FB1	0F91,0FA0,0FC5,0FD6,0FDA
U00X	0FF5	0FB4,0FB6,0FCB,0FCD
U000	0FE9	0F85,0F9A
U001	0FEA	0F87,0F98
U003	0FAF	0FA1
U004	0FEE	
U006	0FEF	0F92,0FC9
U008	0FF2	
U009	0FF3	
V1AC	027A	027C
V154	0241	023E
V168	024E	024B
V170	0253	0250
V174	0257	0254
V180	0261	025E
V184	0266	0263
W8C0	0F76	0EF2,0F67
W8C4	0F7D	0F7A
X000	012D	3000,0FFA
X001	0286	3001,02B1
X003	02C7	3002,02C3
X007	0F7C	3003
Z000	0FF0	0D3D,0F89,0F94,0FAB,0FC1,0FD1,0FE0,0FEC
Z020	0F7F	0F7B

```
                        ABS
3001                    ORG     /3001
                *
                *                       ** PROGRAM WAITS **
                *
3001 0 013D             DC      WT1&1   WAIT 1
                *
                *                       NORMAL WAIT AFTER PROGRAM
                *                       LOAD.BIT SWITCH 8 OFF TO
                *                       RUN PROGRAM.BIT SWITCH 8
                *                       ON TO SELECT SCOPING RTN.
                *                       PUSH START TO EXECUTE
                *
                *                            NOTE
                *
                *                       INSERT 3 JUMPERS AS PER
                *                       SECTION 3.2 A.SET DISPLAY
                *                       ADDRESS REGISTER SWITCH TO
                *                       DISPLAY CAR BEING TESTED.
                *
3002 0 0146             DC      WT2&1   WAIT 2
                *
                *                       OBSERVE CAR LAMPS. CAR
                *                       SHOULD BE 0000. PUSH START
                *
3003 0 014A             DC      WT3&1   WAIT 3
                *
                *                       OBSERVE CAR LAMPS. CAR
                *                       SHOULD BE 7FFF. PUSH START
                *
3004 0 0153             DC      WT4&1   WAIT 4
                *
                *                       THIS WAIT WILL OCCUR 15
                *                       TIMES TO ALLOW THE OPER.
                *                       TO CHECK A 1 BIT RIPPLE
                *                       THROUGH THE CAR. THE CAR
                *                       SHOULD BE THE SAME AS THE
                *                       A REG AT EACH WAIT. PUSH
                *                       START .
                *
3005 0 0169             DC      WT5&1   WAIT 5
                *
                *                       THIS WAIT WILL OCCUR 16
                *                       TIMES.AT EACH WAIT THE CAR
                *                       CONTENTS SHOULD BE THE
                *                       SAME AS THE A REG. EACH
                *                       WAIT OCCURS AFTER THE CAR
                *                       IS LOADED WITH 1 OF 16
                *                       STARTING ADDRESSES AND
                *                       STEPPED 50 TIMES. PUSH
                *                       START AFTER EACH WAIT.
                *
3006 0 0178             DC      WT6&1   WAIT 6
                *
                *                       OBSERVE CAR LAMPS. CAR
                *                       SHOULD BE 7FFF. THIS WAIT
                *                       OCCURS AFTER CAR IS LOADED
                *                       TO 0000 AND STEPPED 7FFF
                *                       TIMES.PUSH START TO RETURN
                *                       TO WAIT 1. THIS IS THE END
                *                       OF PROGRAM WAIT.
                *
3007 0 01B0             DC      WT7&1   WAIT 7
                *
                *                       SCOPE ROUTINE WAIT. ENTER
                *                       DESIRED STARTING ADDRESS
                *                       IN DATA ENTRY SWITCHES.
                *                       PUSH START TO CONTINUE.
```

```
8B500020
8B500030
8B500040
8B500050
8B500060
8B500070
8B500080
8B500090
8B500100
8B500110
8B500120
8B500130
8B500140
8B500150
8B500160
8B500170
8B500180
8B500190
8B500200
8B500210
8B500220
8B500230
8B500240
8B500250
8B500260
8B500270
8B500280
8B500290
8B500300
8B500310
8B500320
8B500330
8B500340
8B500350
8B500360
8B500370
8B500380
8B500390
8B500400
8B500410
8B500420
8B500430
8B500440
8B500450
8B500460
8B500470
8B500480
8B500490
8B500500
8B500510
8B500520
8B500530
8B500540
8B500550
8B500560
8B500570
8B500580
8B500590
8B500600
8B500610
8B500620
8B500630
8B500640
8B500650
8B500660
8B500670
8B500680
8B500690
```



```
                *
3008 0 01B4             DC      WT8&1   WAIT 8
                *
                *                       SCOPE ROUTINE WAIT. ENTER
                *                       DESIRED NUMBER OF CAR
                *                       STEPS IN DATA ENTRY SWITS.
                *                       PUSH START TO CONTINUE.
                *
3009 0 01C4             DC      WT9&1   WAIT 9
                *
                *                       SCOPE ROUTINE WAIT.BIT SW
                *                       4 OPTION SELECTED. SINGLE
                *                       STEP CAR WITH START BUTTON
                *
300A 0 01ED             DC      WTA&1   WAIT A
                *
                *                       SCOPE ROUTINE WAIT.BIT SW
                *                       3 OPTION SELECTED. DESIRED
                *                       NUMBER OF CAR STEPS HAVE
                *                       BEEN ISSUED.CAR SHOULD BE
                *                       THE SAME AS THE A REG.
                *                       PUSH START TO CONTINUE
                *
300B 0 022B             DC      WTB&1   WAIT B
                *
                *                       AN INTERNAL INTERRUPT
                *                       OCCURED.THE ILSW IS IN THE
                *                       A REG.PUSH START TO CONTIN
                *                       UE FROM POINT OF INTERRUPT
                *
300C 0 01B8             DC      WTC&1   WAIT C
                *
                *                       SCOPE ROUTINE WAIT. ENTER
                *                       CONTROL OPTIONS IN DATA
                *                       ENTRY SWITCHES ACCORDING
                *                       TO TABLE 1 SEC. 3.
                *                       PUSH START TO CONTINUE
                *
012C                    ORG     300
                *
                *                       **********************
                *                       *CHANNEL ADDRESS REG*
                *                       *   CHECK PROGRAM    *
                *                       *                    *
                *                       *    ** CARCK **     *
                *                       **********************
                *
                *                       THIS PROGRAM IS TO BE USED
                *                       IN CONJUNCTION WITH THE
                *                       CYCLE STEAL REQUEST TEST
                *                       AND THE CYCLE STEAL ACKNOW
                *                       LEDGE TEST FEATURE OF THE
                *                       1800 SYSTEM DATA CHANNELS
                *
012C 0 B500             DC      /B500   PID
012D 0 631B     CARCK   LDX     3 27    LOAD INTERRUPT
012E 0 C04A             LD      CONST   *ADDRESS WITH TRAP
012F 0 D700 0007        STO     L3 7    *ROUTINE ADDRESS
0131 0 73FF             MDX     3 -1
0132 0 70FC             MDX     *-4
0133 0 6700 0228        LDX     L3 ERROR SET INTERNAL INTRP
0135 0 6F00 0008        STX     L3 8    *ADDRESS
                *
0137 0 C868             LDD     RESRT   SET RESTART INSTRN
0138 0 DC00 0000        STD     L 0
                *
013A 0 0867             XIO     UMSK0   UNMASK INTERRUPT
013B 0 0868             XIO     UMSK1   *LEVELS
```

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8B500700
8B500710
8B500720
8B500730
8B500740
8B500750
8B500760
8B500770
8B500780
8B500790
8B500800
8B500810
8B500820
8B500830
8B500840
8B500850
8B500860
8B500870
8B500880
8B500890
8B500900
8B500910
8B500920
8B500930
8B500940
8B500950
8B500960
8B500970
8B500980
8B500990
8B501000
8B501010
8B501020
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8B501190
8B501200
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8B501240
8B501250
8B501260
8B501270
8B501280
8B501290
8B501300
8B501310
8B501320
8B501330
8B501340
8B501350
8B501360
8B501370
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                        *
013C 0 3001             WT1   WAIT    1           SET BIT SW 8 TO              8B501380
                        *                         *SELECT MANUAL MODE          8B501390
                        *                                                      8B501400
013D 0 086C                   XIO     BSW         GO TO MANUAL ROUTINE         8B501410
013E 0 C03E                   LD      BSW1        *IF SELECTED                 8B501420
013F 0 1008                   SLA     8                                        8B501430
0140 0 4C28 01AE              BSC  L  CARMN,&Z                                 8B501440
                        *                                                      8B501450
0142 0 C04B                   LD      ADDRS&16    LOAD CAR                     8B501460
0143 0 D062                   STO     LOAD                                     8B501470
0144 0 0861                   XIO     LOAD                                     8B501480
                        *                                                      8B501490
0145 0 3002             WT2   WAIT    2           CAR SHOULD BE 0000           8B501500
                        *                                                      8B501510
0146 0 C038                   LD      ADDRS&1     LOAD CAR                     8B501520
0147 0 D05E                   STO     LOAD                                     8B501530
0148 0 085D                   XIO     LOAD                                     8B501540
                        *                                                      8B501550
0149 0 3003             WT3   WAIT    3           CAR SHOULD BE 7FFF           8B501560
                        *                                                      8B501570
                        *                 **RIPPLE ONE BIT THROUGH**           8B501580
                        *                 **ALL CAR BIT POSITIONS **           8B501590
                        *                                                      8B501600
                                                                               8B501610
014A 0 6301                   LDX   3 1           SET UP CHECK STORAGE         8B501620
014B 0 6B30                   STX   3 RIPL                                     8B501630
014C 0 6310                   LDX   3 16                                       8B501640
                        *                                                      8B501650
014D 0 C700 018E        CAR1  LD    L3 RIPPL-1    GET BIT LOAD ADDRESS         8B501660
014F 0 D056                   STO     LOAD        SET ADDRESS IN IOCC          8B501670
0150 0 0855                   XIO     LOAD        LOAD CAR                     8B501680
0151 0 C02A                   LD      RIPL        LOAD A WITH EXP ADRS         8B501690
                        *                                                      8B501700
0152 0 3004             WT4   WAIT    4           CAR SHOULD BE THE            8B501710
                        *                         *SAME AS A REG               8B501720
                        *                                                      8B501730
0153 0 1001                   SLA     1           SET CHECK STORAGE FOR        8B501740
0154 0 D027                   STO     RIPL        *NEXT BIT POSITION           8B501750
0155 0 73FF                   MDX   3 -1          SKIP WHEN ALL BIT            8B501760
0156 0 70F6                   MDX     CAR1        *POSITIONS CHECKED           8B501770
                        *                                                      8B501780
                        *                 ** CHECK CAR INCREMENT **            8B501790
                        *                                                      8B501800
0157 0 6110                   LDX   1 16          ADDRESS INDEX                8B501810
0158 0 C500 017D        CAR2  LD    L1 ADDRS-1    SET STARTING ADDRESS         8B501820
015A 0 D04B                   STO     LOAD        *IN IOCC AND IN              8B501830
015B 0 801E                   A       ONE         *COUNTER                     8B501840
015C 0 D01E                   STO     COUNT                                    8B501850
015D 0 6232                   LDX   2 50          STEP INDEX                   8B501860
015E 0 0847                   XIO     LOAD        LOAD CAR                     8B501870
                        *                                                      8B501880
015F 0 0848             CAR3  XIO     STEP        STEP CAR                     8B501890
0160 0 7401 0178              MDX  L  COUNT,1     STEP COUNTER                 8B501900
0162 0 1000                   NOP                                              8B501910
0163 0 72FF                   MDX   2 -1          SKIP IF 50 STEPS             8B501920
0164 0 70FA                   MDX     CAR3                                     8B501930
0165 0 C015                   LD      COUNT                                    8B501940
0166 0 1000                   NOP     0           ELIMINATE BIT POS.           8B501950
0167 0 1000                   NOP     0           *0 FROM CK WORD              8B501960
                        *                                                      8B501970
0168 0 3005             WT5   WAIT    5           CAR SHOULD BE THE            8B501980
                        *                         *SAME AS A REG               8B501990
                        *                                                      8B502000
0169 0 71FF                   MDX   1 -1          SKIP IF ALL ADDRESS          8B502010
016A 0 70ED                   MDX     CAR2        *USED                        8B502020
                        *                                                      8B502030
                        *                 **CHECK INCREMENT FROM**             8B502040
                        *                 **ZERO TO 7FFF        **             8B502050
```



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                        *                                                      8B502060
016B 0 1010                   SLA     16                                       8B502070
016C 0 D039                   STO     LOAD                                     8B502080
016D 0 C011                   LD      ADDRS&1     SET UP STEP COUNTER          8B502090
016E 0 D00C                   STO     COUNT                                    8B502100
016F 0 0836                   XIO     LOAD        LOAD CAR                     8B502110
                        *                                                      8B502120
0170 0 0837             CAR4  XIO     STEP        STEP CAR                     8B502130
0171 0 74FF 017B              MDX  L  COUNT,-1    STEP COUNTER -1              8B502140
0173 0 1000                   NOP                                              8B502150
0174 0 C006                   LD      COUNT                                    8B502160
0175 0 4820                   BSC     7           SKIP IF ALL STEPS            8B502170
0176 0 70F9                   MDX     CAR4                                     8B502180
                        *                                                      8B502190
0177 0 3006             WT6   WAIT    6           CAR SHOULD BE 7FFF           8B502200
                        *                                                      8B502210
0178 0 70B4                   MDX     CARCK       REPEAT CHECK                 8B502220
                        *                                                      8B502230
                        *                 ** PROGRAM CONSTANTS **              8B502240
                        *                                                      8B502250
0179 0 01F6             CONST DC      SVINT       INTERRUPT ADDRESS            8B502260
017A 0 0001             ONE   DC      1           CONSTANT ONE                 8B502270
017B 0 0000             COUNT DC      0           STEP COUNTER                 8B502280
017C 0 0000             RIPL  DC      0           RIPPLE CHECK WORD            8B502290
017D 0 0000             BSW1  DC      0           BIT SWITCH READ IN           8B502300
017E 0 FFFF             ADDRS DC      /FFFF       TABLE OF STARTING
017F 0 7FFE                   DC      /7FFE       *ADDRESSES                   8B502310
0180 0 7FFF                   DC      /7FEF                                    8B502320
0181 0 7F0E                   DC      /7F0E                                    8B502330
0182 0 7EFF                   DC      /7EFF                                    8B502340
0183 0 70FE                   DC      /70FE                                    8B502350
0184 0 70EF                   DC      /70EF                                    8B502360
0185 0 700E                   DC      /700E                                    8B502370
0186 0 6FFF                   DC      /6FFF                                    8B502380
0187 0 0FFE                   DC      /0FFE                                    8B502390
0188 0 0FEF                   DC      /0FEF                                    8B502400
0189 0 0F0E                   DC      /0F0E                                    8B502410
018A 0 0EFF                   DC      /0EFF                                    8B502420
018B 0 00FE                   DC      /00FE                                    8B502430
018C 0 00EF                   DC      /00EF                                    8B502440
018D 0 000E                   DC      /000E                                    8B502450
018E 0 FFFF                   DC      /FFFF                                    8B502455
018F 0 7FFF             RIPPL DC      /7FFF       RIPPLE TEST LOAD             8B502460
0190 0 3FFF                   DC      /3FFF       *ADDRESSES                   8B502470
0191 0 1FFF                   DC      /1FFF                                    8B502480
0192 0 0FFF                   DC      /0FFF                                    8B502490
0193 0 07FF                   DC      /07FF                                    8B502500
0194 0 03FF                   DC      /03FF                                    8B502510
0195 0 01FF                   DC      /01FF                                    8B502520
0196 0 00FF                   DC      /00FF                                    8B502530
0197 0 007F                   DC      /007F                                    8B502540
0198 0 003F                   DC      /003F                                    8B502550
0199 0 001F                   DC      /001F                                    8B502560
019A 0 000F                   DC      /000F                                    8B502570
019B 0 0007                   DC      /0007                                    8B502580
019C 0 0003                   DC      /0003                                    8B502590
019D 0 0001                   DC      /0001                                    8B502600
019E 0 0000                   DC      /0000                                    8B502610
01A0    0000                  BSS  E  0                                        8B502620
01A0 0 4C00             RESRT DC      /4C00       RESTART INSTRUCTION          8B502630
01A1 0 012D                   DC      CARCK                                    8B502640
01A2 0 0000             UMSK0 DC      /0000       UNMASK INTERRUPTS            8B502650
01A3 0 0480                   DC      /0480       *IOCC                        8B502660
01A4 0 0000             UMSK1 DC      /0000                                    8B502670
01A5 0 0481                   DC      /0481                                    8B502680
01A6 0 0000             LOAD  DC      0           LOAD CAR IOCC                8B502690
01A7 0 05A0                   DC      /05A0                                    8B502700
01A8 0 0000             STEP  DC      0           INCREMENT CAR IOCC           8B502710
```

```
01A9 0 01A0                DC      /01A0
01AA 0 017D          BSW   DC      BSW1        READ BIT SWITCH IOCC
01AB 0 0240                DC      /0240
01AC 0 0000          SNSW  DC      /0000       READ SNS SWITCH IOCC
01AD 0 0760                DC      /0760
                     *
                     *                  ************************
                     *                  MANUAL AND SCOPE ROUTINE
                     *                  ************************
                     *
01AE 0 1000          CARMN NOP
01AF 0 3007          WT7   WAIT    7           ENTER STARTING ADDRS
                     *
01B0 0 08F9                XIO     BSW         READ IN ADDRESS AND
01B1 0 C0CB                LD      BSW1        *SAVE
01B2 0 D040                STO     MNAD
                     *
01B3 0 3008          WT8   WAIT    8           ENTER NUMBER OF CNTS
01B4 0 08F5                XIO     BSW
01B5 0 C0C7                LD      BSW1        READ IN NUMBER OF
01B6 0 D03D                STO     MNCT        *COUNTS AND SAVE
                     *
01B7 0 300C          WTC   WAIT    12          ENTER CNTRL OPTIONS
                     *
01B8 0 C03A          CARM2 LD      MNAD        SET STARTING ADDRESS
01B9 0 D0EC                STO     LOAD        *INTO IOCC AND INTO
01BA 0 D0C0                STO     COUNT       *COUNTER
01BB 0 C038                LD      MNCT        SET NUMBER OF STEPS
01BC 0 D038                STO     MNCTR       *IN STEP COUNTER
01BD 0 08E8                XIO     LOAD        LOAD CAR
                     *
01BE 0 08EB          CARM3 XIO     BSW         READ BIT SWITCHES
01BF 0 C0BD                LD      BSW1
01C0 0 1004                SLA     4           SKIP IF BIT SW 4 ON
01C1 0 4810                BSC     -           SKIP IF BIT SW 4 ON
01C2 0 700F                MDX     CARM4
                     *
01C3 0 3009          WT9   WAIT    9           SINGLE STEP CAR WITH
                     *                        *START BUTTON
                     *
01C4 0 C02F                LD      MNCT        IF NUMBER OF STEPS
01C5 0 4818                BSC     &-          *ENTERED IS ZERO
01C6 0 70F1                MDX     CARM2       *SS WILL LOAD CAR
01C7 0 08E0                XIO     STEP        STEP CAR
01C8 0 7401 017B           MDX  L  COUNT,1     STEP COUNTER
01CA 0 1000                NOP
01CB 0 74FF 01F5           MDX  L  MNCTR,-1    DECREMENT STEP CNTR
01CD 0 1000                NOP
01CE 0 C026                LD      MNCTR
01CF 0 4820                BSC     7           SKIP IF COUNTER ZERO
01D0 0 70ED                MDX     CARM4       CONTINUE STEP
01D1 0 70E6                MDX     CARM2       RELOAD CAR
                     *
                     *                     ** NOT BIT SWITCH 4 **
                     *
01D2 0 C021          CARM4 LD      MNCT        CHECK NUMBER OF STEP
01D3 0 4818                BSC     &-          *SKIP IF STEPS NOT 0
01D4 0 700A                MDX     CARM6
01D5 0 08D2          CARM5 XIO     STEP        STEP CAR
01D6 0 7401 017B           MDX  L  COUNT,1     STEP COUNTER
01D8 0 1000                NOP
01D9 0 74FF 01F5           MDX  L  MNCTR,-1    DECREMENT STEP CNTR
01DB 0 1000                NOP
01DC 0 C018                LD      MNCTR
01DD 0 4820                BSC     Z           SKIP IF COUNTER ZERO
01DE 0 70F6                MDX     CARM5
                     *
                     *                  **COUNT CMPLT CK BIT SW2**
```

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8B502720
8B502730
8B502740
8B502750
8B502760
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8B502780
8B502790
8B502800
8B502810
8B502820
8B502830
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8B502870
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8B502900
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8B502980
8B502990
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8B503390
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01DF 0 08CA          CARM6 XIO     BSW         READ BIT SWITCHES
01E0 0 C09C                LD      BSW1
01E1 0 1002                SLA     2
01E2 0 4810                BSC     -           SKIP IF BIT SW 2 ON
01E3 0 7001                MDX     *&1
01E4 0 70C9                MDX     CARMN       CHANGE PARAMETERS
01E5 0 1001                SLA     1
01E6 0 4810                BSC     -           SKIP IF BIT SW 3 ON
01E7 0 7000                MDX     CARM2       LOOP ROUTINE
01E8 0 C092                LD      COUNT
01E9 0 8090                A       ONE
01EA 0 1001                SLA     1           ELIMINATE BIT POS.
01EB 0 1801                SRA     1           *0 FROM CK WORD
                     *
01EC 0 300A          WTA   WAIT    10          CAR SHOULD BE SAME
                     *                        *AS A REG
                     *
01ED 0 08BC                XIO     BSW         READ BIT SWITCHES
01EE 0 C08E                LD      BSW1
01EF 0 1002                SLA     2
01F0 0 4810                BSC     -           SKIP IF BIT SW 2 ON
01F1 0 70C6                MDX     CARM2       RERUN PRESENT SETUP
01F2 0 70BB                MDX     CARMN       CHANGE PARAMETERS
                     *
01F3 0 0000          MNAD  DC      0           ADDRESS ENTRY
01F4 0 0000          MNCT  DC      0           NUMBER STEPS ENTRY
01F5 0 0000          MNCTR DC      0           STEP COUNTER
                     *
                     *                  **********************
                     *                  INTERRUPT TRAP ROUTINE
                     *                  **********************
                     *
01F6 0 0000          SVINT DC      0                                IF
01F7 0 D02C                STO     SVIO        SAVE ACCUMULATOR
01F8 0 082D                XIO     ILSW        RESET ILSW
01F9 0 7402 0223           MDX  L  SV7,2       SET PASS SWITCH
01FB 0 1010                SLA     16
01FC 0 D023                STO     SV4         CLEAR AREA CODE CNTR
01FD 0 C020                LD      SV2
01FE 0 D023                STO     SV6         SET IOCC IN USE SW
01FF 0 C01D          SVINO LD      SV1
0200 0 D020                STO     SV5         SET MODIFIER COUNTER
0201 0 C01F          SVIN1 LD      SV4         *
0202 0 1008                SLA     11          *
0203 0 E81D                OR      SV5         *BUILD IOCC
0204 0 F81D                OR      SV6         *
0205 0 D01F                STO     SVIO&1      *
0206 0 081D                XIO     SVIO        SENSE/RESET DSW
0207 0 74FF 0221           MDX  L  SV5,-1
0209 0 70F7                MDX     SVIN1       BRNCH IF NOT ALL MOD
020A 0 7401 0220           MDX  L  SV4,1       INCREMENT AREA CODE
020C 0 C013                LD      SV4
020D 0 900E                S       SV0         CHECK IF ALL AC USED
020E 0 4808                BSC     &           SKIP IF ALL AC USED
020F 0 70EF                MDX     SVINO       GO SENSE WITH NXT AC
0210 0 74FF 0223           MDX  L  SV7,-1      SKIP IF SECOND PASS
0212 0 7001                MDX     *&1
0213 0 7005                MDX     SVEXT-1
0214 0 C00A                LD      SV3         SET IOCC FOR PI
0215 0 D00C                STO     SV6
0216 0 1010                SLA     16
0217 0 D008                STO     SV4         SET AC FOR NEXT PASS
0218 0 70E6                MDX     SVINO
0219 0 C00A                LD      SVIO        RESTORE ACCUMULATOR
021A 0 4CC0 01F6     SVEXT BOSC I  SVINT       EXIT                   IX
                     *
                     *                  ** CONSTANTS **
```

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8B503400
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                    *                                                    8B504080
021C 0 001F         SV0   DC      /001F       NUMBER OF AREA CODES       8B504090
021D 0 00FF         SV1   DC      /00FF       NUMBER OF MODIFIERS        8B504100
021E 0 0701         SV2   DC      /0701       SENSE/RESET DSW            8B504110
021F 0 0700         SV3   DC      /0700       SENSE/RESET PISW           8B504120
0220 0 0000         SV4   DC      0           AREA CODE INDICATOR        8B504130
0221 0 0000         SV5   DC      0           MODIFIER INDICATOR         8B504140
0222 0 0000         SV6   DC      0           IOCC IN USE                8B504150
0223 0 0000         SV7   DC      0           PASS SWITCH                8B504160
0224   0000               BSS   F 0                                      8B504170
0224 0 0000         SVIO  DC      0           SENSE DSW/PISW IOCC        8B504180
0225 0 0000               DC      0                                      8B504190
0226 0 0000         ILSW  DC      0           SENSE ILSW IOCC            8B504200
0227 0 0300               DC      /0300                                  8B504210
                    *                                                    8B504220
                    *                 ******************                 8B504230
                    *                 ERROR TRAP ROUTINE                 8B504240
                    *                 ******************                 8B504250
                    *                                                    8B504260
0228 0 0000         ERROR DC      0           ENTRY POINT          IE    8B504270
0229 0 08FC               XIO     ILSW        SENSE ILSW                 8B504280
022A 0 300B         WTB   WAIT    11          ILSW IN A REG              8B504290
022B 0 4CC0 0228          BOSC I  ERROR       EXIT                 IX    8B504300
                    *                                                    8B504310
022E   012D               END     CARCK                                  8B504320
  NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY
```



```
ADDRS   017E  0142 0146 0158 016D
BSW     01AA  013D 01B0 01B4 01BE 01DF 01ED
BSW1    017D  013E 01AA 01B1 01B5 01BF 01E0 01EE
CARCK   012D  0178 01A1 022E
CARMN   01AE  0140 01E4 01F2
CARM2   01B8  01C6 01D1 01E7 01F1
CARM3   01BE  01D0
CARM4   01D2  01C2
CARM5   01D5  01DE
CARM6   01DF  01D4
CAR1    014D  0156
CAR2    0158  016A
CAR3    015F  0164
CAR4    0170  0176
CONST   0179  012E
COUNT   017B  015C 0160 0165 016E 0171 0174 01BA 01C8 01D6 01E8
ERROR   0228  0133 022B
ILSW    0226  01F8 0229
LOAD    01A6  0143 0144 0147 0148 014F 0150 015A 015E 016C 016F 01B9 01BD
MNAD    01F3  01B2 01B8
MNCT    01F4  01B6 01BB 01C4 01D2
MNCTR   01F5  01BC 01CB 01CE 01D9 01DC
ONE     017A  015B 01E9
RESRT   01A0  0137
RIPL    017C  014B 0151 0154
RIPPL   018F  014D
SNSW    01AC
STEP    01A8  015F 0170 01C7 01D5
SVEXT   021A  0213
SVINT   01F6  0179 021A
SVINO   01FF  020F 0218
SVIN1   0201  0209
SVIO    0224  01F7 0205 0206 0219
SV0     021C  020D
SV1     021D  01FF
SV2     021E  01FD
SV3     021F  0214
SV4     0220  01FC 0201 020A 020C 0217
SV5     0221  0200 0203 0207
SV6     0222  01FE 0204 0215
SV7     0223  01F9 0210
UMSK0   01A2  013A
UMSK1   01A4  013B
WTA     01EC  300A
WTB     022A  300B
WTC     01B7  300C
WT1     013C  3001
WT2     0145  3002
WT3     0149  3003
WT4     0152  3004
WT5     0168  3005
WT6     0177  3006
WT7     01AF  3007
WT8     01B3  3008
WT9     01C3  3009
END OF ASSEMBLY
```

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TABLE OF CONTENTS

1. PURPOSE

THE CAR EXERCISER PROGRAM IS TO BE USED IN CONJUNCTION WITH THE CYCLE STEAL REQUEST TEST AND THE CYCLE STEAL ACKNOWLEDGE TEST FEATURES OF THE DATA CHANNEL. THE PROGRAM IS USED TO LOAD AND STEP THE CAR SELECTED FOR TEST. ALL BIT POSITIONS IN THE C.A.R. ARE TESTED.

2. PREREQUISITES

2.1 PROGRAM PREREQUISITES

THE BASIC DIAGNOSTIC LOADER IS REQUIRED TO LOAD THIS PROGRAM.

2.2 EQUIPMENT PREREQUISITES

THE FOLLOWING EQUIPMENT IS REQUIRED.

A. 1800 PROCESSOR/CONTROLLER
B. 1442 CARD READ/PUNCH OR 1054 PAPER TAPE READER.

3. USE PROCEDURE

3.1 PROGRAM LOADING

REFER TO BASIC DIAGNOSTIC LOADER DOCUMENTATION FOR PROGRAM LOADING PROCEDURES.

3.2 PROGRAM OPERATION

WITH PROGRAM STOPPED AT WAIT 1, B REG = 3001,

A. INSERT 3 JUMPERS AS FOLLOWS, TO ACTIVATE THE CYCLE STEAL REQUEST TEST AND CYCLE STEAL ACKNOWLEDGE TEST LEVELS.

JUMPER 1 - B-B1G2D02 (CR221) TO B-B1G5D09 (CQ111)

THIS JUMPER ACTIVATES THE SET CAR FUNCTION DURING AN INITIALIZE READ OR WRITE.

JUMPERS 2 AND 3 - REFER TO LOGIC PAGE CT971. INSTALL JUMPER 2 FROM CS REQUEST TEST SIGNAL TO CS REQUEST LEVEL TO BE TESTED.
INSTALL JUMPER 3 FROM CS ACKNOWLEDGE TEST TO CS ACKNOWLEDGE LEVEL TO BE TES
INSTALL JUMPER 3 FROM CS ACKNOWLEDGE TEST TO CS ACKNOWLEDGE LEVEL TO BE TESTED.

NOTE - POINTS FOR CHANNEL 0 - 8 ARE ON THE 60 B - B1 BOARD AND POINTS FOR CHANNEL 9 - 14 ARE ON THE 60 D - A1 BOARD.

B. SET 'DISPLAY ADDRESS REGISTER' SWITCH TO DISPLAY C.A.R. BEING TESTED.
C. TO RUN PROGRAM CONTROLLED MODE, SET DATA ENTRY SWITCHES TO 0000. DEPRESS START. PROCEED WITH PROGRAM ACCORDING TO WAIT INSTRUCTIONS 2 THROUGH 6.
D. TO RUN MANUAL CONTROLLED (SCOPING) MODE, SET DATA ENTRY SWITCH 8 ON AND DEPRESS START. PROGRAM WILL COME TO WAIT 7. PROCEED WITH PROGRAM ACCORDING TO WAIT INSTRUCTIONS 7 THROUGH A.

TABLE 1
PROGRAM OPTIONS - DATA ENTRY SWITCHES

NOTE -- FUNCTIONS OF SWITCHES 2,3,4 ARE FOR SCOPING ROUTINES ONLY.

NOTE. TABLE 1 PROGRAM OPTIONS MAY BE ENTERED ONLY WHEN PROGRAM IS STOPPED AT WAIT 1.

DATA ENTRY SWITCHES 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	OPTION DESCRIPTION
. . . 0	RUN PROGRAM CONTROLLED MODE
. . . 1	RUN MANUAL CONTROLLED (SCOPING) MODE
. . 1	SINGLE STEP C.A.R. WITH START PUSHBUTTON
. 1	STOP AFTER EACH PASS THROUGH SCOPE ROUTINE
1	RETURN TO WAIT 7 TO CHANGE ADDRESS AND NUMBER OF STEPS

3.3 PROGRAM TERMINATION

IF RUNNING PROGRAM CONTROLLED MODE, PROGRAM WILL EXECUTE ONCE AND STOP AT WAIT 6. DEPRESSING THE START PUSHBUTTON WILL RETURN THE PROGRAM TO WAIT 1, WHICH IS THE START OF THE PROGRAM.

IF RUNNING MANUAL (SCOPE) CONTROLLED MODE, PROGRAM MAY BE TERMINATED BY DEPRESSING THE STOP PUSHBUTTON. DEPRESSING RESET AND START WILL RETURN THE PROGRAM TO WAIT 1.

IMPORTANT NOTE

BEFORE RETURNING SYSTEM TO THE CUSTOMER, INSURE THAT THE 3 JUMPERS INSERTED AT WAIT 1, ARE REMOVED FROM THE CHANNEL.

3.4 RESTART PROCEDURE

PRESS THE STOP, RESET AND START BUTTONS. THE PROGRAM SHOULD GO TO WAIT 1. IF THIS DOES NOT OCCUR, THE PROGRAM MUST BE RELOADED.

3.5 PROGRAM HALTS

PROGRAM WAITS ARE USED IN THIS PROGRAM, AND ARE IDENTIFIED BY REFERENCING THE B REG AND 1 REG.

A PROGRAM WAIT IS OF THE FORM,

30XX, (B REG).

A DESCRIPTION OF THE INDIVIDUAL PROGRAM WAITS CAN BE FOUND AT THE BEGINNING OF THE PROGRAM LISTING. A TYPICAL WAIT DESCRIPTION FOLLOWS. IT IS INCLUDED TO SHOW THE FORMAT OF THE LISTING, AND IT IS NOT NECESSARILY A DESCRIPTION OF AN ACTUAL WAIT.

```
*****************************************************************************
3001 0  01ED              DC      WAIT1+1
                     *                      WAIT 1
                     *
                     *            ONE OF THE METERED I/O UNITS
                     *            FAILED TO SEND A RESPONSE
                     *            INTERRUPT TO THE PROGRAM.  INDEX
                     *            REGISTER 1 WILL HAVE THE ADDRESS
                     *            OF THE IOCC.  THE AREA CODE WILL
                     *            INDICATE THE I/O UNIT NOT READY.
                     *            IF A 2401/02 DRIVE IS NOT READY,
                     *            PROGRAM WILL NOT STOP AT WAIT 1.
                     *
*****************************************************************************
```

B REG, (FIRST 4 DIGIT GROUP) CORRESPONDS TO B REG READING.

1 REG, (SECOND 4 DIGIT GROUP) CORRESPONDS TO 1 REG READING.

4. PRINTOUTS

THERE ARE NO PRINTOUTS ASSOCIATED WITH THE CAR EXERCISER PROGRAM.

5. COMMENTS

THE CAR EXERCISER CONSISTS OF A PROGRAM CONTROL ROUTINE, AND A MANUAL (OPERATOR CONTROL) ROUTINE.

THE PROGRAM CONTROL ROUTINE CONTAINS THE STARTING ADDRESS AND PREDEFINED NUMBER OF STEPS USED TO LOAD AND INCREMENT THE C.A.R. BEING TESTED.

THE C.A.R. IS LOADED USING AN XIO INSTRUCTION WHOSE IOCC IS 0000 05A0. THE CAR WILL AUTOMATICALLY BE INCREMENTED BY 1 EACH TIME IT IS LOADED. THE INCREMENT BY 1 IS A HARDWARE FUNCTION. THE CAR IS STEPPED USING AN XIO INSTRUCTION WHOSE IOCC IS 0000 01A0. EACH XIO CAUSES THE CAR TO BE INCREMENTED BY 1.

WAITS 2 AND 3 ARE USED TO DISPLAY THE RESULTS OF LOADING TESTS. THE C.A.R. IS FIRST LOADED TO 7FFF. THE AUTO INCREMENT SHOULD STEP IT TO 0000. THIS RESULT IS DISPLAYED AT WAIT 2. THE C.A.R. IS THEN LOADED TO 7FFE. THE AUTO INCREMENT SHOULD STEP IT TO 7FFF. THIS IS DISPLAYED AT WAIT 3.

WAIT 4 IS USED TO DISPLAY THE RESULTS OF RIPPLING A 1 BIT THROUGH ALL CAR BIT POSITIONS. EXCEPT BIT 0. EACH TIME THE WAIT OCCURS, THE A REG WILL CONTAIN THE VALUE THAT SHOULD APPEAR IN CAR.

THE LOAD ADDRESSES ARE AS FOLLOWS,

1.	0000	9.	00FF
2.	0001	10.	01FF
3.	0003	11.	03FF
4.	0007	12.	07FF
5.	000F	13.	0FFF
6.	001F	14.	1FFF
7.	003F	15.	3FFF
8.	007F		

WAIT 5 IS USED TO DISPLAY THE RESULTS OF THE C.A.R. INCREMENT TEST. THE C.A.R. IS LOADED 16 TIMES WITH 16 DIFFERENT STARTING ADDRESSES, AND AFTER EACH LOAD THE C.A.R. IS INCREMENTED 50 TIMES. EACH TIME THE WAIT OCCURS, THE A REG. WILL CONTAIN THE VALUE WHICH SHOULD APPEAR IN THE C.A.R.

THE STARTING ADDRESSES USED ARE AS FOLLOWS,

1.	7FFF	9.	6FFF
2.	000E	10.	700E
3.	00EF	11.	70EF
4.	00FE	12.	70FE
5.	0EFF	13.	7EFF
6.	0F0E	14.	7F0E
7.	0FEF	15.	7FEF
8.	0FFE	16.	7FFE

FOLLOWING THE INCREMENT TEST, THE CAR. IS LOADED TO 0000 AND STEPPED 7FFE TIMES. AT WAIT 6, THE CAR SHOULD CONTAIN 7FFF.

ANY ERRORS OBSERVED BY THE OPERATOR CAN BE LOOPED BY SETTING THE STARTING ADDRESS AND NUMBER OF STEPS USED BY THE AUTO ROUTINE INTO THE MANUAL ROUTINE, AND RUNNING THE MANUAL ROUTINE WITH SENSE SWITCH 0 ON.

THE MANUAL CONTROLLED ROUTINE WILL LOAD THE C.A.R. WITH THE ADDRESS ENTERED BY THE OPERATOR AT WAIT 7. IT WILL THEN STEP THE C.A.R. THE NUMBER OF TIMES SPECIFIED BY THE OPERATOR AT WAIT 8. CONTROL OF THE ROUTINE IS TRANSMITTED VIA THE DATA ENTRY SWITCHES. (SEE TABLE 1). IF THE NUMBER OF STEPS ENTERED BY THE OPERATOR AT WAIT 8 IS ZERO, THEN THE PROGRAM WILL ISSUE CONTINUOUS LOAD C.A.R. INSTRUCTION ACCORDING TO THE DATA ENTRY SWITCH SETTING. IF NO CONTROL OPTIONS ARE ENTERED, THE SCOPING ROUTINE WILL LOOP CONTINUOUSLY USING THE DATA ENTERED AT WAITS 7 AND 8 AS INPUT PARAMETERS.

6. APPENDIX (NONE)

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IBM MAINTENANCE DIAGNOSTIC PROGRAM FOR THE 1800 SYSTEM
CAR EXERCISER

DATE 28FEB66 01JUL66 14NOV69 30JAN70 17APR70
EC NO. 415120 415178 431319 431319A 431321
PROG ID 08B5-*

```
                        ABS
                        ORG     /3001
3001                    *-----------------------------------------------
                        *               PROGRAM WAIT SECTION
                        *
3001 0 01F6             DC      WAIT1&1     WAIT 1
                        *
                        *               ONE OF THE METERED I/O UNITS
                        *               FAILED TO SEND A RESPONSE
                        *               INTERRUPT TO THE PROGRAM.  INDEX
                        *               REGISTER 1 WILL HAVE THE ADDRESS
                        *               OF THE IOCC.  THE AREA CODE WILL
                        *               INDICATE THE I/O UNIT NOT READY.
                        *               IF A 2401/02 DRIVE IS NOT READY,
                        *               PROGRAM WILL NOT STOP AT WAIT 1.
                        *
                        *
3002 0 0210             DC      WAIT2&5     WAIT 2
                        *
                        *               SET THE PC DATA ENTRY SWITCHES TO
                        *               INDICATE THE NUMBER OF 72 SECOND
                        *               DELAY LOOPS DESIRED.  PRESS THE
                        *               PC START BUTTON TO START THE
                        *               EXERCISE.
                        *
                        *
3003 0 0230             DC      WAIT3&1     WAIT 3
                        *
                        *               END OF DELAY.  METERS SHOULD BE
                        *               READ AND THE ELAPSED TIME COMPUTED
                        *               %BY HAND<.  TO RUN THE TEST AGAIN,
                        *               SET THE PC DATA ENTRY SWITCHES
                        *               TO INDICATE THE NUMBER OF 72
                        *               SECOND DELAY LOOPS DESIRED AND
                        *               PRESS THE PC START BUTTON.
                        *
                        *
3004 0 0200             DC      WAIT4&1     WAIT 4
                        *
                        *               DID NOT RECEIVE A PRINTER COMPLETE
                        *               INTERRUPT FROM THE 1443.
                        *               MAKE THE 1443 READY AND THEN PRESS
                        *               THE PC START BUTTON.
                        *
                        *-----------------------------------------------
                        *
0123                    ORG     /0123
0123 0 B600             DC      /B600
                        ***********************************************
                        *               TO RESTART THE PROGRAM,
                        *               PRESS THE PC RESET BUTTON AND
                        *               START BUTTON.  THE PROGRAM
                        *               WILL START ALL METERS AGAIN
                        *               AND STOP AT @WAIT 2@.
                        ***********************************************
0124 0 012C             DC      LOAD
012C                    ORG     /012C
012C 0 C400 02D0    LOAD LD   L RSTR
012E 0 D400 0000        STO   L 0
0130 0 C400 02D1        LD    L RSTR&1
0132 0 D400 0001        STO   L 1
0134 0 610D             LDX     1 13        XR1# NO OF EDITS
0135 0 6203             LDX     2 /0003
0136 0 6700 02A9        LDX   L3 CNFIG
                        *
                        ***********************************************
                        *               TRANSFER THE EDIT CARD INFO
                        *               TO I/O CONFIGURATION
```



```
                        *               TABLE. %CNFIG<
                        ***********************************************
0138 0 C200         XFER LD     2 0
0139 0 D300             STO     3 0
013A 0 7201             MDX     2 1
013B 0 7301             MDX     3 1
013C 0 71FF             MDX     1 -1
013D 0 70FA             MDX     XFER
                        *
                        ***********************************************
                        *               BUILD INTR LVL WORD AND STORE
                        *               IN INTERRUPT TABLE. %ITBLE<
                        ***********************************************
013E 0 C400 02BB    RERUN LD    L   ITBLE       ADDR OF ITBLE
0140 0 D400 02B7          STO   L   ITBL1
0142 0 C400 02C8          LD    L   EDCT        SET EDIT COUNT
0144 0 D400 02B6          STO   L   EDCT1       *TO 12.
0146 0 6500 0280          LDX   L1  IOCC
0148 0 6600 02A9          LDX   L2  CNFIG
014A 0 C200         BUILD LD      2 0
014B 0 4828               BSC     &Z          IS THIS DEV ON SYS
014C 0 7028               MDX     NODEV       DEV NOT ON SYSTEM
014D 0 1808               SRA     8
014E 0 4818               BSC     &-
014F 0 7022               MDX     BITO
0150 0 D400 02BA          STO   L WORD
0152 0 6780 02BA          LDX   I3 WORD
0154 0 C400 02CB          LD    L EASY        A REG # 000E
0156 0 B400 02BA          CMP   L WORD        IS INTR LVL LESS
0158 0 7010               MDX     LES14       *THAN FOURTEEN
0159 0 1000               NOP     0
015A 0 73F2               MDX   3 -14
015B 0 7005               MDX     ILWD1
015C 0 C400 02B8          LD    L EIGHT       INTR LVL # 14
015E 0 EC00 02C9          OR    L ONE
0160 0 700D               MDX     STO1
0161 0 C400 02B8    ILWD1 LD    L EIGHT
0163 0 1801         SHRT2 SRA     1
0164 0 73FF               MDX   3 -1
0165 0 70FD               MDX     SHRT2
0166 0 EC00 02C9          OR    L ONE         BIT 15# 1 MEANS IL
0168 0 7005               MDX     STO1        *IS GREATER THAN 13.
0169 0 C400 02B8    LES14 LD    L EIGHT
016B 0 1801         SHRT1 SRA     1
016C 0 73FF               MDX   3 -1
016D 0 70FD               MDX     SHRT1
016E 0 D480 02B7    STO1  STO   I ITBL1       STO IL WD IN TABLE
0170 0 4C00 017F          BSC   L ILSWD       GO TO BUILD ILSW WD
0172 0 C400 02B8    BITO  LD    L EIGHT       AO# 1
0174 0 70F9               MDX     STO1
0175 0 D500 0000    NODEV STO   L1 0
0177 0 7102               MDX     1 2
0178 0 7402 02B7          MDX   L ITBL1,2
017A 0 7202               MDX     2 2
017B 0 74FE 02B6          MDX   L EDCT1,-2
017D 0 70CC               MDX     BUILD
017E 0 7023               MDX     ADDR
                        *
                        ***********************************************
                        *               BUILD ILSW WORD AND STORE IN
                        *               INTERRUPT TABLE. %ITBLE<
                        ***********************************************
017F 0 7401 02B7    ILSWD MDX   L ITBL1,1
0181 0 C200               LD    2 0
0182 0 1008               SLA     8
0183 0 180C               SRA     12
0184 0 4818               BSC     &-
0185 0 700F               MDX     BZERO
```

```
0186 0 D400 02BA          STO  L  WORD
0188 0 6780 02BA          LDX  I3 WORD
018A 0 C400 02B8          LD   L  EIGHT
018C 0 1801          SHRT3 SRA     1
018D 0 73FF               MDX   3 -1
018E 0 70FD               MDX     SHRT3
018F 0 D480 02B7     STO2 STO  I  ITBL1
0191 0 7401 02B7          MDX  L  ITBL1,1     INCR ITBLE
0193 0 4C00 0198          BSC  L  CTLWD
0195 0 C400 02B8     BZERO LD  L  EIGHT
0197 0 70F7               MDX     STO2
                     *
                     ********************************************
                     *              BUILD IOCC CONTROL WORD
                     ********************************************
0198 0 7201          CTLWD MDX   2 1
0199 0 7101               MDX   1 1
019A 0 C200               LD    2 0
019B 0 E900               OR    1 0
019C 0 D100               STO   1 0           PUT CTRL WD IN IOCC
                     *
                     *              DECR REGISTERS
019D 0 7201               MDX   2 1
019E 0 7101               MDX   1 1
019F 0 74FE 02B6          MDX  L  EDCT1,-2
01A1 0 70A8               MDX     BUILD
                     *
                     ********************************************
                     *              LOAD THE ADDR OF %SVINT< INTO
                     *              ALL INTR ADDR LOCATIONS.
                     ********************************************
01A2 0 6218          ADDR LDX   2 24
01A3 0 6108               LDX   1 8
01A4 0 C400 02CC          LD   L  INTRN
01A6 0 D100          ADDR1 STO   1 0
01A7 0 7101               MDX   1 1
01A8 0 72FF               MDX   2 -1
01A9 0 70FC               MDX     ADDR1
                     *
                     ********************************************
                     *              DETERMINE IF THIS DEVICE IS
                     *              ON THE SYSTEM AND IF DESIRED
                     *              INTR IS GREATER THAN
                     *              LEVEL 13
                     ********************************************
01AA 0 C400 02C8          LD   L  EDCT
01AC 0 D400 02B6          STO  L  EDCT1
01AE 0 6500 0280          LDX  L1 IOCC        XR1# IOCC
01B0 0 6600 02BC          LDX  L2 ITBLE&1     LOC OF INTR TABLE
01B2 0 C100          LDRT2 LD    1 0           PUT IOCC IN ACCUM
01B3 0 F400 02B9          EOR  L  FFFF
01B5 0 4818               BSC     &-          IS THIS DEV ON SYS
01B6 0 700C               MDX     INCR        NO
01B7 0 C200          LDRT1 LD    2 0           PUT IL WD IN ACCUM
01B8 0 4804               BSC     E           GREATER THAN 13
01B9 0 7013               MDX     GREAT
01BA 0 C400 028D          LD   L  MASK&1
01BC 0 E400 02CA          AND  L  FFFE        SET BIT 15# ZERO
01BE 0 D400 028D          STO  L  MASK&1
01C0 0 C200               LD    2 0           PUT IL WD IN ACCUM
01C1 0 630B               LDX   3 /000B       XR3# 11
01C2 0 7012               MDX     VECT
01C3 0 C400 02B9     INCR LD   L  FFFF
01C5 0 D400 02D3          STO  L  PASS1
01C7 0 7102               MDX   1 2
01C8 0 7202               MDX   2 2
01C9 0 74FE 02B6          MDX  L  EDCT1,-2
01CB 0 70E6               MDX     LDRT2       GO TO NEXT IOCC
```



```
01CC 0 703E               MDX     WAIT2       RDY TO START DELAY
                     *
                     ********************************************
                     *              PLACE THE XFER VECTOR IN THE
                     *              CORRECT ADDRESS
                     ********************************************
01CD 0 C400 028D     GREAT LD  L  MASK&1
01CF 0 EC00 02C9          OR   L  ONE
01D1 0 D400 028D          STO  L  MASK&1      SET BIT 15# ONE
01D3 0 6319               LDX   3 /0019
01D4 0 C200               LD    2 0           PUT IL WD IN ACCUM
                     *
01D5 0 4828          VECT BSC     &Z          IS BIT 0 ON
01D6 0 7003               MDX     VECT1       * YES
01D7 0 1001               SLA     1           * NO
01D8 0 7301               MDX   3 1
01D9 0 70FB               MDX     VECT
01DA 0 C400 02CD     VECT1 LD  L  XFER1       ADDR OF DESIRED LVL
01DC 0 D300               STO   3 0
                     *
                     *              COMPLEMENT THE IL WD AND STORE
                     *
01DD 0 C200               LD    2 0           PUT IL WD IN ACCUM
01DE 0 F400 02B9          EOR  L  FFFF        COMPLEMENT IL WORD
01E0 0 D400 028C          STO  L  MASK
01E2 0 0C00 028C          XIO  L  MASK        UNMASK THE DESIRED
                     *                        *INTR LEVEL
                     *
                     ********************************************
                     *              PUT CORRECT AREA CODE IN SENSE
                     *              DEVICE IOCC WORD AND START
                     *              THE I/O METER%S<.
                     ********************************************
01E4 0 C101               LD    1 1           PUT CTRL WD IN ACCUM
01E5 0 EC00 02D2          OR   L  SENSE
01E7 0 D400 0293          STO  L  SNSD&1
01E9 0 7201               MDX   2 1           XR2# ILSW WORD
01EA 0 C400 02D3          LD   L  PASS1       BYPASS THE FIRST 1442
01EC 0 4810               BSC     -           *IF THIS IS THE FIRST
01ED 0 7009               MDX     BYPAS       *PASS THRU THE PROGRAM.
01EE 0 0C00 0292          XIO  L  SNSD        THESE 3 OPS NEEDED
01F0 0 7401 02BA          MDX  L  WORD,1      *IF THE DEVICE BEING
01F2 0 0C00 0292          XIO  L  SNSD        *STARTED IS A TAPE DR
01F4 0 0900               XIO   1 0           START A METER
01F5 0 3001          WAIT1 WAIT    1
01F6 0 1000               NOP     0
01F7 0 C400 02B9     BYPAS LD  L  FFFF
01F9 0 D400 02D3          STO  L  PASS1
01FB 0 C100               LD    1 0           ADDR WORD OF IOCC
01FC 0 F400 0284          EOR  L  IOCC&4      1443 IOCC ADDR WORD
01FE 0 4818               BSC     &-          IS THIS DEVICE 1443
01FF 0 3004          WAIT4 WAIT    4           YES, WAIT FOR
                     *                        *PRINTER COMPL INTR
0200 0 1000               NOP     0
0201 0 C400 02CC          LD   L  INTRN       RESTORE ALL XFER
0203 0 D300               STO   3 0           *VECTORS TO SVINT
0204 0 74FE 02B6          MDX  L  EDCT1,-2
0206 0 7001               MDX     INCR1
0207 0 7003               MDX     WAIT2       RDY TO START DELAY
0208 0 7102          INCR1 MDX   1 2           XR1# NEXT IOCC
0209 0 7201               MDX   2 1           XR2# I/O DEV INT TBLE
020A 0 70A7               MDX     LDRT2
020B 0 0C00 028E     WAIT2 XIO  L  MASK1       MASK INTRS 0-13
020D 0 0C00 0290          XIO  L  MASK2       MASK INTRS 14-23
020F 0 3002               WAIT    2
0210 0 1000               NOP     0
                     *
                     ********************************************
```

```
                        *             DETERMINE THE NO OF 72 SEC
                        *             LOOPS TO BE TAKEN %FROM DATA
                        *             ENTRY SWS< AND THEN START DLY.
                        ********************************************
0211 0 0C00 027E        DLY0  XIO  L  DESWS       RD DATA ENTRY SWS
0213 0 6580 02CE              LDX  I1 COUNT       XR1# NO OF 72 SEC LP
0215 0 C400 02B5              LD   L  CNFIG&12    CORE STOR SPEED
0217 0 18C1                   SRA     1
0218 0 4804                   BSC     E           2 OR 4 USEC STORAGE
0219 0 7019                   MDX     FAST        2 US STORAGE
021A 0 C400 02A6              LD   L  FORUS       4 US STORAGE
021C 0 D400 02A8        DLY1  STO  L  CONST
021E 0 6365             DLY2  LDX   3 101         XR3# 101
021F 0 C400 02A8        DLY3  LD   L  CONST
0221 0 8400 02C9        DLY4  A    L  ONE         ADD 1 TO ACCUM
0223 0 4820                   BSC     Z
0224 0 70FC                   MDX     DLY4
0225 0 73FF                   MDX   3 -1
0226 0 70F8                   MDX     DLY3
0227 0 71FF                   MDX   1 -1          MODIFY LOOP COUNT
0228 0 70F5                   MDX     DLY2
0229 0 C400 028B              LD   L  MASK-1      CHANGE IOCC FOR
022B 0 F400 02D4              EOR  L  TWTY        *THE 2402
022D 0 D400 028B              STO  L  MASK-1
022F 0 30C3             WAIT3 WAIT    3           END OF TEST
                        *
                        ********************************************
                        *             TO RUN TEST AGAIN, SET DATA
                        *             SWITCHES TO THE NUMBER OF
                        *             72 SECOND LOOPS DESIRED, AND
                        *             PRESS THE START BUTTON.
                        ********************************************
0230 0 1000                   NOP     0
0231 0 4C00 0211              BSC  L  DLY0
0233 0 C400 02A7        FAST  LD   L  TWOUS
0235 0 70E6                   MDX     DLY1
                        *
                        ********************************************
                        *             ROUTINE TO SERVICE PROGRAM
                        *             GENERATED INTERRUPTS.
                        ********************************************
0236 0 0000             IRTN  DC      0
0237 0 0CC0 027A              XIO  L  SV8         SENSE ILSW
0239 0 E200                   AND   2 0
023A 0 4C20 023F              BSC  L  SENS1,Z     DOES ILSW MATCH
023C 0 C0F9                   LD      IRTN        NO
023D 0 D005                   STO     SVINT
023E 0 7005                   MDX     SVINT&1     GO TO COMM INTR RTN
023F 0 0CC0 0292        SENS1 XIO  L  SNSD        SENSE AND RESET DEV
0241 0 4CC0 0236              BOSC I  IRTN        EXIT
                        *
                        ********************************************
                        *                  ROUTINE TO SERVICE NON
                        *                  PROGRAM GENERATED INTERPT
                        *                  %WILL HANDLE ONLY ONE
                        *                  INTERRUPT AT A TIME<
                        ********************************************
0243 0 0000             SVINT DC      0
0244 0 D037                   STO     SVIO        SAVE ACCUMULATOR
0245 0 0C00 027A              XIO  L  SV8         RESET ILSW
0247 0 7402 0279              MDX  L  SV7,2       SET PASS SWITCH
0249 0 1010                   SLA     16
024A 0 D02B                   STO     SV4         CLEAR AREA CODE CNTR
024B 0 C028                   LD      SV2
024C 0 D02B                   STO     SV6         SET IOCC IN USE SW
024D 0 C025             SVIN0 LD      SV1
024E 0 D028                   STO     SV5         SET MODIFIER COUNTER
024F 0 C026             SVIN1 LD      SV4         *
```



```
0250 0 100B                   SLA     11          *
0251 0 E825                   OR      SV5         *BUILD IOCC
0252 0 E825                   OR      SV6         *
0253 0 D029                   STO     SVIO&1      *
0254 0 0827                   XIO     SVIO        SENSE DSW AND RESET
0255 0 74FF 0277              MDX  L  SV5,-1
0257 0 70F7                   MDX     SVIN1       BRANCH IF NOT ALL MD
0258 0 7401 0276              MDX  L  SV4,1       INCREMENT AREA CODE
025A 0 C01B                   LD      SV4
025B 0 9016                   S       SV0         CHECK IF ALL AC USED
025C 0 4808                   BSC     &           SKIP IF ALL AC USED
025D 0 70EF                   MDX     SVIN0       GO SENSE WITH NXT AC
025E 0 74FF 0279              MDX  L  SV7,-1      SKIP IF SECOND PASS
0260 0 7001                   MDX     *&1
0261 0 7005                   MDX     SVEXT
0262 0 C012                   LD      SV3
0263 0 D014                   STO     SV6         SET IOCC FOR PI
0264 0 1010                   SLA     16
0265 0 D010                   STO     SV4         SET AC FOR NEXT
0266 0 70E6                   MDX     SVIN0       *PASS
0267 0 C400 02CF        SVEXT LD   L  NOOP        IF INTERRUPTED OUT
0269 0 F480 0243              EOR  I  SVINT       *OF ANY WAIT, RETURN
026B 0 4C20 026F              BSC  L  SV11,Z      *TO THAT WAIT.
026D 0 74FF 0243              MDX  L  SVINT,-1
026F 0 C00C             SV11  LD      SVIO        RESTORE ACCUMULATOR
0270 0 4CC0 0243              BOSC I  SVINT       EXIT
                        *
                        *                   **  CONSTANTS  **
                        *
0272 0 001F             SV0   DC      /001F       NUMBER OF AREA CODES
0273 0 00FF             SV1   DC      /00FF       NUMBER OF MODIFIERS
0274 0 0701             SV2   DC      /0701       SENSE/RESET DSW
0275 0 0700             SV3   DC      /0700       SENSE/RESET PISW
0276 0 0000             SV4   DC      0           AREA CODE INDICATOR
0277 0 0000             SV5   DC      0           MODIFIER INDICATOR
0278 0 0000             SV6   DC      0           IOCC IN USE
0279 0 0000             SV7   DC      0           PASS SWITCH
                        *               I/O CONTROL COMMANDS
027A    0000                  BSS  E  0
027A 0 0000             SV8   DC      /0000       IOCC TO SENSE
027B 0 0300             SV9   DC      /0300       THE ILSW
027C 0 0000             SVIO  DC      0           SENSE DSW IOCC
027D 0 0000                   DC      0
027E 0 02CE             DESWS DC      COUNT       IOCC TO READ THE
027F 0 0240                   DC      /0240       DATA ENTRY SWITCHES
0280 0 0000             IOCC  DC      /0000       IOCC TO START
0281 0 0402                   DC      /0402       1442 NO1 METER
0282 0 00C0                   DC      0           IOCC TO START
0283 0 0402                   DC      /0402       1442 NO2 METER
0284 0 0294                   DC      PRINT       IOCC TO START
0285 0 0500                   DC      /0500       1443 NO1 METER
0286 0 029D                   DC      READ        IOCC TO START
0287 0 0600                   DC      /0600       2401 NO1 METER
0288 0 029D                   DC      READ        IOCC TO START
0289 0 0620                   DC      /0620       2401 NO2 METER
028A 0 029D                   DC      READ        IOCC TO START
028B 0 0600                   DC      /0600       2402 METER
028C 0 0000             MASK  DC      /0000       IOCC TO SET THE
028D 0 0480                   DC      /0480       MASK REGISTER
028E 0 FFFF             MASK1 DC      /FFFF       IOCC TO MASK
028F 0 0480                   DC      /0480       INTERRUPTS 0-13
0290 0 FFFF             MASK2 DC      /FFFF       IOCC TO MASK
0291 0 0481                   DC      /0481       INTERRUPTS 14-23
0292 0 0000             SNSD  DC      /0000       IOCC TO SENSE
0293 0 0701                   DC      /0701       A DEVICE
0294 0 0008             PRINT DC      8           1443 PRINT TABLE
0295 0 2435                   DC      /2435             ME
0296 0 1335                   DC      /1335               TE
```

```
0297 0 29C0                DC      /2900                R
0298 0 3517                DC      /3517            EX
0299 0 3529                DC      /3529              ER
029A 0 3339                DC      /3339                CI
029B 0 1235                DC      /1235                  SE
029C 0 2900                DC      /2900                    R
029D 0 40C8          READ  DC      /4008
029E   00C8                BSS     8
02A6 0 84AA          FORUS DC      /84AA       CONST FOR 4US SYS
02A7 0 0900          TWOUS DC      /0900       CONST FOR 2US SYS
02A8 0 0000          CONST DC      /0000       NO OF 72 SEC LOOPS
02A9   000D          CNFIG BSS     13          EDIT CD INFORMATION
02B6 0 000C          EDCT1 DC      /000C       KEEP TRACK OF ED CTS
02B7 0 02BC          ITBL1 DC      ITBLE&1     LOC OF INTR TABLE
02B8 0 8000          EIGHT DC      /8000       CONSTANT# /8000
02B9 0 FFFF          FFFF  DC      /FFFF       CONSTANT# MINUS ONE
02BA 0 0000          WORD  DC      /0000       A UTILITY LOCATION
02BB 0 02BC          ITBLE DC      ITBLE&1     ITBLE ADDRESS
02BC   000C                BSS     12
02C8 0 000C          EDCT  DC      /000C       NO OF EDIT FIELDS
02C9 0 0001          ONE   DC      /0001       CONSTANT# /0001
02CA 0 FFFE          FFFE  DC      /FFFE       CONSTANT# /FFFE
02CB 0 000E          EASY  DC      /000E       CONSTANT# /000E
02CC 0 0243          INTRN DC      SVINT       SPURIOUS INTR RTN
02CD 0 0236          XFER1 DC      IRTN        PROG GEN INTR RTN
02CE 0 0000          COUNT DC      /0000       DATA ENTRY SW SETNG
02CF 0 1000          NOOP  DC      /1000
02D0 0 4C00          RSTR  DC      /4C00
02D1 0 013E                DC      RERUN
02D2 0 0701          SENSE DC      /0701
0050 0               BEGIN EQU     /50
02D3 0 00C0          PASS1 DC      0
02D4 0 0020          TWTY  DC      /0020       CONSTANT FOR 2402
02D6   0050                END     BEGIN
  NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY
```



```
ADDR   01A2  017E
ADDR1  01A6  01A9
BEGIN  0050  02D6
BITO   0172  014F
BUILD  014A  017D 01A1
BYPAS  01F7  01ED
BZERO  0195  0185
CNFIG  02A9  0136 0148 0215
CONST  02A8  021C 021F
COUNT  02CE  0213 027E
CTLWD  0198  0193
DESWS  027E  0211
DLY0   0211  0231
DLY1   021C  0235
DLY2   021E  0228
DLY3   021F  0226
DLY4   0221  0224
EASY   02CB  0154
EDCT   02C8  0142 01AA
EDCT1  02B6  0144 017B 019F 01AC 01C9 0204
EIGHT  02B8  015C 0161 0169 0172 018A 0195
FAST   0233  0219
FFFE   02CA  01BC
FFFF   02B9  01B3 01C3 01DE 01F7
FORUS  02A6  021A
GREAT  01CD  01B9
ILSWD  017F  0170
ILWD1  0161  015B
INCR   01C3  01B6
INCR1  0208  0206
INTRN  02CC  01A4 0201
IOCC   0280  0146 01AE 01FC
IRTN   0236  023C 0241 02CD
ITBLE  02BB  013E 0180 02B7 02BB
ITBL1  02B7  0140 016E 0178 017F 018F 0191
LDRT1  01B7
LDRT2  01B2  01CB 020A
LES14  0169  0158
LOAD   012C  0124
MASK   028C  018A 01BE 01CD 01D1 01E0 01E2 0229 022D
MASK1  028E  0208
MASK2  0290  020D
NODEV  0175  014C
NOOP   02CF  0267
ONE    02C9  015E 0166 01CF 0221
PASS1  02D3  01C5 01EA 01F9
PRINT  0294  0284
READ   029D  0286 0288 028A
RERUN  013E  02D1
RSTR   02D0  012C 0130
SENSE  02D2  01E5
SENS1  023F  023A
SHRT1  016B  016D
SHRT2  0163  0165
SHRT3  018C  018E
SNSD   0292  01E7 01EE 01F2 023F
STO1   016E  0160 0168 0174
STO2   018F  0197
SVEXT  0267  0261
SVINT  0243  023D 023E 0269 026D 0270 02CC
SVIN0  024D  025D 0266
SVIN1  024F  0257
SVIO   027C  0244 0253 0254 026F
SV0    0272  025B
SV1    0273  024D
SV11   026F  026B
SV2    0274  024B
SV3    0275  0262
```

```
SV4     0276  024A 024F 0258 025A 0265
SV5     0277  024E 0251 0255
SV6     0278  024C 0252 0263
SV7     0279  0247 025E
SV8     027A  0237 0245
SV9     027B
TWOUS   02A7  0233
TWTY    02D4  022B
VECT    01D5  01C2 01D9
VECT1   01DA  01D6
WAIT1   01F5  3001
WAIT2   02CB  01CC 0207 3002
WAIT3   022F  3003
WAIT4   01FF  3004
WORD    02BA  0150 0152 0156 0186 0188 01F0
XFER    0138  013D
XFER1   02CD  01DA
END OF ASSEMBLY
```

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TABLE OF CONTENTS

1. PURPOSE

A. CHECK THE ACCURACY OF ALL OF THE USE METERS.
B. INSURE THAT NO METERS ADVANCE WHEN THE METER KEY IS SWITCHED TO CE MODE.
C. CHECK THE METER CONTROL CIRCUITS.

2. PREREQUISITES

2.1 PROGRAM

THIS PROGRAM IS LOADED BY THE RELOCATABLE DIAGNOSTIC LOADER. AN EDIT CARD, CONTAINING THE NECESSARY IOCC INFORMATION FOR THIS 1800 SYSTEM, MUST FOLLOW THE LAST CARD OF THE PROGRAM. (SEE SEC 6.1)

2.2 EQUIPMENT

A. CUSTOMER ENGINEER USE METER KEY.
B. CARD OR PAPER TAPE READER.

3. USE PROCEDURE

THERE ARE 7 STEPS TO THE USE PROCEDURE. A DETAILED DESCRIPTION STARTS IN SECTION 3.1.

1. RECORD ALL METER READINGS.
2. MAKE ALL METERED I/O UNITS READY.
3. LOAD THE PROGRAM.
4. SET THE DESIRED NUMBER OF 72 SECOND LOOPS IN THE PC DATA ENTRY SWITCHES.
5. CHECK CUSTOMER METERS
6. COMPUTE THE ELAPSED TIME. (BY HAND)
7. CHECK THE METER CONTROL CIRCUITS.

3.1 LOADING

1. RECORD THE READINGS ON ALL OF THE CUSTOMER METERS. THE CUSTOMER

MUST BE GIVEN CREDIT FOR THIS TEST TIME.
2. MAKE ALL METERED I/O UNITS READY,

1442 (FIRST) IF THE 1800 SYSTEM IS EQUIPPED WITH A 1442, IT MUST BE USED TO LOAD THE PROGRAM. AFTER THE PROGRAM HAS LOADED, DO NOT PRESS THE 1442 NPRO BUTTON, AS THIS WILL PREVENT THE METER FROM RUNNING
1442 (SECOND ONLY) PLACE A FEW CARDS IN THE FEED HOPPER AND PRESS THE 1442 START KEY. THE 1442 READY LAMP SHOULD GLOW.
1443 TURN ON THE POWER SWITCH AND PRESS THE 1443 START KEY. THE 1443 READY LAMP SHOULD GLOW.
2310 DISK STORAGE-TURN THE SWITCH ON THE FRONT OF THE UNIT TO 'ENABLE'.
2401 PLACE A REEL OF TAPE IN EACH TAPE DRIVE. PRESS THE 2401 LOAD REWIND BUTTON(S). PRESS THE 2401 START BUTTON(S).
2402 PLACE A REEL OF TAPE IN EACH TAPE DRIVE. PRESS BOTH LOAD REWIND BUTTONS AND BOTH START BUTTONS. IT IS NECESSARY TO RUN THE DELAY LOOP TWICE TO ENSURE THAT EACH DRIVE CAN CONTROL THE METER. DURING THE FIRST TIMING LOOP THE METER WILL BE UNDER CONTROL OF DRIVE ZERO. WHEN THE TIMING LOOP TERMINATES THE TAPE IN DRIVE ZERO SHOULD BE RETURNED TO LOAD POINT SO THAT ONLY DRIVE ONE CAN CONTROL THE METER DURING THE SECOND TIMING LOOP. DRIVE ZERO WILL BE STARTED BY THE PROGRAM ON ALL ODD NUMBERED RUNS AND DRIVE ONE ON ALL EVEN NUMBERED RUNS.

4. REFER TO THE RELOCATABLE DIAGNOSTIC LOADER DOCUMENTATION FOR THE LOADING PROCEDURE.

NOTE

IF THE PROGRAM LOADED CORRECTLY, AND ALL METERED I/O UNITS ARE IN A READY STATUS, THE PROGRAM WILL STOP AT WAIT 2. (B REG 3002)

3.2 OPERATION.

3.2.1 TO CHECK CUSTOMER METERS.
1. SET THE DATA ENTRY SWITCHES TO INDICATE THE NUMBER OF 72 SECOND LOOPS THAT YOU WISH TO MAKE.
2. IF THE 1442 WAS USED TO LOAD THE PROGRAM, RECORD THE METER READING. (AGAIN).
3. PRESS PC START BUTTON.
4. THE PROGRAM WILL STOP AT WAIT 3 (B REG 3003) WHEN THE DESIRED DELAY IS COMPLETED. ALL CUSTOMER METERS SHOULD HAVE ADVANCED .02 HOURS FOR EACH 72 SECOND LOOP RUN.
5. IF THE 2402 METER IS BEING CHECKED, IT IS NECESSARY TO RUN THE DELAY LOOP TWICE. DURING THE FIRST RUN (AND ALL SUBSEQUEN ODD NUMBERED RUNS), THE METER WILL BE UNDER CONTROL OF DRIVE ZERO. WHEN THE RUN IS COMPLETED (PROGRAM STOPS AT WAIT 3), PRESS THE 'RESET' AND THE 'LOAD REWIND' BUTTONS ON DRIVE ZERO, PLACE A FEW CARDS IN THE 1442 AND PRESS THE 1802 'RESET' AND 'START' BUTTONS. PROGRAM WILL STOP AT WAIT 2. PRESS THE 1802 'START' BUTTON TO START THE DELAY LOOP. DURING THE SECOND RUN (AND ALL SUBSEQUENT EVEN NUMBERED RUNS), THE METER WILL BE UNDER CONTROL OF DRIVE NUMBER 1. BEFORE EACH RUN, CHECK THAT BOTH DRIVES ARE AT LOAD POINT AND 'READY'
6. TO REPEAT TEST, SLT LOOP COUNT IN THE DATA ENTRY SWITCHES AND PRESS THE PC START BUTTON.

3.2.2 CONTROL CIRCUITRY CHECK.

EACH METER WILL NOW BE CHECKED TO INSURE THAT IT RUNS AND STOPS

RUNNING AT THE CORRECT TIMES.

1. CHECK THAT NO METERS ARE RUNNING WHILE THE PROGRAM IS AT WAIT 3.
2. TURN THE METER KEY TO C.E. MODE. WHILE THE PROGRAM IS RUNNING CHECK THAT NO METERS ARE RUNNING. RETURN THE METER KEY TO THE NORMAL POSITION.
3. WHILE THE PROGRAM IS RUNNING IN A 72 SECOND DELAY LOOP,
   1442-THE METER SHOULD STOP WHEN THE NPRO BUTTON IS PRESSED. (HOPPER MUST BE EMPTY)
   1443-THE METER SHOULD STOP IF THE 1443 STOP BUTTON IS PRESSED.
   2310-THE METER IS CONTROLLED BY THE 'ENABLE/DISABLE' SWITCH ON THE FRONT COVER. IF THE POSITION OF THE SWITCH IS CHANGED, THIS CHANGE SHOULD NOT AFFECT THE METER UNTIL AFTER THE PC HAS COME TO A WAIT. (AND THEN HAS STARTED AGAIN).
   2401/02 THE METER SHOULD RUN WHENEVER THE TAPE IS LOADED AND NOT AT LOAD POINT. IF A TAPE DRIVE IS LOADED AND NOT AT LOAD POINT, PRESSING THE 'LOAD REWIND' BUTTON SHOULD STOP THE METER WHEN THE TAPE REACHES LOAD POINT.

3.3 TERMINATION

THE PROGRAM WILL STOP AT WAIT 3 (B REG 3003) WHEN THE EXERCISE IS COMPLETED. TO REPEAT EXERCISE, REFER TO WAIT 3 DESCRIPTION.

3.4 RESTART

PLACE A FEW BLANK CARDS IN THE FEED HOPPER OF THE FIRST 1442 AND PRESS THE START KEY. THE 1442 READY LAMP SHOULD GLOW. PRESS THE PC RESET BUTTON THEN THE START BUTTON. THIS WILL REINITIALIZE THE PROGRAM, CONDITION ALL THE METERS TO RUN, THEN STOP AT WAIT 2 (B REG 3002).

3.5 PROGRAM HALTS

PROGRAM WAITS ARE USED IN THIS PROGRAM, AND ARE IDENTIFIED BY REFERENCING THE B REG AND I REG.

A PROGRAM WAIT IS OF THE FORM,

30XX, (B REG).

A DESCRIPTION OF THE INDIVIDUAL PROGRAM WAITS CAN BE FOUND AT THE BEGINNING OF THE PROGRAM LISTING. A TYPICAL WAIT DESCRIPTION FOLLOWS. IT IS INCLUDED TO SHOW THE FORMAT OF THE LISTING, AND IT IS NOT NECESSARILY A DESCRIPTION OF AN ACTUAL WAIT.

```
**************************************************************************
3001 0  01ED              DC      WAIT1+1
                       *
                       *                WAIT 1
                       *
                       *          ONE OF THE METERED I/O UNITS
                       *          FAILED TO SEND A RESPONSE
                       *          INTERRUPT TO THE PROGRAM.  INDEX
                       *          REGISTER 1 WILL HAVE THE ADDRESS
                       *          OF THE IOCC.  THE AREA CODE WILL
                       *          INDICATE THE I/O UNIT NOT READY.
                       *          IF A 2401/02 DRIVE IS NOT READY,
                       *          PROGRAM WILL NOT STOP AT WAIT 1.
                       *
**************************************************************************
```

B REG, (FIRST 4 DIGIT GROUP) CORRESPONDS TO B REG READING.

I REG, (SECOND 4 DIGIT GROUP) CORRESPONDS TO I REG READING.

4 PRINTOUTS

THERE ARE NO PRINTOUTS.

5. COMMENTS (NONE)

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6.1 EDIT PROCEDURE

THE FOLLOWING EDIT PROCEDURE IS FOR CARD INPUT. THE EDIT PROCEDURE FOR PAPER TAPE INPUT IS LOCATED IN THE PAPER TAPE EDIT UTILITY PROGRAM DOCUMENTATION. THE PROPER EDIT CARDS MUST BE THE LAST CARDS IN THIS PROGRAM DECK. THE FOLLOWING FORMS ARE PROVIDED TO AID IN MANUALLY PREPARING THESE EDIT CARDS OR UPDATING EXISTING EDIT CARDS. IF IT IS NECESSARY TO PREPARE OR MODIFY EDIT CARDS, FILL IN THE NECESSARY DATA IN THE FORMS PRIOR TO PUNCHING THE CARDS. CARD COLUMNS THAT ARE SHADED SHOULD BE LEFT BLANK.

DDEF STANDS FOR DEVICE DEFINITION EDIT FIELD. IT INCLUDES:

1. THE INTERRUPT LEVEL ASSOCIATED WITH THIS DEVICE (USE HEX NOTATION, 00-17).
2. THE ILSW BIT POSITION ASSOCIATED WITH THIS DEVICE (USE HEX NOTATION, 0-F).
3. THE CHANNEL ASSIGNED TO THIS DEVICE (0-8). IF THIS IS A DPC DEVICE, PUNCH AN "F" IN THE CARD COLUMN.

								1442 (FIRST) DDEF				1442 (FIRST) AREA CODE			1442 (SECOND) DDEF				1442 (SECOND) AREA CODE			1443 (FIRST) DDEF				1443 (FIRST) AREA CODE			2401 (FIRST) DDEF				2401 (FIRST) AREA CODE			2401 (SECOND) DDEF				2401 (SECOND) AREA CODE			2402 DDEF				2402 AREA CODE	
		PROGRAM I.D.		CARD SEQUENCE NUMBER		NUMBER OF EDIT ENTRIES		INTERRUPT LEVEL (HEX)	ILSW BIT (HEX)	CHANNEL (OR F)		AREA CODE (HEX)	MODIFIER (HEX)		INTERRUPT LEVEL (HEX)	ILSW BIT (HEX)	CHANNEL (OR F)		AREA CODE (HEX)	MODIFIER (HEX)		INTERRUPT LEVEL (HEX)	ILSW BIT (HEX)	CHANNEL (OR F)		AREA CODE (HEX)	MODIFIER (HEX)		INTERRUPT LEVEL (HEX)	ILSW BIT (HEX)	CHANNEL (OR F)		AREA CODE (HEX)	MODIFIER (HEX)		INTERRUPT LEVEL (HEX)	ILSW BIT (HEX)	CHANNEL (OR F)		AREA CODE (HEX)	MODIFIER (HEX)		INTERRUPT LEVEL (HEX)	ILSW BIT (HEX)	CHANNEL (OR F)		AREA CODE (HEX)	MODIFIER (HEX)
COLUMN	1	2 3 4 5	6	7 8 9 10	11	12 13 14 15	16	17 18	19	20	21			26				31			36				41			46				51			56				61			66				71		
CARD 0	E	B 6 0 0	▨	E D 0 0	▨	0 0 0 D	▨				▨	1 0	0 0	▨				▨			▨				▨	3 0	0 0	▨				▨			▨				▨			▨				▨		
END	E	B 6 0 0	▨	F F F F	▨		▨				▨			▨				▨			▨				▨			▨				▨			▨				▨			▨				▨		
			▨		▨		▨				▨			▨				▨			▨				▨			▨				▨			▨				▨			▨				▨		
			▨		▨		▨				▨			▨				▨			▨				▨			▨				▨			▨				▨			▨				▨		
			▨		▨		▨				▨			▨				▨			▨				▨			▨				▨			▨				▨			▨				▨		

CARD COLUMNS 77-80 WILL CONTAIN THE SPEED OF THE CORE STORAGE. FOR 2 MICRO SEC. STORAGE PUNCH 0002, AND FOR 4 MICRO SEC. STORAGE, PUNCH 0004.

NOTE: IF A DEVICE IS NOT ON THIS SYSTEM, PUNCH THE CORRESPONDING ENTRY FFFF FFFF.

NO "END EDIT" CARD IS REQUIRED FOR THIS PROGRAM.

DATE 28 FEB 66	DATE 1 MAY 66	DATE 01 JUL 66	DATE 01SEP67
EC 415120	EC 415120A	EC 415178	EC 411857

```
                  *    SEE PID 0802 FOR DESCRIPTION
                       ABS
028C                   ORG     /3500
                  *
                  *    DIMAL INITIAL LOADER PROGRAM WAIT
                  *    DESCRIPTION.
                  *
3500 0 0010            DC      W3500+1    WAIT 500
                  *
                  *                       A DSW ERROR WAS
                  *                       DETECTED DURING LOAD
                  *                       OPERATIONS.RELOAD THE
                  *                       INITIAL LOADER.
                  *
3501 0 0037            DC      W3501+1    WAIT 501
                  *
                  *                       AN INITIAL LOADER EDIT
                  *                       CARD ERROR HAS BEEN
                  *                       DETECTED.CHECK THE EDIT
                  *                       CARDS.INSURE THAT COLUMN
                  *                       1 OF BOTH CARDS CONTAINS
                  *                       AN 'E',THAT THE PID ON
                  *                       BOTH CARDS IS 0200,THAT
                  *                       CARD 1 SEQUENCE NUMBER IS
                  *                       E000 AND CARD 2 IS FFFF.
                  *                       CORRECT ANY ERRORS,PLACE
                  *                       BOTH CARDS IN THE 1442,
                  *                       MAKE IT READY AND CONTINUE
                  *
3502 0 0056            DC      W3502+1    WAIT 502
                  *
                  *                       1442 IS NOT READY.READY
                  *                       THE 1442 WITH INITIAL
                  *                       LOADER EDIT CARDS AND
                  *                       CONTINUE.
                  *
3503 0 0058            DC      W3503+1    WAIT 503
                  *
                  *                       A 1442 DSW ERROR WAS
                  *                       DETECTED DURING EDIT CARD
                  *                       INPUT. REENTER BOTH EDIT
                  *                       CARDS IN THE 1442 HOPPER,
                  *                       MAKE IT READY AND CONTINUE
                  *
3504 0 00A7            DC      W3504+1    WAIT 504
                  *
                  *                       THE DISK PACK CE WORD
                  *                       WAS NOT FOUND ON THE
                  *                       HISTORY TRACK. INSURE THE
                  *                       CE DISK PACK HAS BEEN
                  *                       LOADED.DEPRESS START TO
                  *                       TRY AGAIN.IF ERROR PER-
                  *                       SISTS,REINITIALIZE THE
                  *                       CE DISK PACK.
                  *
3505 0 00AE            DC      W3505+1    WAIT 505
                  *
                  *                       HISTORY DATA FOUND ON THE
                  *                       HISTORY TRACK INDICATES
                  *                       THAT 4 OR MORE BAD CYLIN-
                  *                       DERS EXIST ON THE CE DISK
                  *                       PACK.THIS IS CONSIDERED A
                  *                       BAD PACK.A NEW CE PACK
                  *                       SHOULD BE USED.IF IT IS
                  *                       DESIRED TO USE THE BAD
                  *                       PACK,SET SNS/PGM SWITCH 0
                  *                       AND CONTINUE.
                  *
3506 0 0147            DC      W3506+1    WAIT 506
```



```
                  *
                  *                       THE 1442 IS NOT READY
                  *                       READY THE 1442 WITH DIMAL
                  *                       OBJECT DECK,OR PRESS 1442
                  *                       START FOR LAST CARD AND
                  *                       CONTINUE.
                  *
3507 0 0149            DC      W3507+1    WAIT 507
                  *
                  *                       A 1442 DSW ERROR WAS
                  *                       DETECTED WHILE LOADING
                  *                       DIMAL. RELOAD THE DIMAL
                  *                       OBJECT DECK IN THE 1442
                  *                       HOPPER AND MAKE IT READY.
                  *                       DEPRESS THE 1800 RESET
                  *                       AND START BUTTONS.PROGRAM
                  *                       LOADING SHOULD OCCUR.
                  *
3508 0 016E            DC      W3508+1    WAIT 508
                  *
                  *                       A CHECKSUM ERROR WAS
                  *                       DETECTED DURING DIMAL
                  *                       LOADING.NPRO THE 1442.THE
                  *                       1ST CARD EJECTED IS THE
                  *                       CARD IN ERROR.INSURE CARD
                  *                       IS IN CORRECT SEQUENCE.IF
                  *                       NO PROBLEM IS APPARENT,
                  *                       REENTER BOTH EJECTED CARDS
                  *                       AND CONTINUE.RELOADING
                  *                       MAY ALSO BE DONE BY PLAC-
                  *                       ING THE ENTIRE DIMAL DECK
                  *                       IN THE 1442 HOPPER AND
                  *                       MAKE IT READY.DEPRESS 1800
                  *                       RESET AND START BUTTONS.
                  *
3509 0 01C8            DC      W3509+1    WAIT 509
                  *
                  *                       A LAST CARD SEQUENCE WAS
                  *                       INITIATED BEFORE THE
                  *                       COMPLETE DIMAL DECK WAS
                  *                       READ IN.INSURE THAT THE
                  *                       COMPLETE DIMAL DECK HAS
                  *                       BEEN LOADED.
                  *
350A 0 020E            DC      W350A+1    WAIT 50A
                  *
                  *                       DISK HOME BIT DID NOT
                  *                       COME ON IN THE DSW AFTER
                  *                       THE 3RD ATTEMPT TO SEEK
                  *                       HOME.CORRECT FAILURE AND
                  *                       CONTINUE.IF CORE IS DES-
                  *                       TROYED,RELOADED MUST BE
                  *                       ACCOMPLISHED.
                  *
350B 0 021C            DC      W350B+1    WAIT 50B
                  *
                  *                       2310 DISK DRIVE NOT READY.
                  *                       READY THE 2310 AND
                  *                       CONTINUE.
                  *
350C 0 022D            DC      W350C+1    WAIT 50C
                  *
                  *                       ATTEMPTED DISK READ.DRIVE
                  *                       WENT NOT READY.MAKE DRIVE
                  *                       READY AND CONTINUE. IF
                  *                       DISK ARM POSITION IS
                  *                       CHANGED,RELOADING DIMAL
                  *                       DECK IS REQUIRED.
```

```
                *
350D 0  023A            DC      W350D+1     WAIT 50D                    8B701370
                *                                                       8B701380
                *                                                       8B701390
                *                           A DSW ERROR CCCURED ON A    8B701400
                *                           DISK READ OP ON EACH OF     8B701410
                *                           3 ATTEMPTS.THE A REG.       8B701420
                *                           CONTAINS THE ERROR BITS.    8B701430
                *                           PRESSING START AFTER THE    8B701440
                *                           ERROR WILL CAUSE PROGRAM    8B701450
                *                           TO MAKE 3 MORE TRIES TO     8B701460
                *                           READ. IF ERROR PERSISTS,    8B701470
                *                           CORRECT AND RELOAD DIMAL.   8B701480
                *                                                       8B701490
350E 0  0245            DC      W350E+1     WAIT 50E                    8B701500
                *                                                       8B701510
                *                           ATTEMPTED DISK WRITE.DRIVE  8B701520
                *                           NOT READY.MAKE DRIVE READY  8B701530
                *                           AND CONTINUE.IF DISK ARM    8B701540
                *                           POSITION IS CHANGED,        8B701550
                *                           RELOADING DIMAL DECK IS     8B701560
                *                           REQUIRED.                   8B701570
                *                                                       8B701580
350F 0  0253            DC      W350F+1     WAIT 50F                    8B701590
                *                                                       8B701600
                *                           A DISK WRITE OR MODULO 4    8B701610
                *                           CHECK ERROR EXISTED ON      8B701620
                *                           EACH OF 3 ATTEMTS TO WRITE  8B701630
                *                           DEPRESS START BUTTON WILL   8B701640
                *                           CAUSE PROGRAM TO MAKE 3     8B701650
                *                           ADDITIONAL ATTEMPTS TO      8B701660
                *                           WRITE. IF ERROR PERSISTS,   8B701670
                *                           CORRECT AND RELOAD DIMAL.   8B701680
                *                                                       8B701690
3510 0  0299            DC      W3510+1     WAIT 510                    8B701700
                *                                                       8B701710
                *                           THIS WAIT INDICATES THAT    8B701720
                *                           THE LOADING OF THE CARD     8B701730
                *                           DECK REPRESENTING THE       8B701740
                *                           PAPER TAPE VERSION OF       8B701750
                *                           DIMAL HAS BEEN COMPLETED    8B701760
                *                                                       8B701770
3511                    ORG     0           CARD 1                      8B701780
                *                                                       8B701790
03E8            IN      EQU     1000                                    8B701800
044C            IOA     EQU     1100                                    8B701810
044D            SID     EQU     IOA+1                                   8B701820
044E            OUT     EQU     SID+1                                   8B701830
                *                                                       8B701840
                *               DIMAL SYSTEM INITIAL LOADER             8B701850
                *                                                       8B701860
                *   THE INITIAL LOADER PERFORMS THE                     8B701870
                *   FOLLOWING FUNCTIONS.                                8B701880
                *                                                       8B701890
                *   1. INPUT AND CONVERT THE LOADER EDIT                8B701900
                *      CARDS.                                           8B701910
                *   2. INSURES THAT THE CE DISK PACK IS                 8B701920
                *      LOADED,AND USABLE.                               8B701930
                *   3. ASSIGNS THE CYLINDERS TO BE USE BY               8B701940
                *      THE DISK DIAGNOSTIC MONITOR.                     8B701950
                *   4. INPUTS THE DDM HEADER,COLD START                 8B701960
                *      LOADER,DDM LOADER/ORGANIZER AND THE              8B701970
                *      DDM SELECT/EXECUTE PROGRAMS AND                  8B701980
                *      WRITES THEM ON THE DISK.                         8B701990
                *   5. INPUTS THE DDM LOADER/ORGANIZER FROM             8B702000
                *      THE DISK UPON COMPLETION OF INITIAL-             8B702010
                *      IZING THE DISK WITH THE DIMAL SYSTEM             8B702020
                *                                                       8B702030
                *   THIS IS THE 1ST CARD OF THE LOADER.IT               8B702040
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                *   IS READ IN BY THE IPL OPERATION AND IS              8B702050
                *   USED TO LOAD THE REST OF THE LOADER.                8B702060
                *                                                       8B702070
0000 0  0819    IPL1    XIO     RDPAC       READ PACKED MODE            8B702080
0001 0  081A    IPL2    XIO     DSW         SENSE 1442 STATUS           8B702090
0002 00 4C040001        BSC  L  IPL2,F      BRANCH IF NOT READY         8B702100
0004 0  B017            CMP     DSW         LOOK FOR OP COMPLETE        8B702110
0005 0  7009            MDX     W3500       BRANCH - BIT 2 ON           8B702120
0006 0  7006            MDX     IPL3        BRANCH - BITS 5 OR 6        8B702130
0007 00 7424001A        MDX  L  RDPAC,36    SET IOCC FOR NXT CD         8B702140
0009 00 74FF001E        MDX  L  CDCT,-1     SKIP WHEN LOADER IN         8B702150
000B 0  70F4            MDX     IPL1        GO READ NEXT CARD           8B702160
000C 0  7004            MDX     PREP        PREPARE INPUT AREA          8B702170
000D 0  B011    IPL3    CMP     K0100       CHECK IF BITS 5 OR 6        8B702180
000E 0  1000            NOP                                             8B702190
000F 0  35G0    W3500   DC      /3500       DSW INDICATES ERROR         8B702200
0010 0  70F0            MDX     IPL2                                    8B702210
0011 00 67000141PREP    LDX  L3 321         SET CONSTANT 321 IN         8B702220
0013 00 6F00044C        STX  L3 IOA         *INPUT AREA                 8B702230
0015 0  C802            LDD     BRN         PICKUP RESTART INSTR        8B702240
0016 0  D8E9            STD     0           SET IN LOCS 0 AND 1         8B702250
0017 0  700C            MDX     EDIT        BRANCH TO INPUT EDIT        8B702260
0018    0000            BSS  E  0                                       8B702270
0018 00 4C00027EBRN     BSC  L  RSTRT       RESTART INSTRUCTION         8B702280
001A 0  0024    RDPAC   DC      36          READ 1442 PACKED            8B702290
001B 0  1601            DC      /1601       *IOCC WORD                  8B702300
001C 0  0800    DSW     DC      /0800       SENSE 1442 DSW  IOCC        8B702310
001D 0  1700            DC      /1700                                   8B702320
001E 0  0013    CDCT    DC      19          LOADER CARD COUNT           8B702330
001F 0  0100    K0100   DC      /0100       ERR CK DSW CONSTANT         8B702340
0020 0  FFFF    KFFFF   DC      /FFFF       CONSTANT                    8B702350
                ********************************************          8B702360
                        ORG     36          CARD 2                      8B702370
                ********************************************          8B702380
                *                                                       8B702390
                *   THIS SECTION READS,CONVERTS AND CHECKS              8B702400
                *   THE INITIAL LOADER EDIT CARDS.                      8B702410
                *                                                       8B702420
0021            EDIT    XIO     DSW         SENSE FOR STATUS            8B702430
0024 0  08F7            BSC  L  W3502,E     BRANCH ON NOT READY         8B702440
0025 00 4C040055        LDX  3  1           SET EDIT CARD IND.          8B702450
0027 0  6301            STX  3  EDSW                                    8B702460
0028 0  6835            XIO     RDED        READ A CARD                 8B702470
0029 0  0830    EDIT1   XIO     DSW         SENSE STATUS                8B702480
002A 0  08F1            SRA     1           POSITION DSW                8B702490
0028 0  1801            BSC  L  EDIT1,E     BRANCH IF BUSY              8B702500
002C 00 4C04002A        SRA     12          POSITION DSW                8B702510
002E 0  180C            BSC  L  W3503,E     BRANCH ON ERROR DSW         8B702520
002F 00 4C040057        XIO     DSW1        RESET DSW                   8B702530
0031 0  082A            LD   L  IR          PICKUP 1ST WORD             8B702540
0032 00 C40003E8        BSC  L  EDIT2,+Z    BRANCH IF EDIT CARD         8B702550
0034 00 4C280038W3501   DC      /3501       EDIT CARD ERROR             8B702560
0036 0  3501            MDX     EDIT        RESTART                     8B702570
0037 0  70EC    EDIT2   MDX     HBCV        GO CONVERT HEX TO BI        8B702580
0038 0  7026            LD   L  OUT         GET 1ST CONVERTED WD        8B702590
0039 00 C400044E        EOR     DSW1        CHECK FOR PID 802           8B702600
003B 0  F020            BSC     Z           SKIP IF PROPER PID          8B702610
003C 0  4820            MDX     W3501       BRANCH ON WRONG PID         8B702620
003D 0  70F8            LD      EDSW        PICKUP EDIT SWITCH          8B702630
003E 0  C01F            BSC     +           SKIP IF EDIT SW = 1         8B702640
003F 0  4808            MDX     EDIT3                                   8B702650
0040 0  700E            LD   L  OUT+1       PICKUP SEQUENCE NMBR        8B702660
0041 00 C400044F        EOR     KED00       CHECK FOR CARD ED00         8B702670
0043 0  F015            BSC     Z           SKIP IF PROPER CARD         8B702680
0044 0  4820            MDX     W3501       BRANCH ON WRONG SEQUENCE    8B702690
0045 0  70F0            STD     EDSW        CLEAR EDIT SWITCH           8B702700
0046 0  D017            LDX  3  3           SET WORD INDEX              8B702710
0047 0  6303            ********************************************    8B702720
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0048                    ORG      72          CARD 3                     8B702730
                  ******************************************************8B702740
0048 00 C7000450        LD    L3 OUT+2       PLACE CONVERTED EDIT        8B702740
004A 00 D70001FF        STO   L3 EDWD-1      *WDS IN SAVE LOCATNS        8B702750
004C 0  73FF            MDX    3 -1          SKIP WHEN DONE              8B702760
004D 0  70FA            MDX      *-6         CONTINUE SAVE OP            8B702770
004E 0  70DA            MDX      EDIT1-1     GO READ NEXT CARD           8B702780
004F 00 C400044F  EDIT3 LD    L  OUT+1       PICK UP 2ND EDIT ETY        8B702790
0051 0  F0CE            EOR      KFFFF       CHECK FOR TERMINATOR        8B702800
0052 0  4820            BSC      Z           SKIP IF TERM CARD           8B702810
0053 0  70E2            MDX      W3501       BRANCH  NOT TERM CARD       8B702820
0054 0  7034            MDX      INT                                     8B702830
0055 0  3502      W3502 DC       /3502       1442 NOT READY              8B702840
0056 0  70CD            MDX      EDIT        TRY AGAIN                   8B702850
0057 0  3503      W3503 DC       /3503       DSW INDICATES ERROR         8B702860
0058 0  70CB            MDX      EDIT        TRY FOR REREAD              8B702870
0059 0  ED00      KED00 DC       /ED00       CONSTANT                    8B702880
                  *                                                      8B702890
005A    0000            BSS   E  0                                       8B702900
005A 0  03E8      RDED  DC       IN          1442 READ IOCC              8B702910
005B 0  1600            DC       /1600                                   8B702920
005C 0  0200      DSW1  DC       /0200       1442 SENSE/RESET            8B702930
005D 0  1703            DC       /1703       *DSW IOCC                   8B702940
005E 0  0000      EDSW  DC       0           EDIT SWITCH                 8B702950
                  *                                                      8B702960
                  *     THIS ROUTINE CONVERTS 1 HEXIDECIMAL              8B702970
                  *     CARD TO BINARY.                                  8B702980
                  *                                                      8B702990
005F 0  61E1      HBCV  LDX    1 -31         SET XR TO CONV.30 WD        8B703000
0060 0  1010            SLA      16          CLEAR CONVERTED WORD        8B703010
0061 0  D024            STO      LOC         *STORE POINTER              8B703020
0062 0  6204      HBCV1 LDX    2 4           SET COLUMN XR = 4           8B703030
0063 0  7101            MDX    1 1           SKIP WHEN DONE              8B703040
0064 0  7001            MDX      *+1         CONVERT A WORD              8B703050
0065 0  7003            MDX      EDIT2+1     CONTINUE MAINLINE           8B703060
0066 0  1010            SLA      16          CLEAR CONVERSION            8B703070
0067 0  D01F            STO      SAVE        *WORK LOCATIONS.            8B703080
0068 0  D01F            STO      SAVE1       *                           8B703090
0069 0  1004      HBCV2 SLA      4           POSITION FOR NXT CHR        8B703100
006A 0  D01D            STO      SAVE1       SAVE CONVERTED CHARS        8B703110
006B 0  6300            LDX    3 0           SET CHARAC XR = 0           8B703120
                  ******************************************************8B703130
006C                    ORG      108         CARD 4                     8B703140
                  ******************************************************8B703150
006C 00 C5000407        LD    L1 IN+31       PICK UP HEX COLUMN          8B703160
006E 0  4828            BSC      +Z          SKIP IF NOT ALPHA           8B703170
006F 0  7309            MDX    3 9           ADD 9 FOR ALPHA CHAR        8B703180
0070 0  1003            SLA      3           REMOVE ZONE BITS            8B703190
0071 00 4C180078        BSC   L  HBCV4,+-    XFER IF CHAR = 0            8B703200
0073 0  7301      HBCV3 MDX    3 1           ADD 1 TO CHARACT XR         8B703210
0074 00 4C280078        BSC   L  HBCV4,+Z    XFER IF DIGIT FOUND         8B703220
0076 0  1001            SLA      1           POSITION NEXT BIT           8B703230
0077 0  70FB            MDX      HBCV3       CHECK NEXT BIT              8B703240
0078 0  6B0E      HBCV4 STX    3 SAVE        STORE BIN CHARACTER         8B703250
0079 0  C0CD            LD       SAVE        FETCH BIN CHARACTER         8B703260
007A 0  E80D      HBCV5 OR       SAVE1       ADD TO PREVIOUS CHAR        8B703270
007B 0  7101            MDX    1 1           ADD 1 TO HEX WORD XR        8B703280
007C 0  72FF            MDX    2 -1          SUB 1 FROM COLUMN XR        8B703290
007D 0  70EB            MDX      HBCV2       GO FOR NEXT COLUMN          8B703300
007E 00 67800086        LDX   I3 LOC         PICK UP STORE POINTR        8B703310
0080 0  1000            NOP                                              8B703320
0081 00 D700044E        STO   L3 OUT         SET IN OUTPUT AREA          8B703330
0083 00 74010086        MDX   L  LOC,1       ADD 1 TO POINTER            8B703340
0085 0  70DC            MDX      HBCV1       GO FOR NEXT WORD            8B703350
0086 0  0000      LOC   DC       0           STORAGE POINTER             8B703360
0087 0  0000      SAVE  DC       0           *CONVERSION WORK            8B703370
0088 0  0000      SAVE1 DC       0           *LOCATIONS                  8B703380
                  *                                                      8B703390
                                                                         8B703400
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                  *     THIS ROUTINE BUILDS THE DISK COMMANDS,           8B703410
                  *     DETERMINES IF THE CE PACK IS BEING USED          8B703420
                  *     AND IF THE CE PACK IS GOOD.                      8B703430
                  *
0089 00 C4000202  INT   LD    L  EDWD+2      GET OUTPUT DEVICE IN D      8B703440
008B 0  D031            STO      USTB+7      SET IN USE TABLE            8B703450
008C 00 C4000200        LD    L  EDWD        GET HISTORY CYLINDER        8B703460
008E 0  D02D            STO      USTB+6      SAVE IN USE TABLE           8B703470
008F 0  1803            SRA      3           REMOVE SECTOR BITS          8B703480
                  ******************************************************8B703490
0090                    ORG      144         CARD 5                     8B703500
                  ******************************************************8B703510
0090 00 D400026A        STO   L  DSK         SET IN SEEK COMMAND         8B703520
0092 0  630B            LDX    3 11          SET BUILD INDEX             8B703530
0093 00 C4000201  INT1  LD    L  EDWD+1      PICKUP DISK AREA CD         8B703540
0095 00 EF000264        OR    L3 HOME        ADD AREA CODE TO            8B703550
0097 00 D7000264        STO   L3 HOME        *DISK IOCC                  8B703560
0099 0  73FE            MDX    3 -2          SKIP WHEN DONE              8B703570
009A 0  70F8            MDX      INT1        CONTINUE                    8B703580
009B 00 44000203  INT2  BSI   L  HM          GO SEEK HM                  8B703590
009D 00 44000216  INT3  BSI   L  SEEK        SEEK TO HISTORY TRK         8B703600
009F 00 44000225        BSI   L  READ        READ HISTORY TRACK          8B703610
00A1 00 C400044E        LD    L  IOA+2       PICK UP CE WORD LOC         8B703620
00A3 0  F00E            EOR      CK          CHECK FOR CE PACK           8B703630
00A4 00 4C1800A8        BSC   L  INT4,+-     BRANCH IF CE WORD           8B703640
00A6 0  3504      W3504 DC       /3504       CE WORD NOT READ            8B703650
00A7 0  70F3            MDX      INT2        TRY AGAIN                   8B703660
00A8 00 C400044F  INT4  LD    L  IOA+3       GET BAD CYL COUNT           8B703670
00AA 0  F008            EOR      CK1         CHECK FOR MORE THAN         8B703680
00AB 00 4C1000BE        BSC   L  INT5,-      *3 BAD CYLINDERS            8B703690
00AD 0  3505      W3505 DC       /3505       4 OR MORE BAD CYLS          8B703700
00AE 0  0805            XIO      SNSW        SENSE SWITCH INPUT          8B703710
00AF 00 4C2800BE        BSC   L  INT5,+Z     IF SS0 USE BAD PACK         8B703720
00B1 0  70F6            MDX      INT4                                    8B703730
00B2 0  CEDC      CK    DC       /CEDC                                   8B703740
00B3 0  0018      CK1   DC       24                                      8B703750
                  ******************************************************8B703760
00B4                    ORG      180         CARD 6                     8B703770
                  ******************************************************8B703780
00B4    0000            BSS   E  0                                       8B703790
00B4 0  0030      SNSW  DC       /0030       SENSE S/P SWITCH            8B703800
00B5 0  0760            DC       /0760       *IOCC                       8B703810
                  *                                                      8B703820
                  *     THIS SECTION ASSIGNS THE DDM CYLINDERS           8B703830
                  *                                                      8B703840
00B6 0  0000      USTB  DC       0           HEADER/LDR CYLINDER         8B703850
00B7 0  0000            DC       0           DDM LDR/ORG CYLINDER        8B703860
00B8 0  0000            DC       0           DDM SEL/EXC CYLINDER        8B703870
00B9 0  0000            DC       0           WORK CYLINDER               8B703880
00BA 0  0000            DC       0           WORK CYLINDER               8B703890
00BB 0  0000            DC       0           LOC.DIR - EDIT TABLE        8B703900
00BC 0  0000            DC       0           HISTORY TRACK               8B703910
00BD 0  0000            DC       0           OUTPUT DEVICE               8B703920
                  *                                                      8B703930
00BE 0  62FA      INT5  LDX    2 -6          SET TABLE XR                8B703940
00BF 0  C0F4            LD       SNSW        PICKUP CYL 6 ADDRESS        8B703950
00C0 00 6780044F  INT6  LDX   I3 SID+2       SET ERROR TABLE XR          8B703960
00C2 0  7300            MDX    3 0           SKIP IF ERROR XR = 0        8B703970
00C3 0  7007            MDX      INT9        GO CHECK FOR GOOD CY        8B703980
00C4 00 D60000BC  INT7  STO   L2 USTB+6      SET CYL NMBR IN TBL         8B703990
00C6 0  7201            MDX    2 1           ADD 1 TO TABLE XR           8B704000
00C7 0  7001            MDX      *+1         CONTINUE                    8B704010
00C8 0  700B            MDX      GEN         GO TO NEXT SECTION          8B704020
00C9 0  8009      INT8  A        K8          ADD 8 TO CYLINDER XR        8B704030
00CA 0  70F5            MDX      INT6        CHECK NEXT CYLINDER         8B704040
00CB 00 B700044F  INT9  CMP   L3 SID+2       COMPARE WITH ERR CYL        8B704050
00CD 0  7002            MDX      INT10       OK                          8B704060
00CE 0  7001            MDX      INT10       OK                          8B704070
                                                                         8B704080
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00CF 0  70F9            MDX      INT8        CONTINUE CHECK              88704090
00D0 0  73FF      INT10 MDX    3 -1          DECREMENT ERR XR            88704100
00D1 0  70F9            MDX      INT9        CHECK NEXT ERR ENTRY        88704110
00D2 0  70F1            MDX      INT7        CHECK NEXT CYLINDER         88704120
00D3 0  0008      K8    DC       8           CONSTANT 8                  88704130
                  *                                                      88704140
                  *     THE FOLLOWING SECTIONS WILL INPUT THE            88704150
                  *     DDM AND WRITE IT ON THE DISK.                    88704160
                  *                                                      88704170
00D4 00 44000203  GEN   BSI  L   HM          GO SEEK HOME                88704180
00D6 0  C0DF            LD       USTB        PICKUP 1ST CYLINDER         88704190
00D7 0  1803            SRA      3           REMOVE SECTOR BITS          88704200
                  ******************************************************** 88704210
00D8                    ORG      216         CARD 7                      88704220
                  ******************************************************** 88704230
00D8 00 D400026A        STO  L   DSK         SET IN SEEK COMMAND         88704240
00DA 00 44000216        BSI  L   SEEK        GO SEEK TO DES. CYL.        88704250
00DC 0  6300      GEN1  LDX    3 0           INITIALIZE CARD             88704260
00DD 0  6B4A            STX    3 CDC         *COUNT INDICATOR            88704270
00DE 0  6100            LDX    1 0           SET OUTPUT AREA XR          88704280
00DF 0  7056      GEN3  MDX      RDCD        GO READ A CARD              88704290
00E0 0  C049            LD       LCD         PICK UP LAST CARD SW        88704300
00E1 00 4C2001BF        BSC  L   LAST,Z      BRANCH IF ON                88704310
00E3 0  7068            MDX      PACK        GO PACK BINARY DATA         88704320
00E4 0  C043            LD       CDC         PICK UP CARD COUNT          88704330
00E5 00 4C2000EA        BSC  L   GEN4,Z      BRANCH IF NOT 1ST CD        88704340
00E7 00 74010128        MDX  L   CDC,1       ADD 1 TO CD COUNT           88704350
00E9 0  70F5            MDX      GEN3        IGNORE HEADER CD            88704360
00EA 00 7400C129  GEN4  MDX  L   ADRS,0      SKIP IF NO DATA IN          88704370
00EC 0  7035            MDX      ENDCK       BRANCH TO END CD CK         88704380
00ED 00 4C000270        BSC  L   CKAD        BRANCH TO CHECK ADRS        88704390
00EF 0  D039      GEN9  STO      ADRS        SAVE CARD ADRS              88704400
00F0 0  C03A            LD       SCID        PICK UP SECTION ID          88704410
00F1 00 4C1800FC        BSC  L   GEN6,+-     BRANCH IF SECTION 1         88704420
00F3 0  630B            LDX    3 11          TRANSFER USE TABLE          88704430
00F4 0  62F8            LDX    2 -8          *TO PROGRAM SECTION         88704440
00F5 00 C60000BE  GEN5  LD    L2 USTB+8      *                           88704450
00F7 00 D70003E8        STO   L3 IN          *                           88704460
00F9 0  7301            MDX    3 1           *                           88704470
00FA 0  7201            MDX    2 1           *SKIP WHEN 8 WDS XF         88704480
00FB 0  70F9            MDX      GEN5        *                           88704490
                  ******************************************************** 88704500
00FC                    ORG      252         CARD 8                      88704510
                  ******************************************************** 88704520
00FC 0  1010      GEN6  SLA      16          CLEAR ZEROS SWITCH          88704530
00FD 0  D02E            STO      ZERO        *                           88704540
00FE 00 C40003E8        LD   L   IN          PICK UP CARD ADDRESS        88704550
0100 0  F028            EOR      ADRS        CHECK IF EXPECTED           88704560
0101 00 4C20011F        BSC  L   FILL,Z      BRANCH IF NOT EXPECT        88704570
0103 00 C40003EA        LD   L   IN+2        PICK UP CARD WD CNT         88704580
0105 0  E02A            AND      RSN         SAVE WORD COUNT BITS        88704590
0106 00 D40003EA        STO  L   IN+2        RESTORE TO ORG LOC          88704600
0108 00 678003EA        LDX   I3 IN+2        CARD WORD COUNT XR          88704610
010A 0  6209            LDX    2 9           SET INPUT DATA XR           88704620
010B 00 C60003E8  GEN7  LD    L2 IN          MOVE DATA FROM INPUT        88704630
010D 00 D500044E        STO   L1 OUT         TO OUTPUT AREA              88704640
010F 00 74010129  GEN8  MDX  L   ADRS,1      ADD 1 TO ADDRS INDC         88704650
0111 0  7101            MDX    1 1           ADD 1 TO OUTPUT XR          88704660
0112 0  7201            MDX    2 1           ADD 1 TO INPUT DT XR        88704670
0113 00 7401012F        MDX  L   WDCT,1      ADD 1 TO WORD COUNTR        88704680
0115 0  C019            LD       WDCT        PICK UP WORD COUNT          88704690
0116 0  F016            EOR      K320        CHECK FOR 320 WORDS         88704700
0117 00 441801A5        BSI  L   WRITE,+-    WRITE DISK IF WC 320        88704710
0119 00 7400012C        MDX  L   ZERO,0      SKIP IF ZERO SW OFF         88704720
011B 0  70E0            MDX      GEN6        GO CHECK NEXT ADDRS         88704730
011C 0  73FF            MDX    3 -1          SKIP IF ALL WORDS           88704740
011D 0  70ED            MDX      GEN7        GO MOVE NEXT WORD           88704750
011E 0  70C8            MDX      GEN4-3      GO READ NEXT CARD           88704760
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011F 0  680C      FILL  STX      ZERO        SET ZEROS SWITCH            88704770
                  ******************************************************** 88704780
0120                    ORG      288         CARD 9                      88704790
                  ******************************************************** 88704800
0120 0  1010            SLA      16          CLEAR A REG                 88704810
0121 0  70EB            MDX      GEN7+2      FILL OA WITH ZERO           88704820
0122 00 C40003EA  ENDCK LD   L   IN+2        PICK UP WORD CNT LOC        88704830
0124 0  F009            EOR      K0F00       CHECK FOR END CARD          88704840
0125 00 4C180179        BSC  L   END,+-      BRANCH IF END CARD          88704850
0127 0  7004            MDX      GEN6        CONTINUE                    88704860
0128 0  0000      CDC   DC       0           CARD COUNTER                88704870
0129 0  0000      ADRS  DC       0           ADDRESS INDICATOR           88704880
012A 0  0000      LCD   DC       0           LAST CARD INDICATOR         88704890
012B 0  0000      SCID  DC       0           SECTION ID                  88704900
012C 0  0000      ZERO  DC       0           ZERO FILL INDICATOR         88704910
012D 0  0140      K320  DC       320         CONSTANT                    88704920
012E 0  0F00      K0F00 DC       /0F00       CONSTANT HEX 0F00           88704930
012F 0  0000      WDCT  DC       0           OUTPUT AREA WD CNTR         88704940
0130    0000            BSS  E   0                                       88704950
0130 0  003F      RSN   DC       /003F       SENSE 1442 IOCC             88704960
0131 0  1700            DC       /1700                                   88704970
0132 0  03E8      RD    DC       IN          READ 1442 IOCC              88704980
0133 0  1600            DC       /1600                                   88704990
0134 0  0001      RESN  DC       1           RESET/SENSE IOCC            88705000
0135 0  1703            DC       /1703                                   88705010
                  *                                                      88705020
                  *     THIS ROUTINE READS THE DDM OBJECT CARDS          88705030
                  *                                                      88705040
0136 0  08F9      RDCD  XIO      RSN         SENSE STATUS                88705050
0137 00 4C040146        BSC  L   W3506,E     BRANCH IF NOT READY         88705060
0139 0  08F8            XIO      RD          READ A CARD                 88705070
013A 0  08F5      RDCD1 XIO      RSN         SENSE STATUS                88705080
013B 0  1801            SRA      1           POSITION                    88705090
013C 00 4C04013A        BSC  L   RDCD1,E     SPIN WHILE BUSY             88705100
013E 0  180B            SRA      11          POSITION                    88705110
013F 00 4C04014A        BSC  L   LST,E       BRANCH IF LAST CARD         88705120
0141 0  1801      RDCD2 SRA      1           POSITION                    88705130
0142 00 4C040148        BSC  L   W3507,E     BRANCH IF ERROR             88705140
                  ******************************************************** 88705150
0144                    ORG      324         CARD 10                     88705160
                  ******************************************************** 88705170
0144 0  08EF            XIO      RESN        RESET DSW                   88705180
0145 0  709A            MDX      GEN3+1      EXIT                        88705190
0146 0  3506      W3506 DC       /3506       1442 NOT READY              88705200
0147 0  70EE            MDX      RDCD        TRY AGAIN                   88705210
0148 0  3507      W3507 DC       /3507       DSW INDICATES ERROR         88705220
0149 0  70EC            MDX      RDCD        TRY AGAIN                   88705230
014A 0  68DF      LST   STX      LCD         SET LAST CARD SWITCH        88705240
014B 0  70F5            MDX      RDCD2       CONTINUE                    88705250
                  *                                                      88705260
                  *     THIS ROUTINE PACKS BINARY 12-4 DATA              88705270
                  *                                                      88705280
014C 0  6924      PACK  STX    1 PACK4+1     SAVE INDEX 1                88705290
014D 0  61B8            LDX    1 -72         SET UP WORD INDEX           88705300
014E 0  6300            LDX    3 0           SET UP STORE INDEX          88705310
014F 0  62FD      PACK1 LDX    2 -3          SET UP SHIFT INDEX          88705320
0150 00 C6000177  PACK2 LD    L2 SHIFT+3     PICK UP SHIFT INSTRN        88705330
0152 0  D006            STO      PACK3       SET IN ROUTINE              88705340
0153 00 C5000431        LD    L1 IN+73       PICK UP 2ND HALF WD         88705350
0155 0  18D0            RTE      16          SET IN Q REG.               88705360
0156 00 C5000430        LD    L1 IN+72       PICK UP 1ST HALF WD         88705370
0158 0  1804            SRA      4           POSITION                    88705380
0159 0  1000      PACK3 SLA      0           PACK A AND Q                88705390
015A 00 D70003E8        STO   L3 IN          STORE CONVERTED WD          88705400
015C 0  7301            MDX    3 1           MODIFY STORE INDEX          88705410
015D 0  7101            MDX    1 1           MODIFY WORD INDEX           88705420
015E 0  7201            MDX    2 1           MODIFY SHIFT INDEX          88705430
015F 0  70F0            MDX      PACK2       GO CONVERT NXT WORD         88705440
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0160 0  7101          MDX   1 1         MODIFY FOR NXT GROUP          8B705450
0161 0  70ED          MDX     PACK1     GO CONVERT NXT GROUP          8B705460
                      *                                               8B705470
                      *     THIS ROUTINE PERFORMS THE CHECKSUM        8B705480
                      *                                               8B705490
0162 0  62CA          LDX   2 -54       SET DATA INDEX                8B705500
0163 0  C0C4          LD      CDC       GET CARD COUNT                8B705510
0164 00 8600041E  SUM A     L2 IN+54    SUM DATA WORD                 8B705520
0166 0  4802          BSC     C         SKIP ON CARRY                 8B705530
0167 0  80CC          A       RESN      ADD 1                         8B705540
                      ********************************************* 8B705550
0168                  ORG     360       CARD 11                       8B705560
                      ********************************************* 8B705570
0168 0  7201          MDX   2 1         SKIP WHEN DONE                8B705580
0169 0  70FA          MDX     SUM       CONTINUE                      8B705590
016A 0  80C9          A       RESN      ADD 1                         8B705600
016B 00 4C180170      BSC   L PACK4,+-  BRANCH IF CHECKSUM OK         8B705610
016D 0  3508      W3508 DC      /3508   CHECKSUM ERROR                8B705620
016E 00 4C00000F      BSC   L GEN3      GO REREAD CARD                8B705630
0170 00 65000000  PACK4 LDX   L1 0      RESTORE INDEX 1               8B705640
0172 00 4C0000E4      BSC   L GEN3+5    RETURN TO MAIN LINE           8B705650
0174 0  1084      SHIFT SLT     4       SHIFT 4                       8B705660
0175 0  1088          SLT     8         SHIFT 8                       8B705670
0176 0  108C          SLT     12        SHIFT 12                      8B705680
                      *                                               8B705690
                      *     THIS SECTION SERVICES THE END CARD        8B705700
                      *                                               8B705710
0177 0  FFF0      KFFF0 DC      /FFF0   CONSTANT                      8B705720
0178 0  0003      K3    DC      3       CONSTANT 3                    8B705730
0179 0  7100      END   MDX   1 0       SKIP IF NO DATA TO WRITE      8B705740
017A 0  402A          BSI     WRITE     GO WRITE DISK                 8B705750
017B 0  1010          SLA     16        CLEAR ACC                     8B705760
017C 0  D0AC          STO     ADRS      CLEAR LOC ADRS                8B705770
017D 00 74000128      MDX   L SCID,0    SKIP IF SECTION 1             8B705780
017F 0  7003          MDX     END1      SKIP IF ALL H-TESTS           8B705790
0180 00 74FF01A4      MDX   L TEST,-1   SKIP IF NOT ALL LOADED        8B705800
0182 0  700A          MDX     END2      CONTINUE INPUT                8B705810
0183 0  C0A7      END1 LD       SCID    PICKUP SECTION ID             8B705820
0184 0  F0F3           EOR      K3      CHECK FOR SECT 3              8B705830
0185 00 4C18018F       BSC   L LAST,+-   BRANCH IF 4TH SECT           8B705840
0187 00 74010128       MDX   L SCID,1    ADD 1 TO SECT IND           8B705850
0189 0  C0A1           LD      SCID      PICKUP SECT IND             8B705860
018A 0  1861           SRA     1         CHECK FOR SECTION 1         8B705870
018B 0  4820           BSC     Z         SKIP IF SECTION 1           8B705880
                      ********************************************* 8B705890
018C                  ORG     396       CARD 12                       8B705900
                      ********************************************* 8B705910
018C 0  7002          MDX     END3      BRANCH IF NOT SEC 1           8B705920
018D 00 4C0000DC  END2 BSC    L GEN1    GO INPUT NXT SECTION          8B705930
018F 00 740101A1  END3 MDX    L REF,1   INCR TABLE REF                8B705940
0191 00 678001A1       LDX    I3 REF    SET XR = REF.                 8B705950
0193 00 C70000B6       LD     L3 USTB   PICK UP NEXT CYL              8B705960
0195 00 97000085       S      I3 USTB-1 SUB PREVIOUS CYL              8B705970
0197 0  1803           SRA      3       REMOVE SECTOR BITS            8B705980
0198 00 D400026A       STO    L DSK     SET SEEK COUNT                8B705990
019A 0  407B           BSI      SEEK    SEEK TO NEXT CYLINDR          8B706000
019C 00 C4000269       LD     L DWRT+1  ZERO WRITE IOCC               8B706010
019D 0  E0D9           AND      KFFF0   *SECTOR COUNT                 8B706020
019E 00 D4000269       STO    L DWRT+1  *                             8B706030
01A0 0  70EC           MDX      END2    EXIT                          8B706040
                      *                                               8B706050
01A1 0  0000      REF  DC       0       USE TABLE REFERENCE           8B706060
01A2 0  0007      K7   DC       7       CONSTANT                      8B706070
01A3 0  0141      K321 DC       321     WRT/RD CONSTANT               8B706080
01A4 0  0007      TEST DC       7       NUMBER OF HEADER TESTS        8B706090
                      *                                               8B706100
                      *     THIS ROUTINE SETUPS TO WRITE A DISK       8B706110
                      *     RECORD.                                   8B706120
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                      *                                               8B706130
01A5 0  0000      WRITE DC      0       ENTRY POINT                   8B706140
01A6 0  6101          LDX   1 1         SET UP FOR 1 WORD             8B706150
01A7 00 6D30044C      STX   L1 IOA      * DISK READ                   8B706160
01A9 00 C4000269      LD    L DWRT+1    SETUP THE DISK READ           8B706170
01AB 0  1883          SRT       3       *IOCC TO READ THE             8B706180
01AC 00 C4000267      LD    L DRD+1     *SECTOR ID OF THE             8B706190
01AE 0  1803          SRA       3       *SECTOR TO BE WRITN           8B706200
01AF 0  1083          SLT       3       *                             8B706210
                      ********************************************* 8B706220
0180                  ORG     432       CARD 13                       8B706230
                      ********************************************* 8B706240
0180 00 D4000267      STO   L DRD+1     *                             8B706250
0182 0  4072          BSI      READ     GO READ DISK SID              8B706260
0183 0  C0EF          LD       K321     SET UP WORD COUNT             8B706270
0184 00 D400044C      STO   L IOA       *FOR WRITE TABLE              8B706280
0186 00 4400023F      BSI   L WRIT      GO WRITE THE DISK             8B706290
0188 00 74010269      MDX   L DWRT+1,1  ADD 1 TO SECTOR CNT           8B706300
018A 0  6100          LDX     1 0       SET OUTPUT AREA XR            8B706310
018B 0C 6D00012F      STX   L1 WDCT     CLEAR OUTPUT WC               8B706320
018D 03 4C8001A5      BSC   I WRITE     EXIT SUBROUTINE               8B706330
                      *                                               8B706340
                      *     THE FOLLOWING ROUTINES ARE PERFORMED ON   8B706350
                      *     COMPLETION OF WRITING DIMAL ON DISK.      8B706360
                      *                                               8B706370
018F 0  1010      LAST  SLA       16      CLEAR ACC                     8B706380
01C0 00 D400012A        STO   L LCD       CLEAR LAST CARD SW            8B706390
01C2 00 C4000128        LD    L SCID      PICKUP SECT IND               8B706400
01C4 0  F0B3            EOR     K3        CHECK FOR 4TH SECT            8B706410
01C5 00 4C180291        BSC   L CKPT,+-   BRANCH IF 4TH SECTOR          8B706420
01C7 0  3509      W3509 DC      /3509     DIMAL NOT ALL LOADED          8B706430
01C8 00 4C0000DC        BSC   L GEN1      CONTINUE INPUT                8B706440
01CA 0  4038      LAST1 BSI       HM      SEEK TO HOME                  8B706450
                      *                                               8B706460
                      *     THIS ROUTINE WRITES THE MAINTENANCE       8B706470
                      *     PACK ID (ABCD) ON THE HISTORY TRACK.      8B706480
                      *                                               8B706490
01CB 00 C40000BC        LD    L USTB+6    PICKUP SECTOR ADDRS           8B706500
01CD 0  1a03            SRA       3       REMOVE SECTOR BITS            8B706510
01CE 00 D400026A        STO   L DSK       SET IN SEEK IOCC              8B706520
01D0 0  4045            BSI       SEEK    GO SEEK TO HIST TRAK          8B706530
01D1 00 C4000267        LD    L DRD+1     SET READ IOCC FOR             8B706540
01D3 0  F043            AND       KFFF0   *SECTOR 0                     8B706550
                      ********************************************* 8B706560
01D4                  ORG     468       CARD 14                       8B706570
                      ********************************************* 8B706580
01D4 00 D4000267      STO   L DRD+1     *                             8B706590
01D6 0  6303          LDX     3 3       SET WORD COUNT TO 3           8B706600
01D7 00 6F00044C      STX   L3 IOA                                    8B706610
01D9 00 C4000269      LD    L DWRT+1    SET DISK WRITE IOCC           8B706620
01DB 0  E09B          AND       KFFF0   *FOR SECTOR 0                 8B706630
01DC 00 D4000269      STO   L DWRT+1    *                             8B706640
01DE 0  4046          BSI       READ    READ HIST TRK SEC  0          8B706650
01DF 00 6700ABCD      LDX   L3 /ABCD    SET MAINT. PACK ID            8B706660
01E1 00 6F00044E      STX   L3 OUT      *IN OUTPUT AREA               8B706670
01E3 00 C40000B6      LD    L USTB+5    GET LAST USED CYL             8B706680
01E5 00 D400044F      STO   L OUT+1     SET IN OUTPUT AREA            8B706690
01E7 00 4400023F      BSI   L WRIT      WRITE ID ON HIST TRK          8B706700
                      *                                               8B706710
                      *     THIS ROUTINE WILL INPUT THE LOADER        8B706720
                      *     WHICH IN TURN INPUTS THE DDM LOADER       8B706730
                      *     ORGANIZER PROGRAM                         8B706740
                      *                                               8B706750
01E9 0  4019      LD    BSI       HM      SEEK TO HOME                  8B706760
01EA 00 C40000B6        LD    L USTB      PICKUP LOADER CYL AD          8B706770
01EC 0  1803            SRA       3       REMOVE SECTOR BITS            8B706780
01ED 0  D07C            STO       DSK     SET IN SEEK COMMAND           8B706790
01EE 0  4027            BSI       SEEK    SEEK TO LOADER CYL            8B706800
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01EF 00 67000DAA        LDX  L3 /0DAA       SET XR = INPUT ADDRS        8B706810
01F1 0  6874            STX   3 DRD         SET ADRS IN READ CMD        8B706820
01F2 0  C080            LD      K321        PICKUP RD WORD COUNT        8B706830
01F3 0  D300            STO   3 0           SET IN LOC HEX 0DAA         8B706840
01F4 0  C072            LD      DRD+1       PICKUP READ COMMAND         8B706850
01F5 0  E8AC            OR      K7          SET SECTOR BITS = 7         8B706860
01F6 0  D070            STO     DRD+1       RESTORE READ COMMAND        8B706870
01F7 0  4020            BSI     READ        GO INPUT LOADER             8B706880
                        ********************************************      8B706890
01F8                    ORG     504         CARD 15                     8B706900
                        ********************************************      8B706910
01F8 0  1010            SLA     16          SETUP INIT LDR CALL         8B706920
01F9 00 D400000C        STO  L  /C          SET IN LOC HEX C            8B706930
01FB 0  C005            LD      EDWD+1      PICKUP DRIVE A.C.           8B706940
01FC 00 D400000D        STO  L  /D          SET IN LOC HEX D            8B706950
01FE 00 4C000DAD        BSC  L  /0DAD       BRANCH TO LOADER            8B706960
0200 0  0000    EDWD    DC      0           CE HISTORY TRACK            8B706970
0201 0  0000            DC      0           DRIVE AREA CODE             8B706980
0202 0  0000            DC      0           OUTPUT DEVICE               8B706990
                        *                                               8B707000
                        *       THIS ROUTINE SEEKS THE 2310 TO ITS      8B707010
                        *       HOME POSITION                           8B707020
                        *                                               8B707030
0203 0  0000    HM      DC      0           ENTRY POINT                 8B707040
0204 0  6304            LDX   3 4           SET TRY INDEX               8B707050
0205 0  0868    HM1     XIO     DSNSR       SENSE/RESET STATUS          8B707060
0206 0  D00E            STO     SKST        SAVE STATUS                 8B707070
0207 0  1004            SLA     4           POSITION HOME BIT           8B707080
0208 00 4CA80203        BSC  I  HM,+Z       EXIT IF DISK HOME           8B707090
020A 0  73FF            MDX   3 -1          SKIP IF 3RD TRY             8B707100
020B 0  7003            MDX     HM2         GO ISSUE SEEK CMND          8B707110
020C 0  C008            LD      SKST        RETRIEVE LAST DSW           8B707120
020D 0  350A    W350A   DC      /350A       SEEK HOME ERROR             8B707130
020E 0  70F5            MDX     HM+1        TRY AGAIN                   8B707140
020F 0  0854    HM2     XIO     HOME        SEEK TO HOME                8B707150
0210 0  085B            XIO     DSNS        SENSE DISK STATUS           8B707160
0211 0  1001            SLA     1           POSITION OP CP BIT          8B707170
0212 00 4C100210        BSC  L  HM2+1,-     BRANCH IF NOT DONE          8B707180
0214 0  70F0            MDX     HM1         GO CHECK HOME BIT           8B707190
                        *                                               8B707200
0215 0  0000    SKST    DC      0           SEEK DSW SAVE LOC           8B707210
                        *                                               8B707220
                        *       THIS ROUTINE SEEKS 2310 TO DESIRED CYL  8B707230
                        *                                               8B707240
0216 0  0000    SEEK    DC      0           ENTRY POINT                 8B707250
0217 0  0854            XIO     DSNS        SENSE DISK STATUS           8B707260
0218 0  1002            SLA     2           POSITION DSW                8B707270
0219 00 4C10021D        BSC  L  SEEK1,-     BRANCH ON READY             8B707280
021B 0  350B    W350B   DC      /350B       DISK NOT READY              8B707290
                        ********************************************      8B707300
021C                    ORG     540         CARD 16                     8B707310
                        ********************************************      8B707320
021C 0  70FA            MDX     SEEK+1      TRY AGAIN                   8B707330
021D 0  084C    SEEK1   XIO     DSK         SEEK DISK                   8B707340
021E 0  084D            XIO     DSNS        SENSE STATUS                8B707350
021F 0  1001            SLA     1           POSITION DSW                8B707360
0220 00 4C10021E        BSC  L  SEEK1+1,-   BRANCH TILL DONE            8B707370
0222 0  084B            XIO     DSNSR       RESET DSW                   8B707380
0223 00 4C800216        BSC  I  SEEK        EXIT                        8B707390
                        *                                               8B707400
                        *       THIS ROUTINE READS THE DISK             8B707410
                        *                                               8B707420
0225 0  0000    READ    DC      0           ENTRY POINT                 8B707430
0226 0  6815            STX   3 READ2+1     SAVE INDEX REG 3            8B707440
0227 0  6303            LDX   3 3           SET UP TRY COUNTER          8B707450
0228 0  0843            XIO     DSNS        SENSE DISK STATUS           8B707460
0229 0  1002            SLA     2           POSITION DSW                8B707470
022A 00 4C10022E        BSC  L  READ1,-     BRANCH ON READY             8B707480
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022C 0  350C    W350C   DC      /350C       DISK NOT READY-READ         8B707490
022D 0  70F9            MDX     READ+2      TRY AGAIN                   8B707500
022E 0  0837    READ1   XIO     DRD         READ DISK                   8B707510
022F 0  083C            XIO     DSNS        SENSE STATUS                8B707520
0230 0  1001            SLA     1           POSITION DSW                8B707530
0231 00 4C100225        BSC  L  READ1+1,-   BRANCH TILL NOT BUSY         8B707540
0233 0  083A            XIO     DSNSR       RESET DSW                   8B707550
0234 0  E039            AND     DSNSR       CHECK FOR ERROR             8B707560
0235 00 4C180238        BSC  L  READ2,+-    BRANCH IF NO ERROR          8B707570
0237 0  73FF            MDX   3 -1          SKIP IF 3 TRIES             8B707580
0238 0  70EF            MDX     READ+3      TRY AGAIN                   8B707590
0239 0  350D    W350D   DC      /350D       DISK READ ERROR             8B707600
023A 0  70EC            MDX     READ+2      REPEAT                      8B707610
0238 00 67000000 READ2  LDX  L3 0           RESTORE XR3                 8B707620
023D 00 4C800225        BSC  I  READ        RETURN TO USER              8B707630
                        *                                               8B707640
                        *       THIS ROUTINE WRITES THE DISK AND PER-   8B707650
                        *       FORMS A MODULO 4 CHECK                  8B707660
                        *                                               8B707670
023F 0  0000    WRIT    DC      0           ENTRY POINT                 8B707680
                        ********************************************      8B707690
0240                    ORG     576         CARD 17                     8B707700
                        ********************************************      8B707710
0240 0  0828            XIO     DSNS        SENSE DISK STATUS           8B707720
0241 0  1002            SLA     2           POSITION DSW                8B707730
0242 0  4810            BSC     -           SKIP IF NOT READY           8B707740
0243 0  7002            MDX     WRIT1       OK  CONTINUE                8B707750
0244 0  350E    W350E   DC      /350E       DISK NOT READY-WRITE        8B707760
0245 0  70FA            MDX     WRIT+1      TRY AGAIN                   8B707770
0246 0  6103    WRIT1   LDX   1 3           SET TRY INDEX               8B707780
0247 0  0820            XIO     DWRT        WRITE DISK                  8B707790
0248 0  0823            XIO     DSNS        SENSE STATUS                8B707800
0249 0  1001            SLA     1           POSITION DSW                8B707810
024A 00 4C100248        BSC  L  WRIT1+2,-   BRANCH TILL DONE            8B707820
024C 0  0821            XIO     DSNSR       RESET DSW                   8B707830
024D 0  E020            AND     DSNSR       CHECK FOR ERROR             8B707840
024E 00 4C180254        BSC  L  WRIT2,+-    BRANCH IF NO ERROR          8B707850
0250 0  71FF            MDX   1 -1          SKIP IF 3 TRIES             8B707860
0251 0  70F5            MDX     WRIT1+1     TRY AGAIN                   8B707870
0252 0  350F    W350F   DC      /350F       DISK WRT/MOD 4 ERROR        8B707880
0253 0  70ED            MDX     WRIT+2      REPEAT                      8B707890
0254 0  C014    WRIT2   LD      DWRT+1      SETUP MODULO 4 ICCC         8B707900
0255 0  F016            EOR     DSNS                                    8B707910
0256 0  D012            STO     DWRT+1      SET IN WRITE ICCC           8B707920
0257 0  0810            XIO     DWRT        DO MODULO 4 CHECK           8B707930
0258 0  0813            XIO     DSNS        SENSE STATUS                8B707940
0259 0  1001            SLA     1           POSITION DSW                8B707950
025A 00 4C100258        BSC  L  WRIT2+4,-   SPIN TILL NOT BUSY          8B707960
025C 0  C00C            LD      DWRT+1      RESTORE WRITE ICCC          8B707970
025D 0  F00E            EOR     DSNS                                    8B707980
025E 0  D00A            STO     DWRT+1      SET IN ICCC                 8B707990
025F 0  080E            XIO     DSNSR       RESET DSW                   8B708000
0260 0  E00D            AND     DSNSR       CHECK FOR ERROR             8B708010
0261 00 4C98023F        BSC  I  WRIT,+-     RETURN TO USER IF OK        8B706020
0263 0  70EC            MDX     W350F-2     ERROR - BRANCH              8B708030
                        *                                               8B708040
                        ********************************************      8B708050
0264                    ORG     612         CARD 18                     8B708060
                        ********************************************      8B708070
0264    0000            BSS  E  0                                       8B708080
                        *                                               8B708090
0264 0  00CA    HOME    DC      202         SEEK HOME IOCC              8B708100
0265 0  0404            DC      /0404                                   8B708110
0266 0  044C    DRD     DC      IOA         READ DISK IOCC              8B708120
0267 0  0603            DC      /0603                                   8B708130
0268 0  044C    DWRT    DC      IOA         WRITE DISK IOCC             8B708140
0269 0  0500            DC      /0500                                   8B708150
026A 0  0000    DSK     DC      0           SEEK DISK IOCC              8B708160
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0268 0  0400                DC      /0400
026C 0  0380        DSNS    DC      /0380       SENSE DISK ICCC
026D 0  0700                DC      /0700
026E 0  8740        DSNSR   DC      /8740       SENSE/RESET DSK IOCC
026F 0  0701                DC      /0701
                    *
0270 00 C40003E8    CKAD    LD   L  IN          PICK UP STARTING ADR
0272 0  8009                CMP     K3000       CK ADRS FOR LEGAL
0273 0  7001                MDX     CKAD1       GREATER
0274 0  7005                MDX     CKAD2       ADRS OK-LESS
0275 0  8007        CKAD1   CMP     K70FF       CK ADRS FOR LEGAL
0276 0  7003                MDX     CKAD2       ADRS OK
0277 0  1000                NOP     0
0278 00 4C0000E7            BSC  L  GEN4-3      IGNORE CARD
027A 00 4C0000EF    CKAD2   BSC  L  GEN9        ADRS IS OK-MOVE DATA
027C 0  3000        K3000   DC      /3000       ADRS CK CONSTANTS
027D 0  70FF        K70FF   DC      /70FF       *
                    *
                    *       PROGRAM RESTART OPERATION.
                    *
027E 0  1010        RSTRT   SLA     16          CLEAR PROGRAM CONTRCL
027F 00 D40001A1            STO  L  REF         *SWITCHES
0281 00 D400012B            STO  L  SCID        *
0283 00 D4000129            STO  L  ADRS        *
0285 00 D400012F            STO  L  WDCT        *
0287 0  C0E1                LD      DWRT+1      PICKUP WRITE COMMAND
                    ********************************************
0288                        ORG     648         CARD 19
                    ********************************************
0288 00 E4000177            AND  L  KFFF0       SET SECTOR BITS TO 0
028A 0  B9DE                STO     DWRT+1      REPLACE COMMAND
028B 00 C40001A2            LD   L  K7          GET CONSTANT 7
028D 00 D40001A4            STO  L  TEST        SET IN HEADER TEST SW
028F 00 4C0000D4            BSC  L  GEN         GO INPUT DIMAL
0291 0  0808        CKPT    XIO     DESW        CK FOR PT LOAD FROM CARD
0292 00 F400002C            EOR  L  KFFFF       PT IF SWS = FFFF
0294 00 4C2001CA            BSC  L  LAST1,Z     BRANCH IF NORM CARD LOAD
0296 00 44000203            BSI  L  HM          RETURN ARM TO HOME
0298 0  3510        W3510   DC      /3510       PT DIMAL LOADED
0299 0  70FE                MDX     W3510       END OF PT LOAD TRAP
029A    0000                BSS  E  0
029A 0  0000        DESW    DC      0           SENSE DE SWITCHES ICCC
0298 0  0740                DC      /0740
029C    0000                END     0
```

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8B708170
8B708180
8B708190
8B708200
8B708210
8B708220
8B708230
8B708240
8B708250
8B708260
8B708270
8B708280
8B708290
8B708300
8B708310
8B708320
8B708330
8B708340
8B708350
8B708360
8B708370
8B708380
8B708390
8B708400
8B708410
8B708420
8B708430
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8B708550
8B708560
8B708570
8B708580
8B708590
8870859 8B708603
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CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
ADRS	0129	00EA,00EF,0100,010F,017C,0283
BRN	0018	0015
CDC	0128	00DD,00E4,00E7,0163
CDCT	001E	0009
CK	0082	00A3
CKAD	0270	00ED
CKAD1	0275	0273
CKAD2	027A	0274,0276
CKPT	0291	01C5
CK1	0083	00AA
DESW	029A	0291
DRD	0266	01AC,01B0,01D1,01D4,01F1,01F4,01F6,022E
DSK	026A	0090,00D8,0198,01CE,01ED,021D
DSNS	026C	0210,0217,021E,0228,022F,0240,0248,0255,0258,025D
DSNSR	026E	0205,0222,0233,0234,024C,0252,025F,0260
DSW	001C	0001,0004,0024,002A
DSW1	005C	0031,003B
DWRT	0268	0198,019E,01A9,0188,01D9,01DC,0247,0254,0256,0257, 025C,025E,0287,028A
EDIT	0024	0017,0037,0056,0058
EDIT1	002A	002C,004E
EDIT2	0038	0034,0065
EDIT3	004F	0040
EDSW	005E	0028,003E,0046
EDWD	0200	004A,0089,008C,0093,01FB
END	0179	0125
ENDCK	0122	00EC
END1	0183	017F
END2	018D	0182,01A0
END3	018F	018C
FILL	011F	0101
GEN	00D4	00C8,028F
GEN1	00DC	018D-01C8
GEN3	00DF	00E9,0145,016E,0172
GEN4	00EA	00E5,011E,0278
GEN5	00F5	00FB
GEN6	00FC	00F1,0118,0127
GEN7	010B	011D,0121
GEN8	010F	
GEN9	00EF	027A
HBCV	005F	0038
HBCV1	0062	0085
HBCV2	0069	007D
HBCV3	0073	0077
HBCV4	0078	0071,0074
HBCV5	007A	
HM	0203	009B,00D4,01CA,01E9,0208,020E,0296
HM1	0205	0214
HM2	020F	0208,0212
HOME	0264	0095,0097,020F
IN	03E8	0032,005A,006C,00F7,00FE,0103,0106,0108,0108,0122, 0132,0153,0156,015A,0164,0270
INT	0089	0054
INT1	0093	009A
INT10	00D0	00CD,00CE
INT2	0098	00A7
INT3	009D	
INT4	00A8	00A4,00B1
INT5	00BE	00AB,00AF
INT6	00C0	00CA
INT7	00C4	00D2
INT8	00C9	00CF
INT9	00CB	00C3,00D1
IOA	044C	0000,0013,00A1,00A8,01A7,01B4,01D7,0266,0268
IPL1	0000	0008

DIMAL INITIAL LOADER (CARD)

IPL2	0001	0002,0010
IPL3	000D	0006
KED00	0059	0043
KFFFF	0020	0051,0292
KFFF0	0177	019D,01D3,01D8,0288
K0F00	012E	0124
K0100	001F	000D
K3	0178	0184,01C4
K3000	027C	0272
K320	012D	0116
K321	01A3	01B3,01F2
K7	01A2	01F5,0288
K70FF	027D	0275
K8	0053	30C9
LAST	01BF	00E1,0185
LAST1	01CA	0294
LCD	012A	00E0,014A,01C0
LD	01E9	
LOC	0086	0061,007E,0083
LST	014A	013F
OUT	044E	0039,0041,0048,004F,0081,010D,01E1,01E5
PACK	014C	00E3
PACK1	014F	0161
PACK2	0150	015F
PACK3	0159	0152
PACK4	0170	014C,0168
PREP	0011	000C
RD	0132	0139
RDCD	0136	00DF,0147,0149
RDCD1	013A	013C
RDCD2	0141	0148
RDED	0C5A	0029
RUPAC	001A	00C0,0007
READ	0225	009F,0182,01DE,01F7,022D,0238,023A,023D
READ1	022E	022A,0231
READ2	023B	0226,0235
REF	01A1	018F,0191,027F
RESN	0134	0144,0167,016A
RSN	0130	0105,0136,013A
RSTRT	027E	0018
SAVE	0087	0067,0078,0079
SAVE1	0088	0068,006A,007A
SCID	012B	00F0,017D,0183,0187,0189,01C2,0281
SEEK	0216	009D,00DA,019A,01D0,01EE,021C,0223
SEEK1	021D	0219,0220
SHIFT	0174	0150
SID	044D	0000,00C0,00C8
SKST	0215	0206,020C
SNSW	0084	00AE,008F
SUM	0164	0169
TEST	01A4	0180,028D
USTB	0086	008B,008E,00C4,00D6,00F5,0193,0195,01CB,01E3,01EA
WDCT	012F	0113,0115,018B,0285
WRIT	022F	0186,01E7,0245,0253,0261
WRITE	01A5	0117,017A,018D
WRIT1	0246	0243,024A,0251
WRIT2	0254	024E,025A
W350A	020D	350A
W350B	021B	350B
W350C	022C	350C
W350D	0239	350D
W350E	0244	350E
W350F	0252	350F,0263
W3500	000F	3500,0005
W3501	0036	3501,0033,0045,0053
W3502	0055	3502,0025
W3503	0057	3503,002F
W3504	00A6	3504

DIMAL INITIAL LOADER (CARD)

W3505	00AD	3505
W3506	0146	3506,0137
W3507	0148	3507,0142
W3508	016D	3508
W3509	01C7	3509
W351C	0298	3510,0299
ZERO	012C	00FD,0119,011F

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                            ABS                                                  8B800020
0000                     * CARD 01 ------------------------------------------- 8B800030
                            ORG     0                                           8B800040
                         * ----- LOADER SHOULD BE IN LOCS. 00 - 28 --------    8B800050
                         *-----SEE THAT B IS 30FF.  PRESS START -----------    8B800060
0000 0 30FF                 WAIT    -1       --BEGINNING OF LOADER.             8B800070
0001 0 0C00 000C            XIO  L  B1         READ ONE CARD INTO LOC. 28       8B800080
0003 0 0C00 0010            XIO  L  K0800      RESET DSW                        8B800090
0005 0 0C00 000E      A1    XIO  L  K0003      SENSE DSW FOR 1442               8B800100
0007 0 F400 000E            EOR  L  K0003      CHECK BITS 14&15 ONLY            8B800110
0009 0 4820                 BSC     Z          SKIP BITS 14&15 ONLY             8B800120
000A 0 6016                 LDX     E1         CONTINUE DSW ANALYSIS            8B800130
000B 0 6005                 LDX     A1         CARD IS BEING READ               8B800140
000C 0 0028           B1    DC      /0028      READ CONTROL                     8B800150
000D 0 1601                 DC      /1601         1442, 8/8 FORMAT              8B800160
000E 0 0003           K0003 DC      /0003      SENSE DSW CONTROL                8B800170
000F 0 1700                 DC      /1700      WITHOUT TURN OFF                 8B800180
0010 0 0800           K0800 DC      /0800      SENSE DSW CONTROL                8B800190
0011 0 1703                 DC      /1703      TURN OFF REQUEST                 8B800200
0012 0 F400 0010      D1    EOR  L  K0800      RETURN DSW WORD TO ACC.          8B800210
0014 0 3001                 WAIT    /1       **ERR. SEE ACC. DSW NOT RIGHT      8B800220
0015 0 6001                 LDX     /1         TRY AGAIN                        8B800230
0016 0 0C00 0010      E1    XIO  L  K0800      SENSE AND TURN OFF DSW           8B800240
0018 0 F400 0010            EOR  L  K0800      CHECK FOR BIT 4 ONLY             8B800250
001A 0 4820                 BSC     Z          SKIP OPERATION COMPLETE          8B800260
001B 0 6012                 LDX     D1         DSW ERROR CONDITION              8B800270
001C 0 6023                 LDX     /23                                         8B800280
001D 0 0000                 DC      0          SPACE FILLER                     8B800290
001E 0 0000                 DC      /0000            SPACE FILLER               8B800300
001F 0 0000                 DC      /0000            SPACE FILLER               8B800310
0020 0 0000                 DC      /0000            SPACE FILLER               8B800320
0021 0 0000                 DC      /0000            SPACE FILLER               8B800330
0022 0 0000                 DC      /0000            SPACE FILLER               8B800340
0023 0 6028                 LDX     /28        GO TO PROG. LOADED               8B800350
                         *                                                      8B800360
                         * CARD 02 ------------------------------------------- 8B800370
0024                        ORG     /0028                                       8B800380
0028 0 0C00 0038            XIO  L  K0800      RESET DSW                        8B800390
002A 0 0C00 0034            XIO  L  B2         READ A CARD INTO /0000           8B800400
002C 0 0C00 0036      A2    XIO  L  K0003      SENSE DSW  FOR 1442              8B800410
002E 0 F400 0036            EOR  L  K0003      CHECK BITS 14&15 ONLY            8B800420
0030 0 4820                 BSC     Z          SKIP BITS 14 & 15 ONLY           8B800430
0031 0 603E                 LDX     E2         CONTINUE DSW ANALYSIS            8B800440
0032 0 602C                 LDX     A2         CARD IS BEING READ               8B800450
0033 0 0000                 DC      /0000            SPACE FILLER               8B800460
0034 0 0000           B2    DC      /0000      READ CONTROL  & CONSTANT         8B800470
0035 0 1601                 DC      /1601         1442, 818 FORMAT              8B800480
0036 0 0003           K0003 DC      /0003      SENSE DSW CONTROL                8B800490
0037 0 1700                 DC      /1700      WITHOUT TURN OFF                 8B800500
0038 0 0800           K0800 DC      /0800      SENSE DSW CONTROL                8B800510
0039 0 1703                 DC      /1703      TURN OFF REQUEST                 8B800520
003A 0 0C00 0038      D2    XIO  L  K0800       RESET DSW TO ACC                8B800530
003C 0 3002                 WAIT    /2       **ERR. SEE ACC. DSW NOT RIGHT8B800540
003D 0 6028           R2    LDX     /28        TRY AGAIN                        8B800550
003E 0 0C00 0036      E2    XIO  L  K0003       SENSE DSW                       8B800560
0040 0 F400 0038            EOR  L  K0800       CHECK FOR BIT 4                 8B800570
0042 0 1801                 SRA     1           REMOVE NOT READY BIT            8B800580
0043 0 4820                 BSC     Z          SKIP OPERATION COMPLETE          8B800590
0044 0 603A                 LDX     D2         DSW ERROR CONDITION              8B800600
0045 0 0C00 0038            XIO  L  K0800       SENSE - RESET DSW               8B800610
                         *                     CARD 11 WILL START HERE          8B800620
0047 0 C400 003D      BLD   LD   L  R2         SET PROG. LOADED TO RETURN       8B800630
0049 0 D400 0023            STO  L  /23            TO THIS PROG.                8B800640
004B 0 6000                 LDX     /0000      GO TO PROG. LOADED               8B800650
                         *                                                      8B800660
                         * CARD 03 ------------------------------------------- 8B800670
                         *  TEST FOR XIO OF READ AND SENSE DSW                  8B800680
                         *---*** RUN ONLY ON IPL ***-------------------------- 8B800690
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004C                        ORG     0                                               8B800700
0000 0 6023                 LDX     /23                                             8B800710
0001 0 0C00 0016            XIO  L  B3         READ A CARD                          8B800720
0003 0 0C00 001A            XIO  L  K0800      RESET DSW                            8B800730
0005 0 0C00 0018      A3    XIO  L  K0003      SENSE DSW FOR 1442                   8B800740
0007 0 3003                 WAIT    /0003    --ACC. HAS DSW. SHOULD BE0003          8B800750
                         *                     IF OK PRESS START                    8B800760
0008 0 0C00 001A            XIO  L  K0800      SENSE AND RESET DSW                  8B800770
000A 0 3003                 WAIT    /0003    --ACC. HAS DSW SHOULD BE0800           8B800780
                         *-------------------------------------------------------- 8B800790
000B 0 0C00 0016      LP    XIO  L  B3         LOOP FOR TESTING READ CARD           8B800800
000D 0 0C00 001A            XIO  L  K0800      RESET DSW                            8B800810
000F 0 0C00 0018      A3A   XIO  L  K0003         SHOULD READ AS LONG AS            8B800820
0011 0 F400 0018            EOR  L  K0003         CARDS IN READER                   8B800830
0013 0 4820                 BSC     Z          SKIP BITS 14&15 #BUSY,READY          8B800840
0014 0 601C                 LDX     E3                                              8B800850
0015 0 600F                 LDX     A3A        BUSY AND NOT READY GET DSW           8B800860
0016 0 0028           B3    DC      /0028      RD CARD CONTROL WORDS                8B800870
0017 0 1601                 DC      /1601                                           8B800880
0018 0 0003           K0003 DC      /0003      SENSE DSW CONTROL                    8B800890
0019 0 1700                 DC      /1700      WITHOUT TURN OFF                     8B800900
001A 0 0800           K0800 DC      /0800      SENSE DSW CONTROL                    8B800910
001B 0 1703                 DC      /1703      TURN OFF REQUEST                     8B800920
001C 0 0C00 001A      E3    XIO  L  K0800      SENSE AND TURN OFF DSW               8B800930
001E 0 F400 001A            EOR  L  K0800      CHECK BIT 4 ONLY                     8B800940
0020 0 4820                 BSC     Z          SKIP OPERATION COMPLETE              8B800950
0021 0 3003                 WAIT    /3       **ERR. DSW WRONG. ACC. HAS             8B800960
                         *                     DSW AFTER AN EOR WITH BIT 4          8B800970
0022 0 600B                 LDX     LP         GO READ NEXT CARD                    8B800980
0023 0 6001                 LDX     /1         CHANGED TO LDX 28 BY LOADER          8B800990
                         *                                                          8B801000
                         * CARD 04 ----------------------------------------------- 8B801010
                         * TEST OF LDX FOR LOCATIONS 0 THRU 3F                      8B801020
0024                        ORG     /0000                                           8B801030
0000 0 6002                 LDX     /0002                                           8B801040
0001 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801050
0002 0 601D                 LDX     /001D                                           8B801060
0003 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801070
0004 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801080
0005 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801090
0006 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801100
0007 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801110
0008 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801120
0009 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801130
000A 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801140
000B 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801150
000C 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801160
000D 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801170
000E 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801180
000F 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801190
0010 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801200
0011 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801210
0012 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801220
0013 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801230
0014 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801240
0015 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801250
0016 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801260
0017 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801270
0018 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801280
0019 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801290
001A 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801300
001B 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801310
001C 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801320
001D 0 6023                 LDX     /0023                                           8B801330
001E 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801340
001F 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801350
0020 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801360
0021 0 3004                 WAIT    /4         **ERR. LDX, IPL CARD-4               8B801370
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0022 0 3004              WAIT    /4      **ERR. LDX, IPL CARD-4          8B801380
0023 0 6000              LDX     /0000   --CHANGED TO LDX 28 BY LOADER   8B801390
                     * CARDS 5 6 7 & 8 TEST THE FOLLOWING---------------- 8B801400
                     *1.CRP READS IN 0 & 1 EACH BIT POSITION             8B801410
                     *2.LD 1 PUTS 0 & 1 IN EACH BIT OF ACC.              8B801420
                     *3.BSC Z SKIPS ON ACC#0000 & NOT SKIP ANY 1 BIT.    8B801430
                     * 4 TEST EOR FOR  1,1 & 0,0                         8B801440
                     *                                                   8B801450
                     * CARD 05 ------------------------------------------ 8B801460
0024                       ORG     /0000                                 8B801470
0000 0 C400 0009           LD   L  K0000     SET ACC. TO 0000            8B801480
0002 0 4820                BSC     Z         TEST SKIP ON ZERO           8B801490
0003 0 3005                WAIT    /5      **ERR. BSC Z FAILED OR ACC.   8B801500
                     *                        NOT EQUAL 0000.           8B801510
0004 0 C400 000A     BIT00 LD   L  K8000     SET BIT  0 TO 1, OTHERS 0.  8B801520
0006 0 4820                BSC     Z         SHOULD NOT SKIP             8B801530
0007 0 600B                LDX     BIT01                                 8B801540
0008 0 3005                WAIT    /5      **ERR. BSC Z FAIL OR ACC#0000 8B801550
0009 0 0000          K0000 DC      /0000                                 8B801560
000A 0 8000          K8000 DC      /8000                                 8B801570
000B 0 C400 0010     BIT01 LD   L  K4000     SET BIT  1 TO 1, OTHERS 0.  8B801580
000D 0 4820                BSC     Z         SHOULD NOT SKIP             8B801590
000E 0 6011                LDX     BIT02                                 8B801600
000F 0 3005                WAIT    /5      **ERR. BSC Z FAIL OR ACC#000  8B801610
0010 0 4000          K4000 DC      /4000                                 8B801620
0011 0 C400 0016     BIT02 LD   L  K2000     SET BIT  2 TO 2, OTHERS 0.  8B801630
0013 0 4820                BSC     Z         SHOULD NOT SKIP             8B801640
0014 0 6017                LDX     BIT03                                 8B801650
0015 0 3005                WAIT    /5      **ERR. BSC Z FAIL OR ACC#0000 8B801660
0016 0 2000          K2000 DC      /2000                                 8B801670
0017 0 C400 001C     BIT03 LD   L  K1000     SET BIT  3 TO 1, OTHERS 0.  8B801680
0019 0 4820                BSC     Z         SHOULD NOT SKIP             8B801690
001A 0 601D                LDX     BIT04                                 8B801700
001B 0 3005                WAIT    /5      **ERR. BSC Z FAIL OR ACC#0000 8B801710
001C 0 1000          K1000 DC      /1000                                 8B801720
001D 0 C400 0022     BIT04 LD   L  K0800     SET BIT  4 TO 1, OTHERS 0.  8B801730
001F 0 4820                BSC     Z         SHOULD NOT SKIP             8B801740
0020 0 6023                LDX     /0023                                 8B801750
0021 0 3005                WAIT    /5      **ERR. BSC Z FAIL OR ACC#0000 8B801760
0022 0 0800          K0800 DC      /0800                                 8B801770
0023 0 6000                LDX     /0000   CHANGED TO LDX 28 BY LOADER   8B801780
                     *                                                   8B801790
                     * CARD 06 ------------------------------------------ 8B801800
0024                       ORG     /0000   CARD 6--BSC Z & LD L TEST--   8B801810
0000 0 C400 0005     BIT05 LD   L  K0400     SET BIT  5 TO 1, OTHERS 0.  8B801820
0002 0 4820                BSC     Z         SHOULD NOT SKIP             8B801830
0003 0 6006                LDX     BIT06                                 8B801840
0004 0 3006                WAIT    /6      **ERR. BSC Z FAIL OR ACC#0000 8B801850
0005 0 0400          K0400 DC      /0400                                 8B801860
0006 0 C400 000B     BIT06 LD   L  K0200     SET BIT  6 TO 2, OTHERS 0.  8B801870
0008 0 4820                BSC     Z         SHOULD NOT SKIP             8B801880
0009 0 600C                LDX     BIT07                                 8B801890
000A 0 3006                WAIT    /6      **ERR. BSC Z FAIL OR ACC#0000 8B801900
000B 0 0200          K0200 DC      /0200                                 8B801910
000C 0 C400 0011     BIT07 LD   L  K0100     SET BIT  7 TO 1, OTHERS 0.  8B801920
000E 0 4820                BSC     Z         SHOULD NOT SKIP             8B801930
000F 0 6012                LDX     BIT08                                 8B801940
0010 0 3006                WAIT    /6      **ERR. BSC Z FAIL OR ACC#0000 8B801950
0011 0 0100          K0100 DC      /0100                                 8B801960
0012 0 C400 0017     BIT08 LD   L  K0080     SET BIT  8 TO 1, OTHERS 0.  8B801970
0014 0 4820                BSC     Z         SHOULD NOT SKIP             8B801980
0015 0 6018                LDX     BIT09                                 8B801990
0016 0 3006                WAIT    /6      **ERR. BSC Z FAIL OR ACC#0000 8B802000
0017 0 0080          K0080 DC      /0080                                 8B802010
0018 0 C400 001D     BIT09 LD   L  K0040     SET BIT  9 TO 1, OTHERS 0.  8B802020
001A 0 4820                BSC     Z         SHOULD NOT SKIP             8B802030
001B 0 6023                LDX     /0023                                 8B802040
001C 0 3006                WAIT    /6      **ERR. BSC Z FAIL OR ACC#0000 8B802050
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001D 0 0040          K0040 DC      /0040                                 8B802060
001E 0 0000                DC      /0000           SPACE FILLER          8B802070
001F 0 0000                DC      /0000           SPACE FILLER          8B802080
0020 0 0000                DC      /0000           SPACE FILLER          8B802090
0021 0 0000                DC      /0000           SPACE FILLER          8B802100
0022 0 0000                DC      /0000           SPACE FILLER          8B802110
0023 0 6000                LDX     /0000   CHANGED TO LDX 28 BY LOADER   8B802120
                     *                                                   8B802130
                     * CARD 07 ------------------------------------------ 8B802140
0024                       ORG     /0000   CARD 7--BSC Z & LD 1 TEST--   8B802150
0000 0 C400 0005     BIT10 LD   L  K0020     SET BIT 10 TO 1, OTHERS 0.  8B802160
0002 0 4820                BSC     Z         SHOULD NOT SKIP             8B802170
0003 0 6006                LDX     BIT11                                 8B802180
0004 0 3007                WAIT    /7      **ERR. BSC Z FAIL OR ACC#0000 8B802190
0005 0 0020          K0020 DC      /0020                                 8B802200
0006 0 C400 000B     BIT11 LD   L  K0010     SET BIT 11 TO 1, OTHERS 0.  8B802210
0008 0 4820                BSC     Z         SHOULD NOT SKIP             8B802220
0009 0 600C                LDX     BIT12                                 8B802230
000A 0 3007                WAIT    /7      **ERR. BSC Z FAIL OR ACC#0000 8B802240
000B 0 0010          K0010 DC      /0010                                 8B802250
000C 0 C400 0011     BIT12 LD   L  K0008     SET BIT 12 TO 1, OTHERS 0.  8B802260
000E 0 4820                BSC     Z         SHOULD NOT SKIP             8B802270
000F 0 6012                LDX     BIT13                                 8B802280
0010 0 3007                WAIT    /7      **ERR. BSC Z FAIL OR ACC#0000 8B802290
0011 0 0008          K0008 DC      /0008                                 8B802300
0012 0 C400 0017     BIT13 LD   L  K0004     SET BIT 13 TO 1, OTHERS 0.  8B802310
0014 0 4820                BSC     Z         SHOULD NOT SKIP             8B802320
0015 0 6018                LDX     BIT14                                 8B802330
0016 0 3007                WAIT    /7      **ERR. BSC Z FAIL OR ACC#0000 8B802340
0017 0 0004          K0004 DC      /0004                                 8B802350
0018 0 C400 001D     BIT14 LD   L  K0002     SET BIT 14 TO 1, OTHERS 0.  8B802360
001A 0 4820                BSC     Z         SHOULD NOT SKIP             8B802370
001B 0 6023                LDX     /0023                                 8B802380
001C 0 3007                WAIT    /7      **ERR. BSC Z FAIL OR ACC#0000 8B802390
001D 0 0002          K0002 DC      /0002                                 8B802400
001E 0 0000                DC      /0000           SPACE FILLER          8B802410
001F 0 0000                DC      /0000           SPACE FILLER          8B802420
0020 0 0000                DC      /0000           SPACE FILLER          8B802430
0021 0 0000                DC      /0000           SPACE FILLER          8B802440
0022 0 0000                DC      /0000           SPACE FILLER          8B802450
0023 0 6000                LDX     /0000   CHANGED TO LDX 28 BY LOADER   8B802460
                     *                                                   8B802470
                     * CARD 08 ------------------------------------------ 8B802480
0024                       ORG     /0000   CARD 8 BSC Z & LD BIT 15      8B802490
                     *                    AND EOR 1,1 & 0,0             8B802500
0000 0 C400 0005     BIT15 LD   L  K0001     SET BIT 15 TO 1, OTHERS 0.  8B802510
0002 0 4820                BSC     Z         SHOULD NOT SKIP             8B802520
0003 0 6006                LDX     TEOR                                  8B802530
0004 0 3008                WAIT    /8      **ERR. BSC Z FAIL OR ACC#0000 8B802540
0005 0 0001          K0001 DC      /0001                                 8B802550
0006 0 C400 0012     TEOR  LD   L  KFFFF                                 8B802560
0008 0 F400 0012           EOR  L  KFFFF     TEST D#FFFF & A#FFFF        8B802570
000A 0 4820                BSC     Z         SHOULD SKIP                 8B802580
000B 0 3008                WAIT    /8      **ERR. SEE ACC. SHOULD # 0000 8B802590
000C 0 F400 0011           EOR  L  K0000     TEST 0#0000 & A#0000        8B802600
000E 0 4820                BSC     Z         SHOULD SKIP                 8B802610
000F 0 3008                WAIT    /8      **ERR. SEE ACC. SHOULD # 0000 8B802620
0010 0 6023                LDX     /0023                                 8B802630
0011 0 0000          K0000 DC      /0000                                 8B802640
0012 0 FFFF          KFFFF DC      /FFFF                                 8B802650
0013 0 0000                DC      /0000           SPACE FILLER          8B802660
0014 0 0000                DC      /0000           SPACE FILLER          8B802670
0015 0 0000                DC      /0000           SPACE FILLER          8B802680
0016 0 0000                DC      /0000           SPACE FILLER          8B802690
0017 0 0000                DC      /0000           SPACE FILLER          8B802700
0018 0 0000                DC      /0000           SPACE FILLER          8B802710
0019 0 0000                DC      /0000           SPACE FILLER          8B802720
001A 0 0000                DC      /0000           SPACE FILLER          8B802730
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001B 0 0000        DC     /0000          SPACE FILLER          8B802740
001C 0 0000        DC     /0000          SPACE FILLER          8B802750
001D 0 0000        DC     /0000          SPACE FILLER          8B802760
001E 0 0000        DC     /0000          SPACE FILLER          8B802770
001F 0 0000        DC     /0000          SPACE FILLER          8B802780
0020 0 0000        DC     /0000          SPACE FILLER          8B802790
0021 0 0000        DC     /0000          SPACE FILLER          8B802800
0022 0 0000        DC     /0000          SPACE FILLER          8B802810
0023 0 6000        LDX    /0000    CHANGED TO LDX 28 BY LOADER 8B802820
              *                                                8B802830
              * CARD 09 -------------------------------------- 8B802840
              *        TEST LOAD AND STORE LONG FORM           8B802850
              *        TEST ALL BITS TRANSFER B-D-A-U-A, A-M, A-B 8B802860
              *        EOR L & BSC Z COULD CAUSE FAILURE       8B802870
0024               ORG    /0000                                8B802880
0000 0 C400 000D TST1 LD   L  KON1&1   LOAD A TO 3333          8B802890
0002 0 D400 CCCC KON2 STO  L  /CCCC    STORE 3333 IN CCCC      8B802900
0004 0 C400 CCCC      LD   L  /CCCC    GET   3333 FROM CCCC    8B802910
0006 0 F400 000D      EOR  L  KON1&1   EOR A#3333  TO  D#3333  8B802920
0008 0 4820           BSC     Z        SHOULD SKIP             8B802930
0009 0 3009           WAIT    /9    **ERR. A NOT 0000. GO TO TST1 8B802940
000A 0 C400 0003 TST2 LD   L  KON2&1   LD A TO CCCC            8B802950
000C 0 D400 3333 KON1 STO  L  /3333    STORE CCCC AT 3333      8B802960
000E 0 C400 3333      LD   L  /3333    GET CCCC FROM 3333      8B802970
0010 0 F400 0003      EOR  L  KON2&1   EOR A#CCCC TO D#CCCC    8B802980
0012 0 4820           BSC     Z        SHOULD SKIP             8B802990
0013 0 3009           WAIT    /9    **ERR. A NOT 0000. GO TO TST2 8B803000
0014 0 6023           LDX     /0023                            8B803010
0015 0 0000           DC      /0000          SPACE FILLER      8B803020
0016 0 0000           DC      /0000          SPACE FILLER      8B803030
0017 0 0000           DC      /0000          SPACE FILLER      8B803040
0018 0 0000           DC      /0000          SPACE FILLER      8B803050
0019 0 0000           DC      /0000          SPACE FILLER      8B803060
001A 0 0000           DC      /0000          SPACE FILLER      8B803070
001B 0 0000           DC      /0000          SPACE FILLER      8B803080
001C 0 0000           DC      /0000          SPACE FILLER      8B803090
001D 0 0000           DC      /0000          SPACE FILLER      8B803100
001E 0 0000           DC      /0000          SPACE FILLER      8B803110
001F 0 0000           DC      /0000          SPACE FILLER      8B803120
0020 0 0000           DC      /0000          SPACE FILLER      8B803130
0021 0 0000           DC      /0000          SPACE FILLER      8B803140
0022 0 0000           DC      /0000          SPACE FILLER      8B803150
0023 0 6000           LDX     /0000    CHANGED TO LDX 28 BY LOADER 8B803160
              * CARD A TEST EOR FOR 1,0 0,1------------------- 8B803170
              *        SRA 1 PARTLY TESTED                     8B803180
              *                                                8B803190
              * CARD 0A -------------------------------------- 8B803200
0024                  ORG     /0000                            8B803210
0000 0 C400 001B      LD   L  K8000    PUT BIT 0#1 IN ACC.     8B803220
0002 0 6008           LDX     RETRY-2  GO STORE IT IN TEST     8B803230
0003 0 1801     SHIFT SRA     1        SHIFT TO TEST NEXT BIT  8B803240
0004 0 4820           BSC     Z        SHOULD NOT SKIP         8B803250
0005 0 6008           LDX     RETRY-2                          8B803260
0006 0 300A           WAIT    /A    **ERR. SRA 1 DROPPED BIT   8B803270
              *                        LOC. TEST HAS WORD BEFORE 8B803280
              *                        SRA 1 THAT FAILED.      8B803290
0007 0 600A           LDX     RETRY                            8B803300
0008 0 D400 0018      STO  L  TEST     STORE BIT FOR EOR TEST 0&1 8B803310
000A 0 C400 0019 RETRY LD  L  K0000    CLEAR ACC.              8B803320
000C 0 F400 0018      EOR  L  TEST     EOR ACC#0  D HAS A 1.   8B803330
000E 0 4820           BSC     Z        SHOULD NOT SKIP         8B803340
000F 0 6012           LDX     CONTA                            8B803350
0010 0 300A           WAIT    /A    **ERR. A IS 0000  GO TO RETRY 8B803360
0011 0 600A           LDX     RETRY                            8B803370
0012 0 F400 0019 CONTA EOR L  K0000    EOR ACC. HAS A 1 & D#0  8B803380
0014 0 4820           BSC     Z        SHOULD NOT SKIP         8B803390
0015 0 601C           LDX     CONTB                            8B803400
0016 0 300A           WAIT    /A    **ERR. A IS 0000  GO TO RETRY 8B803410
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0017 0 600A           LDX     RETRY                            8B803420
0018 0 0000     TEST  DC      /0000    BIT WITH 1 IS BEING TESTED 8B803430
0019 0 0000     K0000 DC      /0000                            8B803440
001A 0 0001     K0001 DC      /0001                            8B803450
001B 0 8000     K8000 DC      /8000                            8B803460
001C 0 F400 001A CONTB EOR L  K0001    TEST FOR BIT 15#1       8B803470
001E 0 4820           BSC     Z        SKIP BIT 15#1,ALL POS. DONE 8B803480
001F 0 6003           LDX     SHIFT    GO TO DO NEXT BIT POSITION. 8B803490
0020 0 6023           LDX     /0023                            8B803500
0021 0 0000           DC      /0000          SPACE FILLER      8B803510
0022 0 0000           DC      /0000          SPACE FILLER      8B803520
0023 0 6000           LDX     /0000    CHANGED TO LDX 28 BY LOADER 8B803530
              *                                                8B803540
              * CARD 0B -------------------------------------- 8B803550
0024                  ORG     0                                8B803560
              *  TEST ADD BY POSITIVE AND NEGATIVE ONES        8B803570
0000 0 C400 001C      LD   L  H0000    CLEAR TO ZERO           8B803580
0002 0 D400 001B      STO  L  SUMMI        SUM OF MINUS ONES   8B803590
0004 0 D400 001A      STO  L  SUMPL        SUM OF PLUS ONES    8B803600
0006 0 C400 001B ADD  LD   L  SUMMI    GET SUM OF MINUS ONES   8B803610
0008 0 8400 001E      A    L  HFFFF    ADD MINUS ONE           8B803620
000A 0 D400 001B      STO  L  SUMMI    STORE SUM OF MINUS ONES 8B803630
000C 0 C400 001A      LD   L  SUMPL    GET SUM OF PLUS ONES    8B803640
000E 0 8400 001D      A    L  H0001    ADD PLUS ONE            8B803650
0010 0 D400 001A      STO  L  SUMPL    STORE SUM OF PLUS ONES  8B803660
0012 0 4820           BSC     Z        SKIP WHEN SUM IS 0000   8B803670
0013 0 6015           LDX     TOTAL                            8B803680
0014 0 6023           LDX     /0023    BRANCH WHEN ONE PASS DONE. 8B803690
0015 0 8400 001B TOTAL A   L  SUMMI    ADD SUMMI TO SUMMPL     8B803700
0017 0 4820           BSC     Z        SHOULD SKIP             8B803710
0018 0 300B           WAIT    /B    **ERR. TOTAL SHOULD BE ZERO 8B803720
0019 0 6006           LDX     ADD                              8B803730
001A 0 0000     SUMPL DC      /0000    LOC. FOR SUM OF PLUS ONES 8B803740
001B 0 0000     SUMMI DC      /0000    LOC. FOR SUM OF MINUS ONES 8B803750
001C 0 0000     H0000 DC      0                                8B803760
001D 0 0001     H0001 DC      1                                8B803770
001E 0 FFFF     HFFFF DC      -1                               8B803780
001F 0 0000           DC      0        SPACE FILLER            8B803790
0020 0 0000           DC      0        SPACE FILLER            8B803800
0021 0 0000           DC      0        SPACE FILLER            8B803810
0022 0 0000           DC      0        SPACE FILLER            8B803820
0023 0 6000           LDX     /0000    CHANGED TO LDX 28 BY LOADER 8B803830
              *                                                8B803840
              * CARD 10 -------------------------------------- 8B803850
0024                  ORG     0                                8B803860
0000 0 0C00 000C      XIO  L  B10      READ ONE CARD INTO BLD  8B803870
0002 0 0C00 0038      XIO  L  K0800    RESET DSW               8B803880
0004 0 0C00 0036 A10  XIO  L  K0003    SENSE DSW FOR 1442      8B803890
0006 0 F400 0036      EOR  L  K0003    CHECK BITS 14&15 ONLY   8B803900
0008 0 4820           BSC     Z        SKIP BITS 14 & 15 ONLY  8B803910
0009 0 6012           LDX     E10      CONTINUE DSW ANALYSIS   8B803920
000A 0 6004           LDX     A10      CARD IS BEING READ      8B803930
000B 0 6028      C10  LDX     /0028                            8B803940
000C 0 0047      B10  DC      BLD      READ CONTROL            8B803950
000D 0 1601           DC      /1601       1442 8/8 FORMAT      8B803960
000E 0 F400 0038 D10  EOR  L  K0800    RETURN DSW WORD TO ACC. 8B803970
0010 0 3010           WAIT    /10   **ERR. SEE ACC. DSW NOT RIGHT 8B803980
0011 0 6000           LDX     /0       TRY AGAIN               8B803990
0012 0 0C00 0038 E10  XIO  L  K0800    SENSE AND TURN OFF DSW  8B804000
0014 0 F400 0038      EOR  L  K0800    CHECK FOR BIT 4 ONLY    8B804010
0016 0 4820           BSC     Z        SKIP OPERATION COMPLETE 8B804020
0017 0 600E           LDX     D10      DSW ERROR CONDITION     8B804030
0018 0 6028           LDX     /0028    READ A CARD & FORM ITS SUM 8B804040
              *                                                8B804050
              * CARD 11 -------------------------------------- 8B804060
0019                  ORG     BLD                              8B804070
              * THIS CARD IS READ OVER THE LOADER IN 46 THRU 68 8B804080
              * USES ITS INSTRUCTIONS FROM 0028 THRU 0045      8B804090
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0047 0 C400 0024          LD   L  /0024     GET WORD COUNT                 8B804100
0049 0 4820               BSC     Z         SKIP IF WORD COUNT ZERO        8B804110
004A 0 604F               LDX     SUM1                                     8B804120
004B 0 3011               WAIT    /11       **ERR. WORD COUNT IS ZERO      8B804130
004C 0 6028               LDX     /0028     START LOADS NEXT CARD          8B804140
004D 0 0000          K0000 DC      /0000                                    8B804150
004E 0 0001          K0001 DC      /0001                                    8B804160
004F 0 C400 004D     SUM1  LD   L  K0000     RESTORE MODIFIED ADDRESS       8B804170
0051 0 D400 0058              STO  L  CKLOD&1                              8B804180
0053 0 D400 0027              STO  L  /0027     CLEAR SUM LOC.               8B804190
0055 0 C400 0027              LD   L  /0027                                  8B804200
0057 0 8400 FFFF     CKLOD A       L  /FFFF     FORM SUM OF LOCS. 0 THRU 26  8B804210
0059 0 D400 0027              STO  L  /0027                                  8B804220
005B 0 C400 0058              LD   L  CKLOD&1   MODIFY ADDRESS               8B804230
005D 0 8400 004E              A    L  K0001                                  8B804240
005F 0 D400 0058              STO  L  CKLOD&1                              8B804250
0061 0 F400 0056              EOR  L  CKLOD-1   CHECK THAT ALL WORDS DONE     8B804260
0063 0 4820                   BSC     Z         SKIP.ALL LOCS. ADDED         8B804270
0064 0 6055                   LDX     CKLOD-2                                8B804280
0065 0 C400 0027              LD   L  /0027     LOAD SUM 0 THRU 26           8B804290
0067 0 4820                   BSC     Z         SKIP READ IN OK.             8B804300
0068 0 3011                   WAIT    /11       **ERR. IN CHECK SU. START    8B804310
                     *                          LOADS NEXT CARD.             8B804320
0069 0 6000          MOVE  LDX     /0000     RUN CARD LOADED. CARD 13       8B804330
                     *                          BEGINS LOADING HERE.         8B804340
                     *                                                       8B804350
                     * CARD 12 ---------------------------------------------- 8B804360
006A                       ORG     0                                        8B804370
                     * CHECK SUM CHECK CARD. THIS IS USED TO DETECT          8B804380
                     * ERRORS THAT OCCUR AS THE RESULT OF WRONG CHECK        8B804390
                     * SUM FOR CARD IMAGE IN LOCS. 0000 THRU 0026           8B804400
                     * CHECK SUM ROUTINES ADD LOC. 0 THRU 26 IN SEQUENCE    8B804410
                     *   .  CORRECT ACC. AFTER ADD IS SHOWN BELOW IN        8B804420
                     * SEQUENCE THE PROG. FOLLOWS.                          8B804430
                     *     CORE CONTENTS. CORRECT SUM.     CORE LOC.        8B804440
0000 0 6028                DC      /6028     6028          0000             8B804450
0001 0 9FD7                DC      /9FD7     FFFF          0001             8B804460
0002 0 FFFF                DC      /FFFF     FFFE          0002             8B804470
0003 0 0001                DC      /0001     FFFF          0003             8B804480
0004 0 0001                DC      /0001     0000          0004             8B804490
0005 0 0001                DC      /0001     0001          0005             8B804500
0006 0 0001                DC      /0001     0002          0006             8B804510
0007 0 0002                DC      /0002     0004          0007             8B804520
0008 0 0004                DC      /0004     0008          0008             8B804530
0009 0 0008                DC      /0008     0010          0009             8B804540
000A 0 0010                DC      /0010     0020          000A             8B804550
000B 0 0020                DC      /0020     0040          000B             8B804560
000C 0 0040                DC      /0040     0080          000C             8B804570
000D 0 0080                DC      /0080     0100          000D             8B804580
000E 0 0100                DC      /0100     0200          000E             8B804590
000F 0 0200                DC      /0200     0400          000F             8B804600
0010 0 0400                DC      /0400     0800          0010             8B804610
0011 0 0800                DC      /0800     1000          0011             8B804620
0012 0 1000                DC      /1000     2000          0012             8B804630
0013 0 2000                DC      /2000     4000          0013             8B804640
0014 0 4000                DC      /4000     8000          0014             8B804650
0015 0 8000                DC      /8000     0000          0015             8B804660
0016 0 5555                DC      /5555     5555          0016             8B804670
0017 0 5555                DC      /5555     AAAA          0017             8B804680
0018 0 AAAA                DC      /AAAA     5554          0018             8B804690
0019 0 0001                DC      /0001     5555          0019             8B804700
001A 0 AAAA                DC      /AAAA     FFFF          001A             8B804710
001B 0 AAAA                DC      /AAAA     AAA9          001B             8B804720
001C 0 5557                DC      /5557     FFFF          001C             8B804730
001D 0 5555                DC      /5555     5554          001D             8B804740
001E 0 AAAB                DC      /AAAB     FFFF          001E             8B804750
001F 0 1000                DC      /1000     0FFF          001F             8B804760
0020 0 F100                DC      /F100     00FF          0020             8B804770
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0021 0 FF10                DC      /FF10     000F          0021             8B804780
0022 0 FFF1                DC      /FFF1     0000          0022             8B804790
0023 0 3210                DC      /3210     3210          0023             8B804800
                     *                /0024     3234          0024             8B804810
                     *                /0100     3334          0025             8B804820
                     *                /CCCC     0000          0026             8B804830
                     *                                                        8B804840
                     * CARD 13 ---------------------------------------------- 8B804850
0024                       ORG     0                                        8B804860
0000 0 0C00 000C           XIO  L  B13       READ TWO CARDS                 8B804870
0002 0 0C00 0038           XIO  L  K0800     RESET DSW                      8B804880
0004 0 0C00 0036     A13   XIO  L  K0003     SENSE DSW FOR 1442             8B804890
0006 0 F400 0036           EOR  L  K0003                                    8B804900
0008 0 4820                BSC     Z         SKIP BITS 14 & 15 ONLY         8B804910
0009 0 6013                LDX     E13       CONTINUE DSW ANALYSIS          8B804920
000A 0 6004                LDX     A13       CARD IS BEING READ             8B804930
000B 0 008A          CON2  DC      CD15                                     8B804940
000C 0 0069          B13   DC      MOVE      READ CONTROL PROG. MODIFYS.    8B804950
000D 0 1601                DC      /1601        1442 8/8 FORMAT             8B804960
000E 0 6028          C13   LDX     /0028                                    8B804970
000F 0 F400 0038     D13   EOR  L  K0800     RETURN DSW WORD TO ACC.        8B804980
0011 0 3013                WAIT    /13       **ERR. SEE ACC. DSW NOT RIGHT  8B804990
0012 0 6000                LDX     /0        TRY AGAIN                      8B805000
0013 0 0C00 0038     E13   XIO  L  K0800     SENSE AND RESET DSW            8B805010
0015 0 F400 0038           EOR  L  K0800     CHECK FOR BIT 4 ONLY           8B805020
0017 0 4820                BSC     Z         SKIP OPERATION COMPLETE        8B805030
0018 0 600F                LDX     D13       DSW ERROR CONDITION            8B805040
0019 0 C400 000E     MOD1  LD   L  C13       SET THIS PROG. TO READ 2ND     8B805050
001B 0 D400 0019           STO  L  MOD1         CARD & BR. TO READ IN       8B805060
001D 0 C400 000B           LD   L  CON2         FIRST PROG. CARD            8B805070
001F 0 D400 000C           STO  L  B13                                      8B805080
0021 0 6000                LDX     /0                                       8B805090
                     *                                                       8B805100
                     * CARD 14 ---------------------------------------------- 8B805110
0022                       ORG     MOVE                                     8B805120
0069 0 C400 0025     MOVE  LD   L  /0025     GET ADDRESS FOR FIRST WORD     8B805130
006B 0 4820                BSC     Z         SKIP ADDRESS EQU. 0000         8B805140
006C 0 6070                LDX     STORE                                    8B805150
006D 0 6000                LDX     /0000                                    8B805160
006E 0 6400 0092     HOP   LDX  L  CKMOV                                    8B805170
0070 0 D400 0079     STORE STO  L  PUT&1     SET FIRST WORD ADDRESS         8B805180
0072 0 C400 004D           LD   L  K0000                                    8B805190
0074 0 D400 0077           STO  L  GET&1     SET TO GET FIRST WORD AT 0     8B805200
0076 0 C400 FFFF     GET   LD   L  /FFFF     GET PROG. WORD                 8B805210
0078 0 D400 FFFF     PUT   STO  L  /FFFF     PUT PROG. WORD                 8B805220
007A 0 C400 0079           LD   L  PUT&1     MODIFY PUT                     8B805230
007C 0 8400 004E           A    L  K0001                                    8B805240
007E 0 D400 0079           STO  L  PUT&1                                    8B805250
0080 0 C400 0077           LD   L  GET&1     MODIFY GET                     8B805260
0082 0 8400 004E           A    L  K0001                                    8B805270
0084 0 D400 0077           STO  L  GET&1                                    8B805280
0086 0 F400 0024           EOR  L  /0024     CHECK FOR ALL WORDS MOVED      8B805290
0088 0 4820                BSC     Z         SKIP ALL WORDS MOVED           8B805300
0089 0 6076                LDX     GET                                      8B805310
008A 0 3014          CD15  WAIT    /14       **ERR. CARD 15 SHOULD READ     8B805320
                     *                          OVER THIS WAIT.              8B805330
                     *                                                       8B805340
                     * CARD 15 ---------------------------------------------- 8B805350
008B                       ORG     CD15                                     8B805360
008A 0 C400 0025     SUM2  LD   L  /0025     GET ADDRESS OF FIRST WORD      8B805370
008C 0 D400 0093           STO  L  CKMOV&1      PUT IT INTO ROUTINE         8B805380
008E 0 C400 004D           LD   L  K0000     GET ADDRESS OF FIRST WORD      8B805390
0090 0 D400 0095           STO  L  COMP&1       IN IMAGE & STORE IT.        8B805400
0092 0 C400 FFFF     CKMOV LD   L  /FFFF     GET WORD MOVED                 8B805410
0094 0 F400 FFFF     COMP  EOR  L  /FFFF     COMPARE WITH CARD IMAGE        8B805420
0096 0 4820                BSC     Z         SKIP WORD STORED OK            8B805430
0097 0 3015                WAIT    /15       **ERR. WORD NOT STORED OK.     8B805440
0098 0 C400 0093           LD   L  CKMOV&1   MODIFY FOR NEXT WORD            8B805450
```

```
009A 0 8400 004E          A    L  K0001                                  8B805460
009C 0 D400 0093          STO  L  CKMOV&1                               8B805470
009E 0 C400 0095          LD   L  COMP&1    MODIFY FOR NEXT COMPARE     8B805480
00A0 0 8400 004E          A    L  K0001                                  8B805490
00A2 0 D400 0095          STO  L  COMP&1                                 8B805500
00A4 0 F400 0024          EOR  L  /0024     CHECK IF ALL DONE           8B805510
00A6 0 4820               BSC     Z         SKIP ALL WORDS CHECKED      8B805520
00A7 0 606E               LDX     HOP       GO TO CKMOV                 8B805530
00A8 0 6028               LDX     /0028     GET NEXT CARD               8B805540
                     *                                                  8B805550
                     * CARD 16 ----------------------------------------- 8B805560
                     * THIS CARD IS USED TO CHECK THAT THE MOVE          8B805570
                     * PORTION OF THE LOADER WORKS.   THE CARD SHOULD    8B805580
                     * BE PLACED IN LOCS. 0100 THRU 0123 .               8B805590
                     * EACH LOCATION SHOULD CONTAIN ITS OWN ADDRESS.     8B805600
                     * THE LISTING SHOWS THE SUM DURING CHECK SUM ADD.   8B805610
                     *                  -SUM OF LOCS.-                   8B805620
00A9                      ORG     /0100                                 8B805630
0100 0 0100               DC      /0100       0100                      8B805640
0101 0 0101               DC      /0101       0201                      8B805650
0102 0 0102               DC      /0102       0303                      8B805660
0103 0 0103               DC      /0103       0406                      8B805670
0104 0 0104               DC      /0104       050A                      8B805680
0105 0 0105               DC      /0105       060F                      8B805690
0106 0 0106               DC      /0106       0715                      8B805700
0107 0 0107               DC      /0107       081C                      8B805710
0108 0 0108               DC      /0108       0824                      8B805720
0109 0 0109               DC      /0109       092D                      8B805730
010A 0 010A               DC      /010A       0937                      8B805740
010B 0 010B               DC      /010B       0942                      8B805750
010C 0 010C               DC      /010C       0A4E                      8B805760
010D 0 010D               DC      /010D       0B5B                      8B805770
010E 0 010E               DC      /010E       0C69                      8B805780
010F 0 010F               DC      /010F       0D78                      8B805790
0110 0 0110               DC      /0110       0E88                      8B805800
0111 0 0111               DC      /0111       0F99                      8B805810
0112 0 0112               DC      /0112       10AB                      8B805820
0113 0 0113               DC      /0113       11BE                      8B805830
0114 0 0114               DC      /0114       12D2                      8B805840
0115 0 0115               DC      /0115       13E7                      8B805850
0116 0 0116               DC      /0116       14FD                      8B805860
0117 0 0117               DC      /0117       1614                      8B805870
0118 0 0118               DC      /0118       1726                      8B805880
0119 0 0119               DC      /0119       183F                      8B805890
011A 0 011A               DC      /011A       1959                      8B805900
011B 0 011B               DC      /011B       1A76                      8B805910
011C 0 011C               DC      /011C       1B92                      8B805920
011D 0 011D               DC      /011D       1CAF                      8B805930
011E 0 011E               DC      /011E       1DCD                      8B805940
011F 0 011F               DC      /011F       1EEC                      8B805950
0120 0 0120               DC      /0120       200C                      8B805960
0121 0 0121               DC      /0121       212D                      8B805970
0122 0 0122               DC      /0122       224F                      8B805980
0123 0 0123               DC      /0123       2472                      8B805990
0124   0000               END     0                                     8B806000
 NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY
```


C R O S S R E F E R E N C E

NAME	VALUE	REFERENCES
ADD	0006	0019
A1	0005	000B
A10	0004	000A
A13	0004	000A
A2	002C	0032
A3	0005	
A3A	000F	0015
BIT00	0004	
BIT01	000B	0007
BIT02	0011	000E
BIT03	0017	0014
BIT04	001D	001A
BIT05	0000	
BIT06	0006	0003
BIT07	000C	0009
BIT08	0012	000F
BIT09	0018	0015
BIT10	0000	
BIT11	0006	0003
BIT12	000C	0009
BIT13	0012	000F
BIT14	0018	0015
BIT15	0000	
BLD	0047	000C
B1	000C	0001
B10	000C	0000
B13	000C	0000,001F
B2	0034	002A
B3	0016	0001,000B
CD15	008A	000B
CKLOD	0057	0051,005B,005F,0061,0064
CKMOV	0092	006E,008C,0098,009C
COMP	0094	0090,009E,00A2
CONTA	0012	000F
CONTB	001C	0015
CON2	000B	001D
C10	000B	
C13	000E	0019
D1	0012	001B
D10	000E	0017
D13	000F	0018
D2	003A	0044
E1	0016	000A
E10	0012	0009
E13	0013	0009
E2	003E	0031
E3	001C	0014
GET	0076	0074,0080,0084,0089
HFFFF	001E	0008
HOP	006E	00A7
H0000	001C	0000
H0001	001D	000E
KFFFF	0012	0006,0008
KON1	000C	0000,0006
KON2	0002	000A,0010
K0000	0009	0000
K0001	0005	0000
K0003	000E	0005,0007
K0800	0010	0003,0012,0016,0018
K0000	0011	000C
K0000	0019	000A,0012
K0001	001A	001C
K0003	0018	0005,000F,0011
K0000	004D	004F,0072,008E
K0001	004E	005D,007C,0082,009A,00A0
K0002	001D	0018

```
K0003   0036  0004,0004,0006,0006,002C,002E,003E
K0004   0017  0012
K0008   0011  000C
K0010   000B  0006
K0020   0005  0000
K0040   001D  0018
K0080   0017  0012
K0100   0011  000C
K0200   000B  0006
K0400   0005  0000
K0800   001A  0003,0008,000D,001C,001E
K0800   0022  001D
K0800   0038  0002,0002,000E,000F,0012,0013,0014,0015,0028,003A,0040,0045
K1000   001C  0017
K2000   0016  0011
K4000   0010  000B
K8000   001B  0000
K8000   000A  0004
LP      000B  0022
MOD1    0019  001B
MOVE    0069  000C
MOVE    0069
PUT     0078  0070,007A,007E
RETRY   000A  0002,0005,0007,0011,0017
R2      003D  0047
SHIFT   0003  001F
STORE   0070  006C
SUMMI   001B  0002,0006,000A,0015
SUMPL   001A  0004,000C,0010
SUM1    004F  004A
SUM2    008A
TEOR    0006  0003
TEST    0018  0008,000C
TOTAL   0015  0013
TST1    0000
TST2    000A
END OF ASSEMBLY
```

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TABLE OF CONTENTS

1. PURPOSE

THE 1800 BASIC DIAGNOSTIC LOADER IS A SELF-CHECKING PROGRAM USED TO LOAD THE PROCESSOR DIAGNOSTIC PROGRAMS AND TO VERIFY THEIR CORRECT LOADING. THE LOADER CONTAINS ONE-CARD PROGRAMS USED AS AIDS IN DIAGNOSIS OF BASIC FAILURES IN THE PROCESSOR.

2. PREREQUISITES

2.1 PROGRAM PREREQUISITES

AN 1800 PROCESSOR DIAGNOSTIC PROGRAM PUNCHED IN 8-8 FORMAT IS REQUIRED.

2.2 EQUIPMENT PREREQUISITES

A. 1800 DATA ACQUISITION AND CONTROL SYSTEM PROCESSOR.

B. 1442 SERIAL CARD READ/PUNCH.

3. OPERATING PROCEDURE

3.1 PROGRAM LOADING

A. AT 1442 SERIAL CARD READ/PUNCH,

1. DEPRESS NPRO PUSHBUTTON TO RUN OUT ANY CARDS REMAINING IN FEED.
2. PLACE BASIC LOADER DECK FOLLOWED BY MAIN PROGRAM AND ONE BLANK IN READER HOPPER.
3. DEPRESS START PUSHBUTTON. READY INDICATOR SHOULD LIGHT.

B. USING CONTROLS OF 1800 PROCESSOR CLEAR STORAGE TO 70FF AS FOLLOWS,

1. SET MODE SWITCH TO RUN.
2. SET CHECK STOP SWITCH TO OFF.
3. SET WRITE STOR PROT BITS SWITCH TO YES.
4. SET DATA ENTRY SWITCHES TO 70FF.
5. HOLD DOWN THE CLEAR STOR PUSHBUTTON AND DEPRESS START PUSHBUTTON TO CLEAR STORAGE.
6. DEPRESS STOP BUTTON TO TERMINATE CLEAR OPERATION.

C. AT 1800 PROCESSOR SET SWITCHES AS FOLLOWS,

1. SET CHECK STOP SWITCH TO ON.
2. SET WRITE STOR PROT BITS TO NO.

D. DEPRESS RESET PUSHBUTTON.

E. DEPRESS PROG LOAD PUSHBUTTON. CHECK THAT ONLY ONE CARD FEEDS. POSSIBLE FAILURES FOLLOW.

FAILURE	FAILURE / ACTION
AFTER DEPRESSION OF PROG LOAD BUTTON NO CARD FEEDS, OR MORE THAN ONE CARD FEEDS.	REPEAT LOAD PROCEDURE WITH MODE SWITCH IN SI POSITION. IF FAILURE REOCCURS A PROG LOAD FAILURE IS POSSIBLE. FEEDING MORE THAN ONE CARD COULD ALSO BE CAUSED BY FAILURE TO PERFORM WAIT INSTRUCTION (B REG=30FF) THAT SHOULD HAVE READ INTO LOCATION 0000.

F. CHECK THAT PROGRAM HAS STOPPED WITH I REG=0001, AND B REG=30FF. POSSIBLE FAILURES FOLLOW.

FAILURE	FAILURE / ACTION
PROGRAM DOES NOT STOP WITH I REG=0001 AND B REG=30FF.	IF LOCATION 0000 CONTAINS A WAIT INSTRUCTION (30FF), EITHER THE WAIT OPERATION IS FAILING, OR PROG LOAD IS NOT SETTING THE I REGISTER TO 0000.
PROGRAM STOPS WITH I REG=0001, BUT B REG READING IS NOT 30FF.	THE FIRST WORD OF CARD 01 OF LOADER IS 30FF. FIND OUT WHY THE WORD WAS NOT READ INTO LOCATION 0000.

G. DEPRESS START PUSHBUTTON. CHECK THAT ALL LOADER AND PROGRAM CARDS FEED, AND THAT PROGRAM BEGINS EXECUTION. POSSIBLE FAILURES FOLLOW

FAILURE	FAILURE / ACTION
PROGRAM STOPS AT WAIT WITH I REG=0001, AND B REG=30FF.	CARD 02 PROGRAM READS A CARD WHICH REMOVES WAIT FROM LOCATION 0000. AN XIO FAILURE IS INDICATED. RUN CARD 03 TO HELP ISOLATE FAILURE. (PAR. 3.2.1).
PROGRAM STOPS AT ERROR WAIT. (B REG READING BETWEEN 3001 AND 3015).	REFER TO TABLE 1- ERROR WAIT DIAGNOSTIC GUIDE.
PROGRAM STOPS AT OTHER THAN A WAIT INSTRUCTION	DETERMINE WHICH PROGRAM CAUSED FAILURE. IF MORE THAN TWO CARDS HAVE FED, FAILURE IS MOST LIKELY DUE TO LAST CARD READ.
PROGRAM RUNNING BUT CARDS DO NOT FEED.	STOP PROGRAM. DETERMINE WHICH PROGRAM IS ACTIVE. THE ACTIVE PROGRAM SHOULD BE STORED BETWEEN LOCATIONS 0000 AND 0025, OR BETWEEN LOCATIONS 0028 AND 004F. DISPLAY ACTIVE PROGRAM UNTIL A WAIT IS FOUND. DETERMINE THE PROGRAM NUMBER BY REFERENCING THE LAST 10 BITS OF THE WAIT INSTRUCTION. REFER TO LISTING FOR THE PROGRAM AND RUN IN SI MODE TO DETERMINE FAILURE. EXECUTION OF ONE-CARD PROGRAMS MAY ALSO BE HELPFUL. (PAR. 3.2.1 AND 3.2.2).

TABLE 1
ERROR WAIT DIAGNOSTIC GUIDE

WAIT B REGISTER	WAIT I REGISTER	FAILURE / RECOMMENDED ACTION
3001		CHECK A REGISTER. IT CONTAINS THE 1442 DSW. IF THE DSW IS OTHER THAN 0003, OR 0800, THE DSW IS IN ERROR. DEPRESS PROG LOAD BUTTON TO LOAD CARD 03 ONE-CARD PROGRAM. (CARD 03 IS AN XIO TEST PROGRAM.) SEE CARD 03 TEST PROCEDURE (PARAGRAPH 3.2.1).
3002		SAME FAILURE AS 3001. PRESS PROG LOAD BUTTON TO LOAD CARD 03 TO HELP ISOLATE FAILURE. (REFER PARAGRAPH 3.2.1).

WAIT B REGISTER	WAIT I REGISTER	FAILURE / RECOMMENDED ACTION
3003		THIS WAIT WILL NOT NORMALLY OCCUR WHILE LOADING A MAIN PROGRAM AS CARD 03 IS BYPASSED. REFER TO CARD 03 PROGRAM TEST PROCEDURE (PARAGRAPH 3.2.1).
3004		FAILURE OF LDX INSTRUCTION. REFER TO PROGRAM LISTING. RUN CARD 04 SEPARATELY. IF WAIT REOCCURS A SCOPING LOOP MAY BE SET UP BY REPLACING ERROR WAIT BY AN LDX /0000 INSTRUCTION (6000).
3005 3006 3007 3008	0005	READ IN FAILURE FROM CARD READER, OR BIT TRANSFER INTO A REG FAILURE, OR BSC Z INSTRUCTION FAILURE. REFER TO LISTING. SET I REG TO ADDRESS OF LD INSTRUCTION JUST BEFORE WAIT INSTRUCTION AND STEP THROUGH PROGRAM IN SI MODE TO LOCATE FAILING INSTRUCTION.
3008	000C	EOR OF ALL ONES AGAINST ALL ONES DID NOT RESULT IN A REG EQUAL 0000. REDEVELOP ERROR BY STARTING PROGRAM AT LOCATION 0000. STEP THROUGH IN SI MODE.
3008	0010	EOR OF ALL ZEROES AGAINST ALL ZEROES DID NOT RESULT IN A REG EQUAL 0000. REDEVELOP ERROR BY STARTING AT LOCATION 0000 IN SI MODE.
3009		LOAD LONG FAILURE, STORE LONG FAILURE, OR POSSIBLE EOR FAILURE. REFER TO LISTING. RUN IN SI MODE CHECKING THAT AFTER A LOAD INSTRUCTION A REG IS CORRECT, AND THAT AFTER A STORE INSTRUCTION THE A, B, AND M REGISTERS ARE CORRECT. DATA PATH TEST MAY ALSO HELP (SEE PARAGRAPH 3.5).
300A	0007	SRA 1 DROPPED THE 1 DURING THE SHIFT. FOLLOWING THIS WAIT, PROGRAM RUNS AGAIN THROUGH SAME CONDITIONS THAT CAUSED THE ERROR. STEP THROUGH IN SI MODE TO LOCATE FAILURE.
300A	0011	EOR OF A 1 IN STORAGE AGAINST A 0 IN A REG RESULTED IN A 0 IN A REG. RUN IN SI MODE TO LOCATE ERROR.

WAIT		FAILURE / RECOMMENDED ACTION
B REGISTER	I REGISTER	
300A	0017	EOR OF A 0 IN STORAGE AGAINST A 1 IN A REG RESULTED IN A 0 IN A REG. RUN IN SI MODE TO LOCATE ERROR.
3008		ADD FAILURE. SUM OF SUMPL AND SUMMI NOT EQUAL 0000. ERROR SUM IS IN A REG. DISPLAY SUMPL AND SUMMI, AND DETERMINE IF THEIR SUM SHOULD BE 0000. IF THEIR SUM SHOULD BE 0000, DIAGNOSE THE PROBLEM. IF THEIR SUM SHOULD NOT BE 0000, EITHER SUMPL OR SUMMI IS IN ERROR. RUN MANUAL ENTRY ADD TEST (PARAGRAPH 3.4).
3010		ERROR DSW DETECTED. CHECK A REG. FAILURE COULD BE IN THE 1442 READER, OR IN ITS ATTACHMENT CIRCUITRY, OR COULD BE CAUSED BY INTERMITTENT PROCESSOR FAILURES. RUN CARD 03 ONE-CARD PROGRAM.
3011	0048	WORD COUNT OF CARD JUST READ IN WAS FOUND TO BE 0000. WORD COUNT IS READ INTO LOCATION 0024. CHECK CARD JUST READ. IT SHOULD HAVE INFORMATION PUNCHED IN COLUMN 73. IF CORRECTLY PUNCHED, THE CARD CAN BE RE-LOADED BY DEPRESSING THE START BUTTON ON THE PROCESSOR CONSOLE. A READ-IN FAILURE IS POSSIBLE.
3011	0068	SUM OF LOCATION 0000 THROUGH 0026 IS NOT 0000. A REG CONTAINS THE DEVELOPED SUM. COMPARE THE CARD READ WITH ITS IMAGE IN LOCATION 0000 THROUGH 0027. IT MAY HAVE READ IN INCORRECTLY. THE SUM ROUTINE MAY BE RUN BY STARTING AT LOCATION SUM1 OF CARD 11. REFER TO LISTING. IF ERROR OCCURED ON CARD 12, REFER TO ITS LISTING. CARD 12 IS USED TO CHECK THE SUM ROUTINE.
3013		CARD 13 PROGRAM HAS DETECTED AN ERROR DSW. THE ERROR DSW IS IN THE A REG. ERROR COULD BE IN THE 1442 READER, OR IN THE DSW CIRCUITRY, OR COULD BE CAUSED BY AN INTERMITTENT FAILURE IN THE PROCESSOR. IF THE SOURCE OF ERROR IS NOT EVIDENT, RUN ONE-CARD PROGRAMS (CARDS 04 THROUGH 0B).
3014		THIS WAIT IS IN A LOCATION THAT SHOULD NOT BE EXECUTED UNTIL CARD 15 IS READ. CARD 15 HAS ITS FIRST WORD STORED IN THAT LOCATION BY CARD 13. THE MOST LIKELY CAUSE OF THIS ERROR IS CARDS OUT OF SEQUENCE. THE SEQUENCE NUMBER IS PUNCHED IN COLUMNS 79 AND 80 IN HOLLERITH CODED HEXADECIMAL.

WAIT		FAILURE / RECOMMENDED ACTION
B REGISTER	I REGISTER	
3015		ERROR IN STORING THE PROGRAM FROM THE CARD IMAGE AREA INTO ITS PROPER PLACE IN STORAGE. AFTER THE NUMBER OF WORDS SPECIFIED BY THE WORD COUNT HAS BEEN STORED, EACH STORED WORD IS COMPARED WITH ITS CORRESPONDING IMAGE WORD TO CHECK FOR CORRECT TRANSFER. THE FAILING ADDRESS CAN BE FOUND BY REFERRING TO LISTING FOR CARD 15. (SWITCH TO DISPLAY MODE AND LOOK AT THE ADDRESS POSITION OF THE NEXT INSTRUCTION). IF THE ERROR OCCURRED WHILE LOADING CARD 16, REFER TO ITS LISTING. CARD 16 IS LOADED IN LOCATION 0100 AND ABOVE, AND IS DESIGNED TO AID IN DIAGNOSING FAILURES IN THE ' MOVE SECTION OF THE LOADER.

3.2 ONE-CARD PROGRAMS TEST PROCEDURE

1800 BASIC DIAGNOSTIC LOADER CARDS 03 THROUGH 0B ARE THE ONE-CARD PROGRAMS. EXCEPT FOR CARD 03 WHICH IS BYPASSED, ONE-CARD PROGRAMS ARE EXECUTED BY THE LOADER IN THE NORMAL PROCESS OF BUILDING UP THE LOADER. EACH ONE-CARD PROGRAM CAN BE RUN INDIVIDUALLY BY LOADING INTO CORE STORAGE UNDER PROGRAM LOAD MODE.

PROVIDED NO ERRORS OCCUR, EACH ONE-CARD PROGRAM RUNS CONTINUOUSLY UNTIL STOPPED BY DEPRESSION OF STOP PUSH-BUTTON ON OPERATORS CONSOLE.

ERRORS ENCOUNTERED DURING EXECUTION ARE SIGNALED BY PROGRAM STOPPING AT A UNIQUE ERROR WAIT WITH THE LAST 10 BITS OF B REGISTER CONTAINING THE PROGRAM NUMBER. FOR EXAMPLE, THE B REGISTER WILL HAVE A READING OF 3008 IF CARD 08 PROGRAM STOPS AT AN ERROR WAIT. THE I REGISTER READING IS USED TO REFERENCE AN ERROR WAIT WHEN THERE IS MORE THAN ONE ERROR WAIT IN A PROGRAM.

3.2.1 CARD 03 PROGRAM TEST PROCEDURE

A. EXECUTE ONE-CARD PROGRAMS 04 THROUGH 0B TO BECOME REASONABLY CERTAIN PROCESSOR IS OPERATING CORRECTLY. (PAR. 3.2.2).

B. ON 1442 SERIAL CARD READ/PUNCH,

1. DEPRESS NPRO PUSHBUTTON TO CLEAR FEED.
2. PLACE CARD 03 FOLLOWED BY SUBSTANTIAL DECK OF BLANK CARDS IN HOPPER.
3. DEPRESS START PUSHBUTTON. READY INDICATOR SHOULD LIGHT.

C. ON 1800 PROCESSOR OPERATOR'S CONSOLE.

1. SET CHECK STOP SWITCH TO ON.

2. DEPRESS RESET PUSHBUTTON.

3. DEPRESS PROG LOAD PUSHBUTTON. CARD 04 SHOULD FEED, LOAD, AND BEGIN EXECUTION.

D. PROGRAM SHOULD CAUSE ONE CARD TO FEED. CHECK THAT CARD HAS FED.

E. CHECK THAT PROGRAM HAS STOPPED AT WAIT WITH I REGISTER READING OF 0008, B REGISTER READING OF 3003, AND A REGISTER READING OF 0003.

IF PROGRAM DOES NOT STOP AT ABOVE MENTIONED WAIT, CARD 03 MAY NOT HAVE LOADED CORRECTLY. REFER TO PROGRAM LISTING AND DISPLAY EACH LOCATION.

IF A REGISTER IS NOT 0003 (CARD READER BUSY AND NOT READY) A DSW FAILURE IS INDICATED. REFER TO LISTING. SET UP APPLICABLE SCOPE LOOP TO AID IN DIAGNOSIS.

IF ALL REGISTERS MENTIONED ARE CORRECT DEPRESS START PUSHBUTTON.

F. CHECK THAT PROGRAM HAS STOPPED AT WAIT WITH I REGISTER READING OF 0008, B REGISTER READING OF 3003, AND A REGISTER READING OF 0800.

IF A REGISTER READING IS NOT 0800 (OP COMPLETE) AN ERROR DSW IS INDICATED. SET UP APPLICABLE SCOPE LOOP. UTILIZE AVAILABLE DIAGNOSTIC AIDS TO LOCATE THE PROBLEM. IF REGISTERS READ CORRECTLY AND IT IS DESIRED TO REPEAT STEPS D THROUGH F, DEPRESS RESET AND START PUSHBUTTONS IN SUCCESSION. IF NOT, PROCEED TO STEP G.

G. DEPRESS START PUSHBUTTON.

H. PROGRAM SHOULD FEED CARDS CONTINUOUSLY AND SHOULD NOT STOP UNLESS AN ERROR WAIT OCCURS WITH I REGISTER READING OF 0022, B REGISTER READING OF 3003. THIS WAIT STOP INDICATES THAT AN ERROR DSW HAS BEEN DETECTED. THE DSW IS DISPLAYED BY THE A REGISTER. REFER TO LISTING. DETERMINE THE DSW BITS THAT ARE IN ERROR. THERE ARE ONLY TWO LEGAL DSW READINGS, 0003 AND 0800. ANY OTHER DSW READINGS ARE CONSIDERED TO BE IN ERROR BY THE PROGRAM. SET UP APPLICABLE SCOPE LOOP.

SCOPING LOOPS MAY BE SET UP IN CARD 03 PROGRAM TO FACILITATE SCOPING OF XIO FUNCTIONS.

SCOPE LOOP SETUP

```
**********************************************************
* TO READ CARDS CONTINUOUSLY, INSERT LDX /0001  6001 , *
* AT LOCATION 0003.                                     *
*                                                       *
* TO READ CARD, SENSE AND RESET DSW, INSERT LDX /0001   *
*  6001 , AT LOCATION 0005.                             *
*                                                       *
* TO SENSE DSW CONTINUOUSLY WITHOUT CARD READING,       *
* INSERT LDX /0003  6003 , AT LOCATION 0005.            *
**********************************************************
```


3.2.2 CARD 04 - 08 PROGRAMS TEST PROCEDURE

THE FOLLOWING TEST PROCEDURE DESCRIPTION APPLIES TO ANY ONE-CARD PROGRAM FROM 04 TO 08.

A. ON 1442 SERIAL CARD READ/PUNCH,

1. DEPRESS NPRO PUSHBUTTON TO CLEAR FEED.

2. PLACE ONE-CARD PROGRAM FOLLOWED BY TWO BLANK CARDS IN HOPPER.

3. DEPRESS START PUSHBUTTON. READY INDICATOR SHOULD LIGHT.

B. ON 1800 PROCESSOR OPERATOR'S CONSOLE,

1. DEPRESS RESET PUSHBUTTON.

2. DEPRESS PROG LOAD PUSHBUTTON. CARD

SHOULD FEED, LOAD, AND BEGIN EXECUTION.

THE PROGRAM WILL RUN CONTINUOUSLY UNLESS AN ERROR OCCURS, IN WHICH CASE PROGRAM STOPS AT ERROR WAIT. REFER TO PROGRAM LISTING AND TO TABLE 1 - ERROR WAIT DIAGNOSTIC GUIDE.

3.3 MANUAL ENTRY ADD TEST

THIS TEST HELPS LOCATE AN ADD FAILURE THAT CANNOT BE LOCATED WHEN RUNNING CARD 08 OF ONE-CARD PROGRAMS IN SI MODE BECAUSE OF THE DYNAMIC NATURE OF THE PROBLEM. IF THE CONTENTS OF SUMPL AND SUMMI DO NOT ADD TO 0000, THERE HAS BEEN A FAILURE IN ADDING 0001 TO SUMPL OR A FAILURE IN ADDING FFFF TO SUMMI. TO DETERMINE WHICH OF THE TWO SUMS IS IN ERROR, IT MUST BE ASSUMED THAT ONE OF THEM IS CORRECT IN ORDER TO ARRIVE AT THE VALUE OF THE OTHER PRIOR TO THE FAILURE. IN OTHER WORDS, TO DETERMINE VALUE OF SUMPL PRIOR TO FAILURE, IT MUST BE ASSUMED THAT PRESENT VALUE OF SUMMI IS CORRECT AND VICE VERSA.

EXECUTE ADD TEST PROGRAM AS FOLLOWS.

A. OBTAIN VALUE OF SUMPL PRIOR TO FAILURE BY DETERMINING TWO'S COMPLEMENT OF (SUMMI - FFFF).

B. OBTAIN VALUE OF SUMMI PRIOR TO FAILURE BY DETERMINING TWO'S COMPLEMENT OF (SUMPL - 0001).

C. LOAD FOLLOWING PROGRAM BY MEANS OF CONSOLE ENTRY SWITCHES.

NOTE

ALL NUMBERS SHOWN BELOW ARE IN HEXADECIMAL NOTATION.

LOCATION	CONTENTS	MNEMONIC	COMMENTS
0000	VALUE OF SUMPL PRIOR TO ERROR		WILL BE IN ACCUMULATOR WHEN ADD OCCURS.
0001	0001		WILL BE ADDED TO ACCUMULATOR DURING ADD.
0002	CORRECT SUM OF ADDITION		USED TO CHECK ADD OPERATION.
0003	C0FC	LD	LOAD ACCUMULATOR FROM LOCATION 0000.
0004	80FC	A	ADD CONTENTS OF LOCATION 0001 TO ACCUMULATOR.
0005	F0FC	EOR	EOR ACCUMULATOR WITH CORRECT ANSWER.
0006	4820	BSC Z	SKIP ON ZERO TO LOCATION 0008.
0007	3000	WAIT	WAIT. AN ERROR HAS OCCURED.
0008	6003	LDX	BRANCH TO LOCATION 0003.

D. LOAD I REGISTER WITH 0003.

E. RUN PROGRAM IN RUN MODE. AN ADD FAILURE WILL CAUSE PROGRAM TO STOP AT WAIT INSTRUCTION WITH I REGISTER INDICATOR INDICATING 0008.

F. IF PROGRAM RUNS CONTINUOUSLY WITHOUT ERRORS,

1. DEPRESS STOP PUSHBUTTON.
2. LOAD LOCATION 0000 WITH VALUE OF SUMMI PRIOR TO ERROR.
3. LOAD LOCATION 0001 WITH FFFF.
4. LOAD LOCATION 0002 WITH CORRECT SUM OF SUMMI PLUS FFFF.
5. RUN AGAIN IN RUN MODE.

3.4 MANUAL ENTRY DATA-PATH TEST

THIS TEST IS LOADED USING THE DATA ENTRY SWITCHES AND TESTS THE ABILITY OF THE 1800 PROCESSOR TO TRANSFER ONES AND ZEROES BETWEEN THE FOLLOWING REGISTERS.

A. FROM B TO D TO A TO M TO I REGISTER.

B. FROM A TO U TO A REGISTER.

C. FROM A REGISTER TO B REGISTER.

D. FROM I REGISTER TO B REGISTER.

E. FROM I REGISTER TO A REGISTER.

TEST PROCEDURE

A. USING CONTROLS OF 1800 PROCESSOR, CLEAR STORAGE TO WAIT INSTRUCTION (33FF). SEE PARAGRAPH 3.1 .

B. ENTER THE FOLLOWING PROGRAM USING DATA ENTRY SWITCHES.

LOCATION	CONTENTS	MNEMONIC	COMMENTS
FFFA	C006	LD	LOAD ACCUMULATOR WITH CONTENTS OF LOCATION 0001.
FFFB	4480	BSI I	STORE CONTENTS OF I COUNTER (FFFD) AT ADDRESS STORED IN LOCATION FFFD. SET I COUNTER TO THAT ADDRESS AND ADD ONE TO I COUNTER.
FFFC	FFFD		ADDRESS POSITION OF BSI I INSTRUCTION
FFFD	FFFD		THIS IS THE ACTUAL BRANCH ADDRESS FOR THE BSI I INSTRUCTION AND IS REPLACED BY THE BSI I.
FFFE	D002	STO	STORE CONTENTS OF ACCUMULATOR AT LOCATION 0001 (SHOULD NOT CHANGE).
FFFF	C0FC	LD	LOAD ACCUMULATOR WITH CONTENTS OF LOCATION FFFC.
0000	4480	BSI I	STORE CONTENTS OF I COUNTER (0002) AT ADDRESS STORED IN LOCATION 0002. SET I COUNTER TO THAT ADDRESS AND ADD ONE TO I COUNTER.
0001	0002		THIS IS ADDRESS POSITION OF BSI I INSTRUCTION.
0002	0002		THIS IS THE ACTUAL BRANCH ADDRESS FOR THE BSI I INSTRUCTION AND IS REPLACED BY THE BSI I INSTRUCTION.
0003	D0F8	STO	STORE CONTENTS OF ACCUMULATOR AT LOCATION FFFC (SHOULD NOT CHANGE).
0004	70F5	MDX	BRANCH TO LOCATION FFFA.

C. LOAD I REGISTER WITH FFFA.

D. STEP THROUGH PROGRAM IN SI MODE, CHECKING THAT PROGRAM LOOPS PROPEPLY. ANY DATA-PATH ERROR SHOULD RESULT IN THE IMPROPER BRANCHING OF A BSI I INSTRUCION AND STOPPING AT A WAIT INSTRUCTION. THE LOCATION BEFORE THE WAIT INSTRUCTION SHOULD CONTAIN THE CONTENTS OF I REGISTER WHEN THE BRANCH OCCURRED. LOGICAL RECONSTRUCTION OF THE ERROR SHOULD ISOLATE A DATA-TRANSFER ERROR AND SUGGEST THE CIRCUIT CARD CAUSING THE ERROR.

NOTE

A BRANCH OUTSIDE OF THE PROGRAM INTO A CORE LOCATION LOADED WITH 33FF INDICATES AN ERROR HAS OCCURRED. SUBTRACT TWO FROM I REGISTER INDICATOR READING AND DISPLAY THAT LOCATION. THE CONTENT OF LOCATION DISPLAYED IS THE I REGISTER SETTING WHEN THE ERRONEOUS BRANCH OCCURED. IF THE BRANCH WAS CAUSED BY A BSI I INSTRUCTION FAILURE, THE LOCATION JUST CHECKED WILL HAVE A VALUE, BY ONE, THAN THE ADDRESS OF THE SECOND WORD OF THE BSI I INSTRUCTION. IF THIS IS THE CASE, DISPLAY LOCATIONS WHERE PROGRAM IS STORED TO DETERMINE IF THE LOCATIONS HAVE CHANGED. THE ADDRESSES OF BSI I INSTRUCTION ARE STORED BY THE STO INSTRUCTIONS, AND THE LOCATIONS FFFD AND 0002 ARE STORED BY THE BSI I INSTRUCTIONS. STATIC OR INTERMITTENT DATA-TRANSFER ERRORS SHOULD BE READILY DETECTED BY THIS MEANS, AND BE EASY TO ISOLATE BECAUSE OF THE UNIQUE FAILURE INDICATIONS.

ERRORS IN THE DATA PATH PROGRAM SHOULD BE CAUSED BY SINGLE BIT FAILURES, OR BY HALF-WORD FAILURES. THUS, DROPPED OR ADDED BITS CAN BE REFERENCED DIRECTLY TO A CIRCUIT CARD. SWAP INDICATED CIRCUIT CARD TO SEE IF FAILURE CHANGES.

THE Q, U, A, AND D REGISTERS CIRCUIT CARDS ARE LOCATED IN ROW 4 OF THE CARD GATE, AND ARE INTERCHANGEABLE.

THE I, B, AND M REGISTERS CIRCUIT CARDS ARE LOCATED IN ROW 6 OF THE CARD GATE, AND ARE INTERCHANGEABLE.

FAILING BIT- 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
COLUMN------ C D E F G H J K

THE FOLLOWING CARDS CONTROL HALF-WORD TRANSFERS AND ARE INTERCHANGEABLE.

M4, M5, M7, L5, AND L6.

PROGRAM DESCRIPTION

THE LD INSTRUCTION AT LOCATION FFFA PERFORMS THE FUNCTION OF SETTING THE ACCUMULATOR TO 0002 SO THAT WHEN THE FOLLOWING BSI I INSTRUCTION IS PERFORMED, A COMPLEMENT BIT PATTERN (FFFD) WILL BE SENT THROUGH THE A REGISTER, THUS TESTING THAT THE A REGISTER IS RETURNED TO 0002 AT THE END OF THE BSI I INSTRUCTION. THIS TEST IS ACCOMPLISHED BY STORING THE CONTENTS OF THE A REGISTER BACK INTO LOCATION 0001 AFTER THE BSI I INSTRUCTION. THE SAME PHILOSOPHY IS USED DURING BSI I INSTRUCTION AT LOCATION 0000 BY SETTING THE A REGISTER TO FFFD WHILE 0002 IS SENT THROUGH IT DURING THE BSI I INSTRUCTION. A FAILURE OF EITHER BSI I INSTRUCTION THAT AFFECTS THE A REGISTER WILL CAUSE THE FOLLOWING BSI I INSTRUCTION TO TAKE ITS ADDRESS FROM THE WRONG LOCATION. THIS LOCATION WILL PROBABLY BE ONE OF THE CORE LOCATIONS LOADED WITH 33FF, THUS CAUSING THE PROGRAM TO STOP.

4. PRINTOUTS (NONE)

5. COMMENTS

5.1 BASIC DIAGNOSTIC LOADER PHILOSOPHY

THE 1800 BASIC DIAGNOSTIC LOADER IS A SELF-CHECKING PROGRAM USED TO LOAD THE PROCESSOR DIAGNOSTIC PROGRAMS, AND TO VERIFY THEIR CORRECT LOADING. THE LOADER CONTAINS ONE-CARD PROGRAMS USED AS AIDS IN DIAGNOSIS OF BASIC FAILURES IN THE PROCESSOR. THESE ONE-CARD PROGRAMS NUMBERED 03 THROUGH 0B IN COLUMNS 79 AND 80 ARE NORMALLY EXECUTED WHILE IN THE PROCESS OF LOADING AND BUILDING OF THE LOADER. CARD 03 IS BYPASSED.

TABLE 3 CONTAINS A BREAKDOWN OF THE 1800 BASIC DIAGNOSTIC LOADER. CARD NUMBER, LOCATION IN STORAGE AND FUNCTION OF EACH CARD ARE SHOWN.

THE FINAL LOADER USED TO LOAD THE MAIN PROGRAM CONSISTS OF THE COMBINED PROGRAMS OF CARDS 02, 11, 14 AND 15. CARDS 01, 10, 12, 13, AND 16 ARE USED IN THE PROCESS OF BUILDING AND CHECKING THE LOADER. CARDS 03 THROUGH 0B ARE ONE-CARD PROGRAMS USED TO CHECK SPECIFIC PROCESSOR FUNCTIONS.

THE FINAL LOADER PERFORMS THE FOLLOWING FUNCTIONS.

A. READS A CARD INTO LOCATION 0000 TO 0027.

B. CONTINUOUSLY CHECKS DSW WAITING FOR AN OP COMPLETE. ANY ERROR DSW IS SIGNALED BY PROGRAM STOPPING AT A SPECIFIED ERROR WAIT INSTRUCTION.

C. CHECKS WORD COUNT AFTER OP COMPLETE IS RECEIVED. WORD COUNT MUST NOT BE ZERO. IF A WORD COUNT OF ZERO IS DETECTED PROGRAM STOPS AT ERROR WAIT.

D. FORMS CHECK SUM OF LOCATIONS 0000 THROUGH 0026. THE DEVELOPED CHECK SUM MUST BE 0000 OR PROGRAM STOPS AT ERROR WAIT.

E. CHECKS LOCATION 0025 FOR STARTING ADDRESS WHERE WORDS MUST BE STORED INTO. IF THE ADDRESS IS 0000 PROGRAM ASSUMES LAST CARD OF PROGRAM HAS BEEN READ AND CONSEQUENTLY BRANCHES TO LOCATION 0000 TO BEGIN EXECUTION OF MAIN PROGRAM. IF THE ADDRESS IS NOT 0000 PROGRAM MOVES THE NUMBER OF WORDS SPECIFIED BY THE WORD COUNT FROM IMAGE AREA (0000 - 0027) TO ADDRESS SPECIFIED IN LOCATION 0025, AND ABOVE.

F. COMPARES (EOR) EACH WORD MOVED FROM IMAGE AREA WITH THE CORRESPONDING WORD AT THE NEW LOCATION. FAILURE OF ANY ONE WORD TO COMPARE RESULTS IN ERROR WAIT INDICATING A TRANSFER ERROR.

G. REPEATS ENTIRE PROCEDURE FOR EVERY CARD.

TABLE 2
REFERENCE DATA

CARD NO.	STORAGE LOCATION	FUNCTION / COMMENTS	LOADED BY
01	0000-0027	LOADS CARD 02	PROGRAM LOAD
02	0028-004F	LOADS CARDS 03 - 10	CARD 01
03	0000-0027	XIO TEST. NORMAL LOAD BYPASSES THIS CARD. TO EXECUTE, LOAD CARD 03 UNDER PROGRAM LOAD.	CARD 02
04	0000-0027	LDX TEST.MAY BE LOADED UNDER PROGRAM LOAD.	CARD 02
05	0000-0027	TESTS READ IN FROM CARD READER, LOAD LONG, BSC Z AND EOR.EACH CARD MAY BE LOADED SEPARATELY UNDER PROGRAM LOAD.	CARD 02
06	0000-0027		
07	0000-0027		
08	0000-0027		
09	0000-0027	DATA PATH TEST. MAY BE LOADED UNDER PROGRAM LOAD.	CARD 02
0A	0000-0027	EOR TEST. MAY BE LOADED UNDER PROGRAM LOAD.	CARD 02
0B	0000-0027	ADD TEST. MAY BE LOADED UNDER PROGRAM LOAD.	CARD 02
10	0000-0027	READS CARD 11 OVER PART OF CARD 02 PROGRAM.	CARD 02
11	0046-0068	WITH LOCATIONS 0028-0045 OF CARD 02, BECOMES LOADER FOR CARDS 12 AND 13.	CARD 10
12	0000-0027	DATA TO CHECK THAT CARD 02 AND 11 COMBINED PROGRAM IS CORRECT.	CARD 02 AND 11
13	0000-0027	READS CARDS 14 AND 15.	CARD 02 AND 11
14	0068-0089	MOVES CARD IMAGE TO SPECIFIED LOCATION.	CARD 13
15	0089-00A7	VERIFIES TRANSFER OF MOVED WORDS.	CARD 13
16	0100-0123	DATA CARD TO CHECK THAT FINAL LOADER IS WORKING PROPERLY.	CARDS 02, 11, 14 AND 15. (FINAL LOADER)

5.2 DESCRIPTION OF ONE-CARD PROGRAMS

ONE-CARD PROGRAMS ARE NUMBERED 03 THROUGH 0B, AND MAY BE RUN INDIVIDUALLY BY LOADING UNDER PROGRAM LOAD MODE. PROGRAMS 04 THROUGH 0B ARE EXECUTED ONCE WHILE LOADING THE BASIC LOADER TO INSURE THAT THE FUNCTIONS TESTED BY THESE ONE-CARD PROGRAMS ARE FUNCTIONING PROPERLY. PROGRAM 03 IS BYPASSED BY THE BASIC LOADER.

5.2.1 THE CARD 03 PROGRAM IS A TWO PART PROGRAM. PART 1 READS A CARD, RESETS DSW, SENSES DSW AND STOPS ON WAIT TO PERMIT OPERATOR TO VERIFY THAT THE DSW IS CORRECT. FOLLOWING DEPRESSION OF START PUSHBUTTON, THE PROGRAM SENSES AND RESETS THE DSW AND STOPS ON WAIT TO ALLOW VERIFICATION OF DSW. IF NO ERROKS ARE ENCOUNTERED, PART 2 MAY BE EXECUTED. PART 2 CAUSES CARDS TO FEED CONTINUOUSLY AND CHECKS THE DSW. IF ANY DSW ERRORS ARE ENCOUNTERED, PROGRAM STOPS ON WAIT WITH A REGISTER DISPLAYING THE RESULT OF AN EOR OF THE ERROR DSW WITH 0800.

5.2.2 THE CARD 04 PROGRAM PERFORMS A TEST OF THE LDX INSTRUCTION. INCORRECT OPERATION OF THE LDX INSTRUCTION CAUSES PROGRAM TO BRANCH TO AN ERROR WAIT. THE B REGISTER READING FOR THE ERROR WAIT MAY BE 3004 IF THE BRANCH OCCURS WITHIN THE PROGRAM, OR 33FF IF PROGRAM IS MADE TO BRANCH OUTSIDE OF THE PROGRAM.

5.2.3 CARD 05, 06, 07 AND 08 TEST THAT EACH BIT POSITION OF THE A REGISTER CAN BE LOADED WITH A 1 AND A 0. AN ERROR IN LOADING THE A REGISTER CAUSES AN ERROR WAIT. THE BSC Z INSTRUCTION IS ALSO TESTED. FAILURE OF THE BSC Z INSTRUCTION WOULD CAUSE AN ERROR WAIT STOP. CARD 05 TESTS BIT POSITIONS 0 THROUGH 4. CARD 06 TESTS BIT POSITIONS 5 THROUGH 9. CARD 07 TESTS BIT POSITIONS 10 THROUGH 14.

CARD 08 TESTS BIT POSITION 15 AND IN ADDITION CHECKS THAT EOR OF FFFF AND FFFF RESULTS IN A REGISTER EQUAL 0000, AND THAT EOR OF 0000 AND 0000 ALSO RESULTS IN A REGISTER EQUAL 0000. FAILURE OF EOR CAUSES PROGRAM TO STOP ON ERROR WAIT.

5.2.4 CARD 09 PROGRAM IS A TEST OF DATA TRANSFER BETWEEN REGISTERS. THE TEST TRANSFERS CONSTANTS 3333 AND CCCC ALTERNATELY BETWEEN B-D-A-V-A-B AND B-D-A-M REGISTERS BY PERFORMING LOAD, AND STORE INSTRUCTIONS. FAILURE TO OBTAIN EXPECTED RESULTS CAUSES PROGRAM TO STOP ON ERROR WAIT.

5.2.5 THE CARD 0A PROGRAM IS A TEST OF EOR ACCOMPLISHED BY TESTING EACH BIT POSITION FOR THE FOLLOWING CONDITIONS.

A = 0	D = 1	A AND D CORRESPOND TO
A = 1	D = 0	BIT POSITIONS IN THE A AND B REGISTERS.

FAILURE OF EOR RESULTS IN PROGRAM STOPPING ON ERROR WAIT.

5.2.6 CARD 0B PROGRAM IS A TEST OF THE ADD OPERATION. THE TEST ADDS FFFF TO CONTENTS OF SYMBOLIC LOCATION SUMMI, ADDS 0001 TO CONTENTS OF SYMBOLIC LOCATION SUMPL, AND ADDS CONTENTS OF SUMMI AND SUMPL. IF THE RESULTANT SUM IS 0000 THE ENTIRE PROCEDURE IS REPEATED. IF THE SUM IS NOT 0000 THE PROGRAM STOPS ON ERROR WAIT.

6. APPENDIX (NONE)

0 0 0

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3001                    ABS
                        ORG     /3001                                   8B900020
                *                                                       8B900030
                *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   8B900040
                *XXXXXXXXXXXXXXXX PROGRAMMED WAITS IN THIS  X           8B900050
                *XXXXXXXXXXXXXXXX PROGRAM                   X           8B900060
                *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   8B900070
                *                                                       8B900080
3001 0 014C             DC      WAIT1&1     WAIT FOR DATA ENTRY         8B900090
                *                           SWITCHES TO BE SET.         8B900100
                *                           PUSH START TO               8B900110
                *                           CONTINUE THE PROGRAM.       8B900120
                ********************************************          8B900130
                *                                                       8B900140
3002 0 03B8             DC      WAIT2&1     WAIT BEFORE ROUTINE,        8B900150
                *                           TERMINATE PROGRAM OR        8B900160
                *                           HALT ON ERROR.  IF          8B900170
                *                           HALT ON ERROR OR            8B900180
                *                           TERMINATE PROGRAM,          8B900190
                *                           A PRINTOUT WILL OCCUR       8B900200
                *                           BEFORE THE WAIT.            8B900210
                *                           PUSH START TO CONTINUE      8B900220
                *                           OR RESTART.                 8B900230
                ********************************************          8B900240
                *                                                       8B900250
3003 0 047B             DC      WAIT3&1     1443 PRINTER IS NOT         8B900260
                *                           READY.  MAKE PRINTER        8B900270
                *                           READY AND PUSH START.       8B900280
                ********************************************          8B900290
                *                                                       8B900300
3004 0 0627             DC      WAIT4&1     WAIT BECAUSE TYPE-          8B900310
                *                           WRITER IS NOT READY.        8B900320
                *                           MAKE TYPEWRITER READY       8B900330
                *                           AND PUSH START TO           8B900340
                *                           CONTINUE PROGRAM.           8B900350
                ********************************************          8B900360
                *                                                       8B900370
3005 0 07A8             DC      WAIT5&1     LOST INTRPT. AFTER          8B900380
                *                           TIMED WRT OR RD.            8B900390
                ********************************************          8B900400
                *                                                       8B900410
3006 0 07DF             DC      WAIT6&1     LOST INTRPT. AFTER BSP      8B900420
                ********************************************          8B900430
                *                                                       8B900440
3007 0 3007             DC      /3007       NOT USED                    8B900450
3008 0 3008             DC      /3008       NOT USED                    8B900460
                ********************************************          8B900470
                ********************************************          8B900480
                *                                                       8B900490
                *                                                       8B900500
                *                           ON ALL LOST INTERRUPT       8B900510
                *                           WAITS, PUSH RESET           8B900520
                *                           AND START TO RESTART.       8B900530
                ********************************************          8B900540
                ********************************************          8B900550
                *                                                       8B900560
3009 0 0371             DC      WAIT9&1     NO LEGAL DSW BIT ON         8B900570
                *                           AT INTERRUPT.  PUSH         8B900580
                *                           RESET AND START TO          8B900590
                *                           RESTART PROGRAM.            8B900600
                ********************************************          8B900610
                *                                                       8B900620
300A 0 0373             DC      WAITA&1     BLANK ILSW AT               8B900630
                *                           INTERRUPT.  PUSH            8B900640
                *                           RESET AND START             8B900650
                *                           TO RESTART THE PROGRAM.     8B900660
                ********************************************          8B900670
                *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   8B900680
                                                                        8B900690
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                *                                                       8B900700
                        ORG     300                                     8B900710
012C                    DC      /B900       PID                         8B900720
012C 0 B900     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   8B900730
                *XXXXXXXXXXXXXXXX ROUTINE TO READ EDIT CARDSX           8B900740
                *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   8B900750
                *                                                       8B900760
012D 0 6700 0132 BEGN   LDX   L3 BEGN1      IX 3 # LDR RETURN           8B900770
012F 0 6F00 0124        STX   L3 /0124      STORE IN LDR                8B900780
0131 0 6050             LDX   X  /0050      GO TO LOADER                8B900790
0132 0 63F9     BEGN1   LDX    3 -7         IX # NO ENTRIES             8B900800
0133 0 C30A     BEGN2   LD     3 10         GET AN ENTRY                8B900810
0134 0 D700 02ED        STO   L3 EDIT&9     SET IN EDIT FIELD           8B900820
0136 0 7301             MDX    3 1          DECR IX                     8B900830
0137 0 70FB             MDX      BEGN2      LOOP                        8B900840
0138 0 6700 013D        LDX   L3 BEGAP      IX 3 # LDR RETURN           8B900850
013A 0 6F00 0124        STX   L3 /0124      STORE IN LOADER             8B900860
013C 0 6050             LDX   X  /0050      GO TO LOADER                8B900870
013D 0 631A     BEGAP   LDX    3 26         IX # NO LVLS                8B900880
013E 0 C00F             LD       BEGX3      GET COMMON INTR TRAP        8B900890
013F 0 D700 0008        STO   L3 8          SET                         8B900900
0141 0 73FF     BEGBA   MDX    3 -1         DECR IX REG                 8B900910
0142 0 70FC             MDX      BEGBA      LOOP                        8B900920
0143 0 CC00 02D8        LDD   L  BEGX4      SET RESTART                 8B900930
0145 0 DC00 0000        STD   L  0          *                           8B900940
0147 0 C400 02EE        LD    L  ACTI&1     GET INTRPT RTN ADRS         8B900950
0149 0 D480 02E7        STO   I  EDIT&3     SET FOR TAPES               8B900960
014B 0 3001     WAIT1   WAIT     1          WAIT FOR SWS                8B900970
014C 0 4C00 02EF        BSC   L  M@NT                                   8B900980
014E 0 0332     BEGX3   DC       SVINT      COMMON INTR TRAP            8B900990
                *                                                       8B901000
                *                   RESTORE PROGRAM TO 4                8B901010
                *                   MICROSEC MEM AND MOD 3 DRS          8B901020
                *                                                       8B901030
014F 0 0000     BEGIN   DC       0                                  SE  8B901040
0150 0 6373             LDX      3 115                                  8B901050
0151 0 C700 0157 BEGAN  LD    L3 BEGX8-1    GET BASE CONSTANT           8B901060
0153 0 D700 066C        STO   L3 CON-1      SET                         8B901070
0155 0 73FF             MDX    3 -1         DECR IX                     8B901080
0156 0 70FA             MDX      BEGAN      LOOP                        8B901090
0157 0 7073             MDX      BEGAC                                  8B901100
0158 0 0308     BEGX8   DC       776        RESTORE CONSTANTS           8B901110
0159 0 0712             DC       1810                                   8B901120
015A 0 0308             DC       776                                    8B901130
015B 0 048B             DC       1163                                   8B901140
015C 0 0080             DC       128                                    8B901150
015D 0 012F             DC       303                                    8B901160
015E 0 0080             DC       128                                    8B901170
015F 0 00C3             DC       195                                    8B901180
0160 0 00F8             DC       248                                    8B901190
0161 0 0131             DC       305                                    8B901200
0162 0 00F5             DC       245                                    8B901210
0163 0 012E             DC       302                                    8B901220
0164 0 01E0             DC       480                                    8B901230
0165 0 0003             DC       3                                      8B901240
0166 0 0D40             DC       3392                                   8B901250
0167 0 0002             DC       2                                      8B901260
0168 0 7100             DC       28928                                  8B901270
0169 0 0001             DC       1                                      8B901280
016A 0 D4C0             DC       54464                                  8B901290
016B 0 0001             DC       1                                      8B901300
016C 0 3880             DC       14464                                  8B901310
016D 0 0000             DC       0                                      8B901320
016E 0 9C40             DC       40000                                  8B901330
016F 0 0000             DC       0                                      8B901340
0170 0 4E20             DC       20000                                  8B901350
0171 0 0000             DC       0                                      8B901360
0172 0 3E80             DC       16000                                  8B901370
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F
L

2400 TIMING TEST

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0173 0 0000          DC    0                    8B901380
0174 0 2EE0          DC    12000                8B901390
0175 0 0000          DC    0                    8B901400
0176 0 1F40          DC    8000                 8B901410
0177 0 0000          DC    0                    8B901420
0178 0 0FA0          DC    4000                 8B901430
0179 0 0000          DC    0                    8B901440
017A 0 0C80          DC    3200                 8B901450
017B 0 0000          DC    0                    8B901460
017C 0 0960          DC    2400                 8B901470
017D 0 0000          DC    0                    8B901480
017E 0 0640          DC    1600                 8B901490
017F 0 0000          DC    0                    8B901500
0180 0 0578          DC    1400                 8B901510
0181 0 0000          DC    0                    8B901520
0182 0 04B0          DC    1200                 8B901530
0183 0 0000          DC    0                    8B901540
0184 0 03E8          DC    1000                 8B901550
0185 0 0000          DC    0                    8B901560
0186 0 0384          DC    900                  8B901570
0187 0 0000          DC    0                    8B901580
0188 0 0320          DC    800                  8B901590
0189 0 0000          DC    0                    8B901600
018A 0 02BC          DC    700                  8B901610
018B 0 0000          DC    0                    8B901620
018C 0 0258          DC    600                  8B901630
018D 0 0000          DC    0                    8B901640
018E 0 01F4          DC    500                  8B901650
018F 0 0000          DC    0                    8B901660
0190 0 0190          DC    400                  8B901670
0191 0 0000          DC    0                    8B901680
0192 0 0168          DC    360                  8B901690
0193 0 0000          DC    0                    8B901700
0194 0 0140          DC    320                  8B901710
0195 0 0000          DC    0                    8B901720
0196 0 0118          DC    280                  8B901730
0197 0 0000          DC    0                    8B901740
0198 0 00F0          DC    240                  8B901750
0199 0 0000          DC    0                    8B901760
019A 0 00DC          DC    220                  8B901770
019B 0 0000          DC    0                    8B901780
019C 0 00C8          DC    200                  8B901790
019D 0 0000          DC    0                    8B901800
019E 0 00B4          DC    180                  8B901810
019F 0 0000          DC    0                    8B901820
01A0 0 00A0          DC    160                  8B901830
01A1 0 0000          DC    0                    8B901840
01A2 0 008C          DC    140                  8B901850
01A3 0 0000          DC    0                    8B901860
01A4 0 0078          DC    120                  8B901870
01A5 0 0000          DC    0                    8B901880
01A6 0 006E          DC    110                  8B901890
01A7 0 0000          DC    0                    8B901900
01A8 0 0064          DC    100                  8B901910
01A9 0 0000          DC    0                    8B901920
01AA 0 005A          DC    90                   8B901930
01AB 0 0000          DC    0                    8B901940
01AC 0 0050          DC    80                   8B901950
01AD 0 0000          DC    0                    8B901960
01AE 0 0046          DC    70                   8B901970
01AF 0 0000          DC    0                    8B901980
01B0 0 003C          DC    60                   8B901990
01B1 0 0000          DC    0                    8B902000
01B2 0 0032          DC    50                   8B902010
01B3 0 0000          DC    0                    8B902020
01B4 0 002C          DC    44                   8B902030
01B5 0 0000          DC    0                    8B902040
01B6 0 0028          DC    40                   8B902050
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2400 TIMING TEST

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01B7 0 0000          DC    0                    8B902060
01B8 0 0024          DC    36                   8B902070
01B9 0 0000          DC    0                    8B902080
01BA 0 0020          DC    32                   8B902090
01BB 0 0000          DC    0                    8B902100
01BC 0 001C          DC    28                   8B902110
01BD 0 0000          DC    0                    8B902120
01BE 0 0018          DC    24                   8B902130
01BF 0 0000          DC    0                    8B902140
01C0 0 0016          DC    22                   8B902150
01C1 0 0000          DC    0                    8B902160
01C2 0 0014          DC    20                   8B902170
01C3 0 03C0          DC    960                  8B902180
01C4 0 0780          DC    1920                 8B902190
01C5 0 4D92          DC    19858                8B902200
01C6 0 0003          DC    3                    8B902210
01C7 0 0000          DC    0                    8B902220
01C8 0 0025          DC    37                   8B902230
01C9 0 004B          DC    75                   8B902240
01CA 0 0070          DC    112                  8B902250
                     *                          8B902260
                     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 8B902270
                     *XXXXXXXXXXXXXXXX EDIT ROUTINE XXXXXXXXXXXXXX 8B902280
                     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 8B902290
                     *                          8B902300
                     *                          8B902310
                     *        SET PROGRAM TO MEM SPEED 8B902320
                     *                          8B902330
                     *                          8B902340
01CB 0 C400 02EC BEGAC LD    L  EDIT&8    GET MEM SPEED  8B902350
01CD 0 4C30 0202      BSC    L  BEGAD-1,Z-  BR IF 4.00 US $ 8B902360
01CF 0 4C10 020F      BSC    L  BEGAE,-     BR IF 2.00 US $ 8B902370
01D1 0 636F           LDX    3 111                       $ 8B902380
01D2 0 10A0           BAK    SLT  32        SETUP        $ 8B902390
01D3 0 C700 066C      LD     L3 SPEC        CONSTANTS    $ 8B902400
01D5 0 1882           SRT    2              FOR          $ 8B902410
01D6 0 A00B           M      ARIA1+1        2.25 US MEMORY $ 8B902420
01D7 0 A80B           D      ARIA1+2                     $ 8B902430
01D8 0 1002           SLA    2                           $ 8B902440
01D9 0 D700 066C      STO    L3 SPEC                     $ 8B902450
01DB 0 73FF           MDX    3 -1                        $ 8B902460
01DC 0 70F5           MDX    BAK                         $ 8B902470
01DD 0 C006           LD     ARIA1+3                     $ 8B902480
01DE 0 D400 06DC      STO    L  MLGX7                    $ 8B902490
01E0 0 7005           MDX    PART2          BR TO CONT. SETUP $ 8B902500
01E1 0 FFFF ARIA1     DC     /FFFF          X            $ 8B902510
01E2 0 000F           DC     /000F          T            $ 8B902520
01E3 0 0011           DC     /0011          N            $ 8B902530
01E4 0 0025           DC     /0025          T            $ 8B902540
01E5 0 FFFF           DC     /FFFF          S            $ 8B902550
                     *                                   $ 8B902555
01E6 0 C811 PART2     LDD    ARIA5          SETUP        $ 8B902560
01E7 0 DC00 067A      STD    L  MT5X0       SPECIAL      $ 8B902570
01E9 0 C810           LDD    ARIA5+2        DOUBLE       $ 8B902580
01EA 0 DC00 067C      STD    L  MT5X0+2     WORD         $ 8B902590
01EC 0 C80F           LDD    ARIA5+4        CONSTANTS    $ 8B902600
01ED 0 DC00 067E      STD    L  MT5X0+4                  $ 8B902610
01EF 0 C80E           LDD    ARIA5+6                     $ 8B902620
01F0 0 DC00 0680      STD    L  MT5X0+6                  $ 8B902630
01F2 0 C00D           LD     ARIA5+8                     $ 8B902640
01F3 0 D400 06DB      STO    L  GPHLM                    $ 8B902650
01F5 0 6400 0213      LDX    L  BEGAF                    $ 8B902660
01F8   0000           BSS    E  0                        $ 8B902670
01F8 0 0002 ARIA5     DC     /0002          D     C      $ 8B902680
01F9 0 B150           DC     /B150          O  W  O      $ 8B902690
01FA 0 0002           DC     /0002          U  O  N      $ 8B902700
01FB 0 2778           DC     /2778          B  R  S      $ 8B902710
01FC 0 0001           DC     /0001          L  D  T      $ 8B902720
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01FD 0 9D98            DC       /9D98        E     A            $ 8B902730
01FE 0 0001            DC       /0001              N            $ 8B902740
01FF 0 13B8            DC       /13B8              T            $ 8B902750
0200 0 0002            DC       /0002              S            $ 8B902760
0201 0 FFFF            DC       /FFFF                           $ 8B902770
                 *                                              $ 8B902775
0202 0 636F            LDX   3 111                              $ 8B902780
0203 0 C700 066C BEGAD LD    L3 CON-1     GET A CONSTANT          8B902790
0205 0 1801            SRA      1         DVD BY 2                8B902800
0206 0 D700 066C       STO   L3 CON-1     SET                     8B902810
0208 0 73FF            MDX    3 -1        DECR IX                 8B902820
0209 0 70F9            MDX      BEGAD     LOOP                    8B902830
020A 0 C400 066B       LD    L  CONV1     GET CONV CONSTANT       8B902840
020C 0 D400 06DC       STO   L  MLGX7     SET                     8B902850
020E 0 7004            MDX      BEGAF                             8B902860
                 *                                                8B902870
                 *              MEMORY SPEED IS 2 MICROSEC        8B902880
                 *                                                8B902890
020F 0 C400 066A BEGAE LD    L  CONV      GET CONV CONSTANT       8B902900
0211 0 D400 06DC       STO   L  MLGX7                             8B902910
                 *                                                8B902920
                 *              EDIT TO DRIVE MODEL               8B902930
                 *                                                8B902940
0213 0 C500 02EA BEGAF LD    L1 EDIT&6    GET DR MODEL            8B902950
0215 0 4808            BSC      &         ARE THEY MOD 3          8B902960
0216 0 7052            MDX      BEGAM     YES                     8B902970
0217 0 F400 036E       EOR   L  ONE                               8B902980
0219 0 4820            BSC      Z         ARE THEY MOD 1          8B902990
021A 0 7076            MDX      BEGAI     NO                      8B903000
                 *                                                8B903010
                 *              SET PROGRAM TO MODEL 1            8B903020
                 *                                                8B903030
021B 0 C400 06D9       LD    L  TURA1     GET TURNAROUND          8B903040
021D 0 D400 0679       STO   L  MT1X0     SET                     8B903050
021F 0 C400 06DD       LD    L  MOD1S     GET TAPE SPEED          8B903060
0221 0 D400 06DF       STO   L  INPSE     SET                     8B903070
0223 0 C400 06DB       LD    L  GPHLM     GET GR LN MOD           8B903080
0225 0 1001            SLA      1         MUL BY 2                8B903090
0226 0 8400 06DB       A     L  GPHLM     MUL BY 1                8B903100
0228 0 D400 06DB       STO   L  GPHLM     SET MODIFIER            8B903110
022A 0 6304            LDX    3 4                                 8B903120
022B 0 10A0      BEGAG SLT      32        CLEAR A AND Q           8B903130
022C 0 C700 066C       LD    L3 CON-1     GET A CONSTANT          8B903140
022E 0 A400 0D84       M     L  MT7X0     MUL BY 10               8B903150
0230 0 18D0            RTE      16        SET IN ACCUM            8B903160
0231 0 8400 0679       A     L  MT1X0     ADD TURNAROUND          8B903170
0233 0 D700 066C       STO   L3 CON-1     SET                     8B903180
0235 0 73FF            MDX    3 -1        DECR IX                 8B903190
0236 0 70F4            MDX      BEGAG     LOOP                    8B903200
0237 0 C400 06DA       LD    L  MD1LM     GET READ LIMIT          8B903210
0239 0 D400 066E       STO   L  CON&1     SET                     8B903220
023B 0 6308            LDX    3 8                                 8B903230
023C 0 C700 0670 BEGAR LD    L3 CON1-1    GET A CONSTANT          8B903240
023E 0 1001            SLA      1         MUL BY 2                8B903250
023F 0 8700 0670       A     L3 CON1-1    MUL BY 1                8B903260
0241 0 D700 0670       STO   L3 CON1-1    SET                     8B903270
0243 0 73FF            MDX    3 -1        DECR IX                 8B903280
0244 0 70F7            MDX      BEGAR     LOOP                    8B903290
0245 0 C400 02EC       LD    L  EDIT&8    GET MEM SPEED           8B903300
0247 0 4C18 0262       BSC   L  FWRD,+-   BR IF 2.00 US         $ 8B903310
0249 0 4C10 02D5       BSC   L  BEGAK,-   BR IF 4.00 US         $ 8B903320
024B 0 C010            LD       ARIA2                           $ 8B903330
024C 0 D400 0675       STO   L  MT5XA      SETUP                $ 8B903340
024E 0 C00E            LD       ARIA2+1    FOR                  $ 8B903350
024F 0 D400 0676       STO   L  MT5XA+1     2.25 US             $ 8B903360
0251 0 C00C            LD       ARIA2+2     MEMORY              $ 8B903370
0252 0 D400 0677       STO   L  MT5XA+2     SPEED               $ 8B903380
0254 0 C00A            LD       ARIA2+3     AND                 $ 8B903390
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0255 0 D400 0678       STO   L  MT5XA+3    MOD 1                $ 8B903400
0257 0 C008            LD       ARIA2+4    TAPE                 $ 8B903410
0258 0 D400 06DB       STO   L  GPHLM      CONSTANTS            $ 8B903420
025A 0 4C00 02D5       BSC   L  BEGAK      BR TO EXIT SETUP     $ 8B903430
025C 0 029C      ARIA2 DC       /029C                           $ 8B903440
025D 0 0310            DC       /0310      MOD 1                $ 8B903450
025E 0 0294            DC       /0294     TAPE                  $ 8B903460
025F 0 0308            DC       /0308     CONSTANTS             $ 8B903470
0260 0 0008            DC       /0008     2.25 US               $ 8B903480
0261 0 FFFF            DC       /FFFF                           $ 8B903490
0262 0 7402 0677 FWRD  MDX   L  MT5XA+2,2 ADJ GRPH LIMITS       $ 8B903500
0264 0 74FF 0678       MDX   L  MT5XA&3,-1 *                      8B903510
0266 0 7401 06DB       MDX   L  GPHLM,1   *                       8B903520
0268 0 706C            MDX      BEGAK     BR TO EXIT              8B903530
                 *                                              $ 8B903535
0269 0 C400 02EC BEGAM LD    L  EDIT+8    GET P/C SPEED XTNT    $ 8B903540
026B 0 4828            BSC      Z+        SKIP IF NEG.          $ 8B903550
026C 0 7003            MDX      *+3        BR IF NOT 2.25 US    $ 8B903560
026D 0 C400 06DB       LD    L  GPHLM                           $ 8B903570
026F 0 7017            B        FWD1       SETUP                $ 8B903580
0270 0 C010            LD       ARIA3      MOD 3                $ 8B903590
0271 0 D400 0675       STO   L  MT5XA      TAPE                 $ 8B903600
0273 0 C00E            LD       ARIA3+1    CONSTANTS            $ 8B903610
0274 0 D400 0676       STO   L  MT5XA+1    FOR                  $ 8B903620
0276 0 C00C            LD       ARIA3+2    2.25 US P/C          $ 8B903630
0277 0 D400 0677       STO   L  MT5XA+2                         $ 8B903640
0279 0 C00A            LD       ARIA3+3                         $ 8B903650
027A 0 D400 0678       STO   L  MT5XA+3                         $ 8B903660
027C 0 C008            LD       ARIA3+4                         $ 8B903670
027D 0 D400 06DB       STO   L  GPHLM                           $ 8B903680
027F 0 4C00 02D5       BSC   L  BEGAK      BR TO EXIT           $ 8B903690
0281 0 00D0      ARIA3 DC       /00D0                           $ 8B903700
0282 0 00FB            DC       /00FB      MOD 3                $ 8B903710
0283 0 00CE            DC       /00CE      TAPE                 $ 8B903720
0284 0 00F9            DC       /00F9      CONSTANTS            $ 8B903730
0285 0 0002            DC       /0002                           $ 8B903740
0286 0 FFFF            DC       /FFFF                           $ 8B903750
                 *                                              $ 8B903755
0287 0 1801      FWD1  SRA      1         CK FOR 1              $ 8B903760
0288 0 4C20 02D5       BSC   L  BEGAK,Z   BR # NOT 1              8B903770
028A 0 7401 06DB       MDX   L  GPHLM,1   SET TO 2                8B903780
028C 0 7407 0676       MDX   L  MT5XA&1,7 ADJ GPH LMTS            8B903790
028E 0 7406 0678       MDX   L  MT5XA&3,6                         8B903800
0290 0 7044            MDX      BEGAK                             8B903810
                 *                                                8B903820
                 *              CHECK FOR MODEL 2                 8B903830
                 *                                                8B903840
0291 0 C500 02EA BEGAI LD    L1 EDIT&6    GET DR MODEL            8B903850
0293 0 F400 0610       EOR   L  CODEH&2                           8B903860
0295 0 4820            BSC      Z         ARE THEY MODEL 2        8B903870
0296 0 703E            MDX      BEGAK     NO                      8B903880
                 *                                                8B903890
                 *              SET PROGRAM TO MODEL 2            8B903900
                 *                                                8B903910
0297 0 C400 06D8       LD    L  TURA2     GET TURNAROUND          8B903920
0299 0 D400 0679       STO   L  MT1X0     SET                     8B903930
029B 0 C400 06DE       LD    L  MOD2S     GET TAPE SPEED          8B903940
029D 0 D400 06DF       STO   L  INPSE     SET                     8B903950
029F 0 7401 06DB       MDX   L  GPHLM,1                           8B903960
02A1 0 6304            LDX    3 4                                 8B903970
02A2 0 10A0      BEGAJ SLT      32        CLEAR A AND Q           8B903980
02A3 0 C700 066C       LD    L3 CON-1     GET A CONSTANT          8B903990
02A5 0 1001            SLA      1         MUL BY 2                8B904000
02A6 0 D700 066C       STO   L3 CON-1     SET                     8B904010
02A8 0 73FF            MDX    3 -1        DECR IX                 8B904020
02A9 0 70F8            MDX      BEGAJ     LOOP                    8B904030
02AA 0 6308            LDX    3 8                                 8B904040
02AB 0 C700 0670 BEGAS LD    L3 CON1-1    GET A CONSTANT          8B904050
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02AD 0 1801                SRA     1          MUL BY .5                    8B904060
02AE 0 8700 0670           A    L3 CON1-1     MUL BY 1                     8B904070
02B0 0 D700 0670           STO  L3 CON1-1     SET                          8B904080
02B2 0 73FF                MDX   3 -1         DECR IX                      8B904090
02B3 0 70F7                MDX     BEGAS      LOOP                         8B904100
02B4 0 7401 0677           MDX  L  MT5XA&2,1  ADJ GRPH LMT                8B904110
02B6 0 C035                LD      EDIT&8     GET MEM SPEED                8B904120
02B7 0 4C18 02D1           BSC  L  FWD2,+-    BR IF 2.00 US P/C          $ 8B904130
02B9 0 4C10 02D5           BSC  L  BEGAK,-    BR IF 4.00 US P/C          $ 8B904140
02BB 0 C00F                LD      ARIA4                                 $ 8B904150
02BC 0 D400 0675           STO  L  MT5XA      SETUP                      $ 8B904160
02BE 0 C00D                LD      ARIA4+1    FOR                        $ 8B904170
02BF 0 D400 0676           STO  L  MT5XA+1    2.25 US P/C                $ 8B904180
02C1 0 C00B                LD      ARIA4+2    AND                        $ 8B904190
02C2 0 D400 0677           STO  L  MT5XA+2    MOD 2                      $ 8B904200
02C4 0 C009                LD      ARIA4+3    TAPE                       $ 8B904210
02C5 0 D400 0678           STO  L  MT5XA+3    CONSTANTS                  $ 8B904220
02C7 0 C007                LD      ARIA4+4                               $ 8B904230
02C8 0 D400 0679           STO  L  MT5XA+4                               $ 8B904240
02CA 0 700A                MDX     BEGAK      BR TO EXIT                 $ 8B904250
02CB 0 0148          ARIA4 DC      /0148                                 $ 8B904260
02CC 0 0194                DC      /0194      MOD 2                      $ 8B904270
02CD 0 0144                DC      /0144      TAPE                       $ 8B904280
02CE 0 0190                DC      /0190      CONSTANTS                  $ 8B904290
02CF 0 0004                DC      /0004                                 $ 8B904300
02D0 0 FFFF                DC      /FFFF                                 $ 8B904310
                           *                                             $ 8B904315
02D1 0 74FF 0678     FWD2  MDX  L  MT5XA+3,-1 ADJ GPH CNST              $ 8B904320
02D3 0 7401 06DB           MDX  L  GPHLM,1    *                            8B904330
02D5 0 4C80 014F     BEGAK BSC  I  BEGIN      EXIT                    SX   8B904340
                           *                                               8B904350
                           *          GO TO PROG INITILIZATION             8B904360
                           *                                               8B904370
                           *                                               8B904380
                           *                                               8B904390
                           *          CONSTANTS                            8B904400
                           *                                               8B904410
02D8    0000                    BSS  E  0                                  8B904420
02D8 0 4C00 013D     BEGX4 BSC  L  BEGAP      RESTART CONSTANT             8B904430
02DA 0 02E1          BEGX5 DC      SW0        IOCC-READ BIT SWS            8B904440
02DB 0 0240                DC      /0240                                   8B904450
02DC 0 02E2          BEGX7 DC      SW1        READ PROG SWS IOCC           8B904460
02DD 0 0260                DC      /0260                                   8B904470
                           *                                               8B904480
                           *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   8B904490
                           *XXXXXXXXXXXXXXXX PROGRAM STATUS TABLE XXXXXX   8B904500
                           *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   8B904510
                           *                                               8B904520
02DE 0 B900          PID   DC      /B900                                   8B904530
02DF 0 0000          RID   DC      0          ROUTINE NUMBER               8B904540
02E0 0 0000          RAD   DC      0          ROUTINE ADDRESS              8B904550
02E1 0 0000          SW0   DC      0          SWITCH ENTRY 1               8B904560
02E2 0 0000          SW1   DC      0          SWITCH ENTRY 2               8B904570
02E3 0 FFFF          TERM  DC      /FFFF      TERMINATOR                   8B904580
02E4 0 7000          EDIT  DC      /7000      TAPE AREA CODE               8B904590
02E5 0 3000                DC      /3000      1443 AREA CODE               8B904600
02E6 0 0000                DC      0          ILSW BIT -TAPES              8B904610
02E7 0 0000                DC      0          INTR ADRS-TAPES              8B904620
02E8 0 0000                DC      0          NUMBER TRACKS DR 0           8B904630
02E9 0 0000                DC      0          NUMBER TRACKS DR 1           8B904640
02EA 0 0000                DC      0          DRIVE 0 MODEL                8B904650
02EB 0 0000                DC      0          DRIVE 1 MODEL                8B904660
02EC 0 0000                DC      0          MEMORY SPEED                 8B904670
                           *                                               8B904680
                           *          DSW TABLE                            8B904690
                           *                                               8B904700
02ED 0 0000          ACTI  DC      0          AREA CODE TAPES              8B904710
02EE 0 0313                DC      INTR3&1    INTR RTN TAPES               8B904720
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                           *                                               8B904730
                           *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   8B904740
                           *XXXXXXXXXXXXXXXX INITIALIZATION ROUTINE XXXX   8B904750
                           *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   8B904760
                           *                                               8B904770
02EF 0 630B          MONT  LDX   3 11         CLEAR DST TABLE              8B904780
02F0 0 1010                SLA     16                                      8B904790
02F1 0 D700 06DF     MONT1 STO  L3 DST-1                                   8B904800
02F3 0 73FF                MDX   3 -1                                      8B904810
02F4 0 70FC                MDX     MONT1                                   8B904820
                           *                                               8B904830
                           *                SET NECESSARY VALUES           8B904840
                           *                                               8B904850
02F5 0 1010                SLA     16                                      8B904860
02F6 0 D0E8                STO     RID        CLEAR RTN NO                 8B904870
02F7 0 D400 093B           STO  L  PGSW       CLEAR PROG SW                8B904880
02F9 0 C0EA                LD      EDIT       GET TAPE AREA CODE           8B904890
02FA 0 D0F2                STO     ACTI       SET                          8B904900
02FB 0 D400 06E8           STO  L  DST&8                                   8B904910
02FD 0 0804                XIO     UNMK3      UNMASK ALL LEVELS            8B904920
02FE 0 0805                XIO     UNMK4                                   8B904930
02FF 0 4006                BSI     RDSWS      READ SWS                     8B904940
0300 0 4C00 06F0           BSC  L  MONT4      BRANCH                       8B904950
0302   0000                BSS  E  0                                       8B904960
0302 0 0000          UNMK3 DC      0          IOCC-UNMASK LOWER            8B904970
0303 0 0480                DC      /0480                                   8B904980
0304 0 0000          UNMK4 DC      0          IOCC-UNMASK UPPER            8B904990
0305 0 0481                DC      /0481                                   8B905000
                           *                                               8B905010
0306 0 0000          RDSWS DC      0                                       8B905020
0307 0 08D2                XIO     BEGX5      READ DATA SWS                8B905030
0308 0 08D3                XIO     BEGX7      READ PROG SWS                8B905040
0309 0 C0D8                LD      SW1        ADJ PROG SWS                 8B905050
030A 0 1005                SLA     5                                       8B905060
030B 0 180D                SRA     13                                      8B905070
030C 0 D0D5                STO     SW1        *                            8B905080
030D 0 4C80 0306           BSC  I  RDSWS      EXIT                         8B905090
                           *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   8B905100
                           *XXXXXXXXXXXXXXXX INTERRUPT ROUTINE XXXXXXXX   8B905110
                           *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   8B905120
                           *                                               8B905130
030F 0 6600 0000     TAX1  LDX  L2 0          RESTORE IX                   8B905140
0311 0 C856                LDD     TAAQ       RESTORE A AND Q              8B905150
0312 0 4C40 0000     INTR3 BOSC L  0          ENTRY AND EXIT               8B905160
0314 0 6AFB                STX   2 TAX1&1     SAVE IX 2                    8B905170
0315 0 D852                STD     TAAQ       SAVE A AND Q                 8B905180
0316 0 084F                XIO     ILSW       SENSE ILSW BIT               8B905190
0317 0 4418 0371           BSI  L  TERR,&-    BRANCH ON BLANK ILSW         8B905200
0319 0 E0CC                AND     EDIT&2     CK IF TAPE                   8B905210
031A 0 4C20 031E           BSC  L  INTRR,Z    BRANCH # TAPE                8B905220
031C 0 4015                BSI     SVINT      BRANCH-NOT TAPE              8B905230
031D 0 70F1                MDX     TAX1       GO EXIT                      8B905240
031E 0 C04B          INTRR LD      DSW        BUILD SENSE DSW              8B905250
031F 0 F0CD                EOR     ACTI       *                            8B905260
0320 0 D04A                STO     DSW&1      *                            8B905270
0321 0 0848                XIO     DSW        SENSE-NO RESET               8B905280
0322 0 C048                LD      DSW&1      BUILD RESET SENSE            8B905290
0323 0 F04A                EOR     ONE        *                            8B905300
0324 0 D046                STO     DSW&1      *                            8B905310
0325 0 0844                XIO     DSW        SENSE-RESET                  8B905320
0326 0 D045                STO     TADSW      SAVE SENSE WD                8B905330
0327 0 6600 06E0           LDX  L2 DST        SET IX                       8B905340
0329 0 C042                LD      TADSW      GET SENSE WD                 8B905350
032A 0 E042                AND     TADWC      CK FOR LEGAL                 8B905360
032B 0 4808                BSC     &          SKIP # LEGAL                 8B905370
032C 0 4042                BSI     ERRI       ILLEGAL DSW                  8B905380
032D 0 C03E                LD      TADSW      GET SENSE WD                 8B905390
032E 0 D207                STO   2 7          SET IN DST                   8B905400
```

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032F 0 70DF              MDX     TAX1      EXIT                          8B905410
0330   0000              BSS  E  0                                       8B905420
                         *                                              8B905430
0330 0 0701              DSWSP DC  /0701     SENSE-RESET IOCC            8B905440
0331 0 0000                    DC  0                                     8B905450
                         *                                              8B905460
                         *                                              8B905470
                         *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 8B905480
                         *XXXXXXXXXXXXXXXX ROUTINE TO SERVICE    XXXXX  8B905490
                         *XXXXXXXXXXXXXXXX NON-PROGRAM GENERATED XXXXX  8B905500
                         *XXXXXXXXXXXXXXXX INTERRUPTS            XXXXX  8B905510
                         *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 8B905520
                         *                                              8B905530
0332 0 0000              SVINT DC  0                                IE  8B905540
0333 0 D030                    STO  SVIO      SAVE ACCUMULATOR          8B905550
0334 0 C0AE                    LD   TERM      SET ILLEGAL INTR          8B905560
0335 0 D400 06E7               STO  L DST&7   *                         8B905570
0337 0 082E                    XIO  ILSW      RESET ILSW                8B905580
0338 0 7402 0362               MDX  L SV7,2   SET PASS SWITCH           8B905590
033A 0 1010                    SLA  16                                  8B905600
033B 0 D023                    STO  SV4       CLEAR AREA CODE CNTR      8B905610
033C 0 C020                    LD   SV2                                 8B905620
033D 0 D023                    STO  SV6       SET IOCC IN USE SW        8B905630
033E 0 C01D              SVINO LD   SV1                                 8B905640
033F 0 D020                    STO  SV5       SET MODIFIER COUNTER      8B905650
0340 0 C01E              SVIN1 LD   SV4       *                         8B905660
0341 0 100B                    SLA  11        *                         8B905670
0342 0 E81D                    OR   SV5       *BUILD IOCC               8B905680
0343 0 E81D                    OR   SV6       *                         8B905690
0344 0 D020                    STO  SVIO&1    *                         8B905700
0345 0 081E                    XIO  SVIO      SENSE DSW AND RESET       8B905710
0346 0 74FF 0360               MDX  L SV5,-1                            8B905720
0348 0 70F7                    MDX  SVIN1     BRANCH IF NOT ALL MD      8B905730
0349 0 7401 035F               MDX  L SV4,1   INCREMENT AREA CODE       8B905740
034B 0 C013                    LD   SV4                                 8B905750
034C 0 900E                    S    SV0       CHECK IF ALL AC USED      8B905760
034D 0 4808                    BSC  &         SKIP IF ALL AC USED       8B905770
034E 0 70EF                    MDX  SVINO     GO SENSE WITH NXT AC      8B905780
034F 0 74FF 0362               MDX  L SV7,-1  SKIP IF SECOND PASS       8B905790
0351 0 7001                    MDX  *&1                                 8B905800
0352 0 7005                    MDX  SVEXT-1                             8B905810
0353 0 C00A                    LD   SV3                                 8B905820
0354 0 D00C                    STO  SV6       SET IOCC FOR PI           8B905830
0355 0 1010                    SLA  16                                  8B905840
0356 0 D008                    STO  SV4       SET AC FOR NEXT           8B905850
0357 0 70E6                    MDX  SVINO     *PASS                     8B905860
0358 0 C00B                    LD   SVIO      RESTORE ACCUMULATOR       8B905870
0359 0 4CC0 0332         SVEXT BOSC I SVINT   EXIT                   IX  8B905880
                         *                                              8B905890
                         *                ** CONSTANTS **               8B905900
                         *                                              8B905910
035B 0 001F              SV0   DC   /001F    NUMBER OF AREA CODES       8B905920
035C 0 00FF              SV1   DC   /00FF    NUMBER OF MODIFIERS        8B905930
035D 0 0701              SV2   DC   /0701    SENSE/RESET DSW            8B905940
035E 0 0700              SV3   DC   /0700    SENSE/RESET PISW           8B905950
035F 0 0000              SV4   DC   0        AREA CODE INDICATOR        8B905960
0360 0 0000              SV5   DC   0        MODIFIER INDICATOR         8B905970
0361 0 0000              SV6   DC   0        IOCC IN USE                8B905980
0362 0 0000              SV7   DC   0        PASS SWITCH                8B905990
0364   0000                    BSS  E  0                                8B906000
0364 0 0000              SVIO  DC   0        SENSE DSW IOCC             8B906010
0365 0 0000                    DC   0                                   8B906020
                         *                                              8B906030
                         *              CONSTANTS                       8B906040
                         *                                              8B906050
0366   0000                    BSS  E  0                                8B906060
0366 0 0000              ILSW  DC   0        SENSE ILSW IOCC            8B906070
0367 0 0300                    DC   /0300                               8B906080
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0368 0 0000              TAAQ  DC   0        A AND Q TEM STOR           8B906090
0369 0 0000                    DC   0                                   8B906100
036A 0 0700              DSW   DC   /0700    DSW IOCC                   8B906110
036B 0 0000                    DC   0                                   8B906120
036C 0 0000              TADSW DC   0        TAPE DSW STORAGE           8B906130
036D 0 3040              TADWC DC   /3040    CK TAPE DSW FOR OK         8B906140
036E 0 0001              ONE   DC   1        CONSTANT                   8B906150
                         *                                              8B906160
                         *              ERROR HANGS                     8B906170
                         *                                              8B906180
036F 0 0000              ERRI  DC   0                                   8B906190
0370 0 3009              WAIT9 WAIT 9        ILLEGAL INTRPT             8B906200
                         *                                              8B906210
0371 0 0000              TERR  DC   0                                   8B906220
0372 0 300A              WAITA DC   /300A    BLANK ILSW                 8B906230
                         *                                              8B906240
                         *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 8B906250
                         *XXXXXXXXXXXXXXXX COMMON DCC ROUTINE XXXXXXXX  8B906260
                         *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 8B906270
                         *                                              8B906280
0373 0 0000              DCC   DC   0                                *   8B906290
0374 0 6A10                    STX  2 DCC2&1  SAVE IX 2                 8B906300
0375 0 6780 0373               LDX  I3 DCC    IX3 # RETURN              8B906310
                         *                                              8B906320
0377 0 C300                    LD   3 0        GET ADRS OF STRING       8B906330
0378 0 D0FA                    STO    DCC                               8B906340
                         *                                              8B906350
0379 0 6680 0373               LDX  I2 DCC    IX2 # ADRS STRING         8B906360
                         *                                              8B906370
037B 0 C680 0000               LD   I2 0      SET AREA CODE             8B906380
037D 0 EE80 0001               OR   I2 1      SET FUNC                  8B906390
037F 0 EE80 0002               OR   I2 2      SET MODIFIER              8B906400
                         *                                              8B906410
0381 0 1890                    SRT    16      PUT IN Q                  8B906420
0382 0 C203                    LD   2 3       GET I/O ADRS              8B906430
                         *                                              8B906440
0383 0 D806                    STD    DCC3    SET IOCC WD               8B906450
0384 0 6600 0000         DCC2  LDX  L2 0      RESTORE IX 2              8B906460
                         *                                              8B906470
0386 0 0803                    XIO    DCC3    DO COMMAND                8B906480
                         *                                              8B906490
0387 0 4F00 0001               BSC  L3 1      RETURN                SX  8B906500
038A   0002              DCC3  BSS  E  2                                8B906510
                         *                                              8B906520
                         *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 8B906530
                         *XXXXXXXXXXXXXXXX COMMON DELAY ROUTINE XXXXXX  8B906540
                         *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 8B906550
                         *                                              8B906560
038C 0 0000              DELAY DC   0                                SE  8B906570
038D 0 6780 038C               LDX  I3 DELAY  IX3 # RETURN              8B906580
038F 0 CF80 0000               LDD  I3 0      GET COUNT                 8B906590
0391 0 980C              JDLY2 SD     MONE     SUB 1                     8B906600
0392 0 D80D                    STD    MST     SAVE                      8B906610
0393 0 4C20 0398               BSC  L JDLY3,Z CK FOR ZERO               8B906620
0395 0 18D0                    RTE    16                                8B906630
0396 0 4C18 039A               BSC  L JDLY4,&- CK FOR ZERO              8B906640
0398 0 C807              JDLY3 LDD    MST     GET COUNT                 8B906650
0399 0 70F7                    MDX    JDLY2                             8B906660
039A 0 7401 038C         JDLY4 MDX  L DELAY,1  &1 TO RETURN             8B906670
039C 0 4C80 038C               BSC  I DELAY   RETURN                SX  8B906680
039E   0000                    BSS  E  0                                8B906690
039E 0 0000              MONE  DC   0                                   8B906700
039F 0 0001                    DC   1                                   8B906710
03A0 0 0000              MST   DC   0                                   8B906720
03A1 0 0000                    DC   0                                   8B906730
                         *                                              8B906740
                         *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 8B906750
                         *XXXXXXXXXXXXXXXXX COMMON SENSE DEVICE RTN XXX 8B906760
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                        *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX      8B906770
                        *                                                      8B906780
03A2 0 0000             DIND  DC      0                                 SE     8B906790
03A3 0 6780 03A2              LDX   I3 DIND       IX 3 # RETURN               8B906800
03A5 0 C780 0000              LD    I3 0          LOAD AREA CODE              8B906810
03A7 0 F006                   EOR      FNC        SET FUNCT                   8B906820
03A8 0 F780 0001              EOR   I3 1          SET MOD                     8B906830
03AA 0 D006                   STO      IOCC1&1    SAVE                        8B906840
03AB 0 0804                   XIO      IOCC1      SENSE                       8B906850
03AC 0 4F00 0003              BSC   L3 3          RETURN                  SX  8B906860
03AE 0 0700             FNC   DC      /0700                                  8B906870
03B0   0000                   BSS   E  0                                     8B906880
03B0 0 0000             IOCC1 DC      0                                      8B906890
03B1 0 0000                   DC      0                                      8B906900
                        *                                                      8B906910
                        *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX      8B906920
                        *XXXXXXXXXXXXXXXX COMMON HALT ROUTINE XXXXXXX          8B906930
                        *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX      8B906940
                        *                                                      8B906950
03B2 0 0000             HALT  DC      0                                 SE     8B906960
03B3 0 0C00 043E              XIO   L  MK15       MASK ALL LEVELS             8B906970
03B5 0 0C00 0440              XIO   L  MK27       *                           8B906980
03B7 0 3002             WAIT2 WAIT    2          COMMON WAIT                 8B906990
03B8 0 0C00 0302              XIO   L  UNMK3      UNMASK                      8B907000
03BA 0 0C00 0304              XIO   L  UNMK4      UNMASK                      8B907010
03BC 0 4C80 03B2              BSC   I  HALT       RETURN                  SX  8B907020
03BE 0 0000             WC    DC      0          WD CT STORAGE               8B907030
                        *                                                      8B907040
                        *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX      8B907050
                        *XXXXXXXXXXXXXXXX ROUTINE TO CONTROL     XXXX          8B907060
                        *XXXXXXXXXXXXXXXX CONVERSION AND LOGGING XXXX          8B907070
                        *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX      8B907080
                        *                                                      8B907090
03BF 0 0000             LOGC  DC      0                                 SE     8B907100
03C0 0 6D00 0564              STX   L1 LOGC7&1    SAVE IXING                  8B907110
03C2 0 6E00 0566              STX   L2 LOGC8&1    *                           8B907120
03C4 0 6F00 0568              STX   L3 LOGC9&1    *                           8B907130
03C6 0 6500 08F7              LDX   L1 MODO       IX 1 # ADRS OF MSG          8B907140
03C8 0 6600 0D96              LDX   L2 PRA        IX 2 # ADR OF MSG           8B907150
03CA 0 631F                   LDX    3 31         IX 3 # LNGTH/OUTPUT         8B907160
03CB 0 1010                   SLA      16         SET ACCUM # BLANK           8B907170
03CC 0 D700 0D91        LOGIC STO   L3 PRA4-1     SET I/O AREA # BLANK        8B907180
03CE 0 73FF                   MDX    3 -1                                    8B907190
03CF 0 70FC                   MDX      LOGIC                                 8B907200
03D0 0 6700 08F7              LDX   L3 MODO       IX 3 # ADRS OF MSG          8B907210
03D2 0 C100                   LD     1 0          GET LINE NO/WD CT           8B907220
03D3 0 1808                   SRA      8          SAVE LINE NUMBER            8B907230
03D4 0 4C18 0499              BSC   L  LOGD0,&-    BRANCH # LINE ZERO          8B907240
03D6 0 7306             LOG2C MDX    3 6          SET IX3 # 2ND MOD           8B907250
03D7 0 7210                   MDX    2 16         SET IX2 # 2ND MOD           8B907260
03D8 0 C100                   LD     1 0          GET WD CT/LINE NO           8B907270
03D9 0 1008                   SLA      8                                     8B907280
03DA 0 1808                   SRA      8          SAVE WD CT                  8B907290
03DB 0 D0E2                   STO      WC                                    8B907300
03DC 0 74FC 03BE              MDX   L  WC,-4       DECR WD CT                  8B907310
03DE 0 7001                   MDX      LOGV1      NOT DONE                    8B907320
03DF 0 7039                   MDX      LOG6C      CONV COMPLETE               8B907330
03E0 0 1010             LOGV1 SLA      16         CLEAR ODD-EVEN SW           8B907340
03E1 0 D400 0462              STO   L  SW         *                           8B907350
03E3 0 C400 02DF              LD    L  RID        GET RTN ID                  8B907360
03E5 0 F07D                   EOR      K007       CK FOR RTN 7                8B907370
03E6 0 4820                   BSC      Z          SKIP = RTN 7                8B907380
03E7 0 7016                   MDX      LOG3C      BRANCH                      8B907390
03E8 0 6700 0930              LDX   L3 MTTYD      SET IX 3                    8B907400
03EA 0 C300             LOGV2 LD     3 0          GET WD                      8B907410
03EB 0 D400 05E5              STO   L  WDCON      SET                         8B907420
03ED 0 4400 05A6              BSI   L  HEDEC      CONVERT TO DEC              8B907430
03EF 0 C400 05DB              LD    L  CODE&1     GET CONVERTED WD            8B907440
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03F1 0 D200                   STO    2 0          SET IN MSG                  8B907450
03F2 0 7201                   MDX    2 1          INCR IX                     8B907460
03F3 0 7301                   MDX    3 1          *                           8B907470
03F4 0 7401 0462              MDX   L  SW,1       INCR SWITCH                 8B907480
03F6 0 C06B                   LD       SW         GET SWITCH                  8B907490
03F7 0 4804                   BSC      E          SKIP IF EVEN                8B907500
03F8 0 70F1                   MDX      LOGV2      LOOP                        8B907510
03F9 0 7201                   MDX    2 1          INCR IX                     8B907520
03FA 0 74FF 03BE              MDX   L  WC,-1       CK FOR DONE                 8B907530
03FC 0 70ED                   MDX      LOGV2      LOOP                        8B907540
03FD 0 701B                   MDX      LOG6C      PRINT                       8B907550
03FE 0 C101             LOG3C LD     1 1          GET HEX/DEC SW              8B907560
03FF 0 4C18 0411              BSC   L  LOG5C,&-    BRANCH # HEX                8B907570
0401 0 C300                   LD     3 0          GET WD TO CONV              8B907580
0402 0 D400 05E5              STO   L  WDCON      SET IN CONV RTN             8B907590
0404 0 4400 05A6              BSI   L  HEDEC      GO CONV TO DEC              8B907600
0406 0 CC00 05DA              LDD   L  CODE       GET PACKED WD               8B907610
0408 0 D200             LOG4C STO    2 0          SET IN MSG                  8B907620
0409 0 18D0                   RTE      16                                     8B907630
040A 0 D201                   STO    2 1                                      8B907640
040B 0 7203                   MDX    2 3                                      8B907650
040C 0 7301                   MDX    3 1          INCR IX 3                   8B907660
040D 0 74FF 03BE              MDX   L  WC,-1       CHECK FOR DONE              8B907670
040F 0 70EE                   MDX      LOG3C                                  8B907680
0410 0 7008                   MDX      LOG6C                                  8B907690
0411 0 C300             LOG5C LD     3 0          GET WD TO CONVERT           8B907700
0412 0 D400 0606              STO   L  HEXWD      STO IN HEX CONV RTN         8B907710
0414 0 4400 05E6              BSI   L  HEXCV      GO CONVERT TO HEX       SRC 8B907720
0416 0 CC00 060C              LDD   L  HEXCD      GET CONVERTED WD            8B907730
0418 0 70EF                   MDX      LOG4C      GO CK FOR DONE              8B907740
0419 0 C400 02E3        LOG6C LD    L  TERM       GET A TERM                  8B907750
041B 0 D200                   STO    2 0          SET IN I/O AREA             8B907760
041C 0 C400 02DF              LD    L  RID        GET RTN NO                  8B907770
041E 0 9045                   S        K006       SUB 6                       8B907780
041F 0 4820                   BSC      Z          SKIP IF RTN 6               8B907790
0420 0 7015                   MDX      HERE                                   8B907800
0421 0 C400 0D2E              LD    L  LOW        GET LOW CREEP SW            8B907810
0423 0 4810                   BSC      -          SKIP IF NEG                 8B907820
0424 0 7003                   MDX      HERE1                                  8B907830
0425 0 C03F                   LD       K0020      GET NEG SIGN                8B907840
0426 0 D400 0DA5              STO   L  PRA4&19     SET IN MSG                  8B907850
0428 0 C400 0D30        HERE1 LD    L  AVG        GET AVG SW                  8B907860
042A 0 4810                   BSC      -          SKIP IF NEG                 8B907870
042B 0 7003                   MDX      HERE2                                  8B907880
042C 0 C038                   LD       K0020      GET NEG SIGN                8B907890
042D 0 D400 0DA8              STO   L  PRA4&22     SET IN MSG                  8B907900
042F 0 C400 0D2F        HERE2 LD    L  HI         GET HI SW                   8B907910
0431 0 4810                   BSC      -          SKIP IF NEG                 8B907920
0432 0 7003                   MDX      HERE                                   8B907930
0433 0 C031                   LD       K0020      GET NEG SIGN                8B907940
0434 0 D400 0DAB              STO   L  PRA4&25     SET IN MSG                  8B907950
                        *                                                      8B907960
0436 0 C400 02E1        HERE  LD    L  SW0        GET SWS                     8B907970
0438 0 1806                   SRA      6                                      8B907980
0439 0 4C04 0466              BSC   L  LOGAC,E    BRANCH # USE PRINTER        8B907990
043B 0 4C00 052A              BSC   L  LOGBC      USE TYPEWRITER              8B908000
                        *                                                      8B908010
043E   0000                   BSS   E  0                                     8B908020
043E 0 FFFF             MK15  DC      /FFFF      MASK ALL LVLS IOCCS         8B908030
043F 0 0480                   DC      /0480                                  8B908040
0440 0 FFFF             MK27  DC      /FFFF                                  8B908050
0441 0 0481                   DC      /0481                                  8B908060
0442 0 0700             SNSPR DC      /0700                                  8B908070
0443 0 0700                   DC      /0700                                  8B908080
0444 0 6500 0000        LOG7C LDX   L1 0          RESTORE IX 1                8B908090
0446 0 6600 0000        LOG8C LDX   L2 0          RESTORE IX 2                8B908100
0448 0 6700 0000        LOG9C LDX   L3 0          RESTORE IX 3                8B908110
044A 0 4C80 03BF              BSC   I  LOGC       EXIT                    SX  8B908120
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044C 0 0000          PCCO  DC      0                                SE   8B908130
044D 0 69F7                STX   1 LOG7C&1    SAVE IX 1                8B908140
044E 0 6AF8                STX   2 LOG8C&1    SAVE IX 2                8B908150
044F 0 6BF9                STX   3 LOG9C&1    SAVE IX 3                8B908160
0450 0 C010                LD      PCCX1      GET WD CT                8B908170
0451 0 D400 08F7           STO   L MODO       SAVE                     8B908180
0453 0 C0F8                LD      PCCO       GET RETURN               8B908190
0454 0 D400 03BF           STO   L LOGC       SAVE                     8B908200
0456 0 C400 02E3           LD    L TERM       GET TERMINATOR           8B908210
0458 0 D400 0DAE           STO   L PRA4&28    SET IN MSG               8B908220
045A 0 C400 02E1           LD    L SW0        GET SW FNC 0             8B908230
045C 0 1806                SRA     6                                   8B908240
045D 0 4C04 0466           BSC   L LOGAC,E    BRANCH # USE PRINTER     8B908250
045F 0 4C00 052A           BSC   L LOGBC      USE TYPEWRITER           8B908260
0461 0 0009          PCCX1 DC      9          PCCO WD CT               8B908270
0462 0 0000          SW    DC      0          ODD-EVEN SW              8B908280
0463 0 0007          K007  DC      /0007      CONSTANT  7              8B908290
0464 0 0006          K006  DC      6          CONSTANT                 8B908300
0465 0 0020          K0020 DC      /0020      *                        8B908310
                     ~                                               8B908320
                     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  8B908330
                     *XXXXXXXXXXXXXXXX PRINTER OUTPUT ROUTINE XXXX   8B908340
                     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  8B908350
                     *                                               8B908360
0466 0 6B18          LOGAC STX   3 LOGAB&1    SAVE IX 3                8B908370
0467 0 C400 08F7           LD    L MODO       GET WD CT/ LINE NO       8B908380
0469 0 1008                SLA     8          SAVE WD CT               8B908390
046A 0 1808                SRA     8                                   8B908400
046B 0 D001                STO     LOGAD&1                             8B908410
046C 0 6700 0000     LOGAD LDX   L3 0         IX 3 # WD CT             8B908420
046E 0 C700 048F           LD    L3 PRWC-2    GET FINAL WD CT          8B908430
0470 0 D400 0D92           STO   L PRA4       SAVE                     8B908440
0472 0 C0CF                LD      SNSPR      GET SENSE IOCC           8B908450
0473 0 F400 02E5           EOR   L EDIT&1     SET AREA CODE            8B908460
0475 0 D0CD                STO     SNSPR&1    SAVE                     8B908470
0476 0 08C7                XIO     MK15       MASK ALL LVLS            8B908480
0477 0 08C8                XIO     MK27       *                        8B908490
0478 0 08C9                XIO     SNSPR      SENSE PRINTER            8B908500
0479 0 4804                BSC     E          IS PRINTER READY         8B908510
047A 0 3003          WAIT3 WAIT    3          PRINTER NOT READY        8B908520
                     *                                               8B908530
                     *                                               8B908540
                     ************************************************8B908550
047B 0 4400 0373           BSI   L DCC        GO LOG                   8B908560
047D 0 05A0                DC      LOGX3      ADRS OF STRING           8B908570
                     ************************************************8B908580
047E 0 6700 0000     LOGAB LDX   L3 0         RESTORE IX 3             8B908590
0480 0 08C1          LOGAE XIO     SNSPR      SENSE PRINTER            8B908600
0481 0 1002                SLA     2                                   8B908610
0482 0 4810                BSC     -          IS PRTR CMPL ON          8B908620
0483 0 70FC                MDX     LOGAE      NO                       8B908630
0484 0 C0BE                LD      SNSPR&1    GET IOCC                 8B908640
0485 0 F400 036E           EOR   L ONE        SET BIT 15               8B908650
0487 0 D0BB                STO     SNSPR&1    SAVE                     8B908660
0488 0 08B9          LOGAF XIO     SNSPR      SENSE PRINTER            8B908670
0489 0 1801                SRA     1                                   8B908680
048A 0 4804                BSC     E          IS PRTR BUSY             8B908690
048B 0 70FC                MDX     LOGAF      YES                      8B908700
048C 0 0C00 0302           XIO   L UNMK3      UNMASK ALL LEVELS        8B908710
048E 0 0C00 0304           XIO   L UNMK4                               8B908720
0490 0 70B3                MDX     LOG7C      GO EXIT                  8B908730
0491 0 000E          PRWC  DC      14         WORD CTS FOR PRINTER     8B908740
0492 0 0013                DC      19                                  8B908750
0493 0 0016                DC      22                                  8B908760
0494 0 0019                DC      25                                  8B908770
0495 0 001C                DC      28                                  8B908780
0496 0 001F                DC      31                                  8B908790
0497 0 0022                DC      34                                  8B908800
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0498 0 001C                DC      28                                  8B908810
0499 0 C102          LOGDO LD    1 2        GET WD TO CONV           8B908820
049A 0 D400 0606           STO   L HEXWD      SET IN RTN               8B908830
049C 0 4400 05E6           BSI   L HEXCV      GO CONVERT         SRC   8B908840
049E 0 CC00 060C           LDD   L HEXCD      GET CONVERTED WD         8B908850
04A0 0 DC00 0D96           STD   L PRA        SET IN MSG               8B908860
04A2 0 C104                LD    1 4          GET MSG ID               8B908870
04A3 0 D400 0606           STO   L HEXWD      SET IN RTN               8B908880
04A5 0 4400 05E6           BSI   L HEXCV      GO CONVERT TO HEX  SRC   8B908890
04A7 0 CC00 060C           LDD   L HEXCD      GET CONVERTED WD         8B908900
04A9 0 D400 0D99           STO   L PRA&3      SET IN MSG               8B908910
04AB 0 18D0                RTE     16         MOVE Q TO A              8B908920
04AC 0 D400 0D9A           STO   L PRA&4      SET IN MSG               8B908930
04AE 0 C400 02DF           LD    L RID        GET RTN NUMBER           8B908940
04B0 0 D400 0606           STO   L HEXWD      SET IN RTN               8B908950
04B2 0 4400 05E6           BSI   L HEXCV      GO CONVERT TO HEX  SRC   8B908960
04B4 0 CC00 060C           LDD   L HEXCD      GET CONVERTED WD         8B908970
04B6 0 DC00 0D9C           STD   L PRA&6      SET IN MSG               8B908980
04B8 0 C400 02E0           LD    L RAD        GET RTN ADRS             8B908990
04BA 0 D400 0606           STO   L HEXWD      SET IN RTN               8B909000
04BC 0 4400 05E6           BSI   L HEXCV      GO CONVERT TO HEX  SRC   8B909010
04BE 0 CC00 060C           LDD   L HEXCD      GET CONVERTED WD         8B909020
04C0 0 D400 0D9F           STO   L PRA&9      SET IN MSG               8B909030
04C2 0 18D0                RTE     16         MOVE Q TO A              8B909040
04C3 0 D400 0DA0           STO   L PRA&10     SET IN MSG               8B909050
04C5 0 C105                LD    1 5          GET DRIVE NO             8B909060
04C6 0 D400 0606           STO   L HEXWD      SET IN RTN               8B909070
04C8 0 4400 05E6           BSI   L HEXCV      GO CONVERT         SRC   8B909080
04CA 0 CC00 060C           LDD   L HEXCD      GET CONVERTED WD         8B909090
04CC 0 D400 0DA2           STO   L PRA&12     SET IN MSG               8B909100
04CE 0 18D0                RTE     16                                  8B909110
04CF 0 D400 0DA3           STO   L PRA&13     SET IN MSG               8B909120
04D1 0 4C00 03D6           BSC   L LOG2C                               8B909130
                     *                                               8B909140
                     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  8B909150
                     *XXXXXXXXXXXXXXXX 1443 PAGE CONTROL ROUTINE X   8B909160
                     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  8B909170
                     *                                               8B909180
04D3 0 0000          RST   DC      0                                  8B909190
04D4 0 C400 02E1           LD    L SW0        GET SWITCHES             8B909200
04D6 0 1009                SLA     9          CK FOR 1443              8B909210
04D7 0 4C10 04DE           BSC   L RST2,-     BRANCH # NOT 1443        8B909220
04D9 0 0844                XIO     RSTX2      SKIP TO CHN 1            8B909230
04DA 0 0845          RST1  XIO     RSTX3      SENSE 1443               8B909240
04DB 0 1802                SRA     2          CK FOR BUSY              8B909250
04DC 0 4804                BSC     E          SKIP # NOT BUSY          8B909260
04DD 0 70FC                MDX     RST1       LOOP                     8B909270
04DE 0 C500 02E8     RST2  LD    L1 EDIT&4    GET NUMBER OF TRACKS     8B909280
04E0 0 4C18 04E4           BSC   L DR9,&-     BRANCH # 9 TRACK         8B909290
04E2 0 C03F                LD      K0700      SET 7 TRACK              8B909300
04E3 0 7001                MDX     DR9&1      BRANCH                   8B909310
04E4 0 C03E          DR9   LD      K0900      GET 9 TRACK              8B909320
04E5 0 D400 0E51           STO   L LN3B       SET IN MSG               8B909330
04E7 0 C500 02EA           LD    L1 EDIT&6    GET DRIVE MODEL          8B909340
04E9 0 4C18 04ED           BSC   L MD3,&-     BRANCH # MODEL 3         8B909350
04EB 0 1008                SLA     8          MOVE TO LHW              8B909360
04EC 0 7001                MDX     MD3&1      BRANCH                   8B909370
04ED 0 C036          MD3   LD      K0300      GET MODEL 3              8B909380
04EE 0 D400 0E50           STO   L LN3A       SET IN MSG               8B909390
04F0 0 C400 02FC           LD    L EDIT&8     GET MEM SPEED            8B909400
04F2 0 4C18 0500           BSC   L TMIC,+-    BRANCH # 2 MIC     $ 8B909410
04F4 0 4C10 04FD           BSC   L TMICA,-    BRANCH IF 4 MIC    $ 8B909411
04F6 0 C400 0527           LD    L H023B      SET MSG TO 2.25    $ 8B909412
04F8 0 D400 0E5A           STO   L LN3C       *                  $ 8B909413
04FA 0 C400 0528           LD    L H0205      *                  $ 8B909414
04FC 0 7008                MDX     TMICB      CONTINUE           $ 8B909415
04FD 0 C400 0526     TMICA LD    L H0400      GET 4 MIC          $ 8B909420
04FF 0 7001                MDX     TMIC&1     BRANCH                   8B909430
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0500 0 C024          TMIC  LD      K0200      GET 2 MIC                  8B909440
0501 0 D400 0E5A           STO   L  LN3C       SET IN MSG                 8B909450
0503 0 C400 0529           LD    L  H2020      SET DASHES               $ 8B909451
0505 0 D400 0E5B     TMICB STO   L  LN3C+1     *                        $ 8B909452
0507 0 6913                STX     1 SVE&1     SAVE IX 1                  8B909460
0508 0 7100                MDX     1 0         CHECK DR NUMBER            8B909470
0509 0 7003                MDX       SYDR      DRIVE 1                    8B909480
050A 0 6500 200A           LDX   L1 /200A      IX # -0                    8B909490
050C 0 7002                MDX       SYDR1     BRANCH                     8B909500
050D 0 6500 2001     SYDR  LDX   L1 /2001      IX # -1                    8B909510
050F 0 6D00 0E58     SYDR1 STX   L1 LN3D       SET IN MSG                 8B909520
0511 0 6700 0E4C           LDX   L3 LN3-1      IX # MSG ADRS              8B909530
0513 0 4400 0C21           BSI   L  LOADV      SET MSG - PRINT            8B909540
0515 0 1010                SLA      16         CLEAR ACC                  8B909550
0516 0 4400 0C19           BSI   L  LOADK      SET BLANK LINE             8B909560
0518 0 4400 044C           BSI   L  PCCO       PRINT BLANK                8B909570
051A 0 6500 0000     SVE   LDX   L1 *-*        RESTORE IX 1               8B909580
051C 0 4C80 04D3           BSC   I  RST        EXIT                       8B909590
051E   0000                BSS   E  0                                     8B909600
051E 0 0100          RSTX2 DC        /0100     IOCC - CARRIAGE SKIP       8B909610
051F 0 3400                DC        /3400     *                          8B909620
0520 0 0000          RSTX3 DC        /0000     IOCC - SENSE 1443          8B909630
0521 0 3701                DC        /3701     *                          8B909640
0522 0 0007          K0700 DC        /0007     CONSTANTS                  8B909650
0523 0 0009          K0900 DC        /0009     *                          8B909660
0524 0 0300          K0300 DC        /0300     *                          8B909670
0525 0 0220          K0200 DC        /0220     *                          8B909680
0526 0 0420          H0400 DC        /0420     *                          8B909690
0527 0 023B          H023B DC        /023B     *                        $ 8B909691
0528 0 0205          H0205 DC        /0205     *                        $ 8B909692
0529 0 2020          H2020 DC        /2020     *                        $ 8B909693
                           *                                            8B909700
                           *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 8B909710
                           *XXXXXXXXXXXXXXXX ROUTINE TO CONVERT XXXXXXXX 8B909720
                           *XXXXXXXXXXXXXXXX PRINTER CODE       XXXXXXXX 8B909730
                           *XXXXXXXXXXXXXXXX TO TYPEWRITER CODE XXXXXXXX 8B909740
                           *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 8B909750
                           *                                            8B909760
052A 0 1010          LOGBC SLA      16                                   8B909770
052B 0 D03F                STO       LOX00     CLEAR HALF WD SW           8B909780
052C 0 6937                STX     1 LOGC7&1   SAVE IX 1                  8B909790
052D 0 6A38                STX     2 LOGC8&1   SAVE IX 2                  8B909800
052E 0 6B39                STX     3 LOGC9&1   SAVE IX 3                  8B909810
052F 0 C06F                LD        PRSP      GET CARRIAGE RETURN        8B909820
0530 0 D400 0D92           STO   L   PRA4      SET IN MSG                 8B909830
0532 0 6700 0D93           LDX   L3  PRA4&1    IX 3 # ADRS MSG            8B909840
0534 0 C300          LOGC1 LD      3 0         GET WD TO CONVERT          8B909850
0535 0 D036                STO       LOX02     SAVE                       8B909860
0536 0 F400 02E3           EOR   L   TERM                                 8B909870
0538 0 4818                BSC       &-        IS IT A TERM               8B909880
0539 0 7027                MDX       LOGCC                                8B909890
053A 0 C031          LOGC2 LD        LOX02     GET WD TO CONVERT          8B909900
053B 0 4C18 0556           BSC   L   LOGCA,&-   BRANCH IF ZERO             8B909910
053D 0 180C                SRA       12        SAVE ZONE                  8B909920
053E 0 D001                STO       LOGC3&1                              8B909930
053F 0 6500 0000     LOGC3 LDX   L1  0         IX 1 # ZONE                8B909940
0541 0 C500 056E           LD    L1  LOX04     GET ADRS OF ZONE           8B909950
0543 0 D007                STO       LOGC5&1   SAVE                       8B909960
0544 0 C027                LD        LOX02     GET WD TO CONVERT          8B909970
0545 0 1004                SLA       4         SAVE POSITION              8B909980
0546 0 180C                SRA       12                                   8B909990
0547 0 D001                STO       LOGC4&1                              8B910000
0548 0 6600 0000     LOGC4 LDX   L2  0         IX 2 # POSITION            8B910010
054A 0 C600 0000     LOGC5 LD    L2  0         GET TYPEWRITER CODE        8B910020
054C 0 7400 056B           MDX   L   LOX00,0   IS THIS FIRST HALF          8B910030
054E 0 700B                MDX       LOGC6     NO                         8B910040
054F 0 D01D                STO       LOX03     YES                        8B910050
0550 0 7401 056B           MDX   L   LOX00,1   SET TO SECOND HALF          8B910060
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0552 0 C019                LD        LOX02     GET WD TO CONVERT          8B910070
0553 0 1008                SLA       8         SET TO SECOND HALF         8B910080
0554 0 D017                STO       LOX02     SAVE                       8B910090
0555 0 70E4                MDX       LOGC2     GO CONVERT                 8B910100
0556 0 D0F2          LOGCA STO       LOGC4&1                              8B910110
0557 0 C01A                LD        LOX04&4   GET ADRS                   8B910120
0558 0 D0F2                STO       LOGC5&1   SET                        8B910130
0559 0 70EE                MDX       LOGC4     GO SET BLANK               8B910140
                           *                                            8B910150
                           *              SECOND HALF WORD              8B910160
                           *                                            8B910170
055A 0 1808          LOGC6 SRA       8         MOVE TO SECOND HALF        8B910180
055B 0 F011                EOR       LOX03     COMBINE WITH FIRST         8B910190
055C 0 D300          LOGCB STO     3 0         SET IN MSG                 8B910200
055D 0 1010                SLA       16                                   8B910210
055E 0 D00C                STO       LOX00     SET TO FIRST HALF          8B910220
055F 0 7301                MDX     3 1         IX 3 # NEXT WD             8B910230
0560 0 70D3                MDX       LOGC1     CONVERT NEXT WD            8B910240
                           *                                            8B910250
                           *              FOUND A TERMINATOR            8B910260
                           *                                            8B910270
0561 0 4400 061E     LOGCC BSI   L   LOG       GO PRINT                   8B910280
0563 0 6500 0000     LOGC7 LDX   L1  0         RESTORE IX 1               8B910290
0565 0 6600 0000     LOGC8 LDX   L2  0         RESTORE IX 2               8B910300
0567 0 6700 0000     LOGC9 LDX   L3  0         RESTORE IX 3               8B910310
0569 0 4C00 0444           BSC   L   LOG7C     GO EXIT                    8B910320
                           *                                            8B910330
                           *              CONSTANTS                     8B910340
                           *                                            8B910350
056B 0 0000          LOX00 DC        0         HALF WORD SWITCH           8B910360
056C 0 0000          LOX02 DC        0         TEMP STORAGE FOR           8B910370
                           *                    WORD TO CONVERT           8B910380
056D 0 0000          LOX03 DC        0         TEMP STORAGE FOR           8B910390
                           *                    TYPEWRITER CODE           8B910400
056E 0 0573          LOX04 DC        PR00      ADRS OF ZONE 0             8B910410
056F 0 057C                DC        PR01-2    ADRS OF ZONE 1             8B910420
0570 0 0587                DC        PR02      ADRS OF ZONE 2             8B910430
0571 0 0593                DC        PR03-1    ADRS OF ZONE 3             8B910440
0572 0 0586                DC        PR02-1    ADRS OF BLANK              8B910450
                           *                                            8B910460
                           *          PRINTER CODE TO TYPEWRITER        8B910470
                           *          CODE CONVERSION TABLE             8B910480
                           *                                            8B910490
0573 0 2100          PR00  DC        /2100     0                          8B910500
0574 0 FC00                DC        /FC00     1                          8B910510
0575 0 D800                DC        /D800     2                          8B910520
0576 0 DC00                DC        /DC00     3                          8B910530
0577 0 F000                DC        /F000     4                          8B910540
0578 0 F400                DC        /F400     5                          8B910550
0579 0 D000                DC        /D000     6                          8B910560
057A 0 D400                DC        /D400     7                          8B910570
057B 0 E400                DC        /E400     8                          8B910580
057C 0 E000                DC        /E000     9                          8B910590
057D 0 C400                DC        /C400     0                          8B910600
057E 0 9A00          PR01  DC        /9A00     S                          8B910610
057F 0 9E00                DC        /9E00     T                          8B910620
0580 0 B200                DC        /B200     U                          8B910630
0581 0 B600                DC        /B600     V                          8B910640
0582 0 9200                DC        /9200     W                          8B910650
0583 0 9600                DC        /9600     X                          8B910660
0584 0 A600                DC        /A600     Y                          8B910670
0585 0 A200                DC        /A200     Z                          8B910680
0586 0 2100                DC        /2100     BLANK                      8B910690
0587 0 8400          PR02  DC        /8400     -                          8B910700
0588 0 7E00                DC        /7E00     J                          8B910710
0589 0 5A00                DC        /5A00     K                          8B910720
058A 0 5E00                DC        /5E00     L                          8B910730
058B 0 7200                DC        /7200     M                          8B910740
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058C 0 7600                DC    /7600      N
058D 0 5200                DC    /5200      O
058E 0 5600                DC    /5600      P
058F 0 6600                DC    /6600      Q
0590 0 6200                DC    /6200      R
0591 0 4200                DC    /4200
0592 0 4000                DC    /4000      $
0593 0 D600                DC    /D600      *
0594 0 3E00          PR03  DC    /3E00      A
0595 0 1A00                DC    /1A00      B
0596 0 1E00                DC    /1E00      C
0597 0 3200                DC    /3200      D
0598 0 3600                DC    /3600      E
0599 0 1200                DC    /1200      F
059A 0 1600                DC    /1600      G
059B 0 2600                DC    /2600      H
059C 0 2200                DC    /2200      I
059D 0 0200                DC    /0200
059E 0 0000                DC    /0000      .
059F 0 8121          PRSP  DC    /8121      CARRIAGE RETURN
                     *
                     *                CONSTANTS
                     *
                     *
                     *
                     *                 ADRS STRING FOR DCC CALL
                     *
05A0 0 02E5          LOGX3 DC    EDIT&1     ADRS OF AREA CODE
05A1 0 05A4                DC    LOGX8      ADRS OF FUNCTION
05A2 0 05A5                DC    LOGX9      ADRS OF MODIFIER
05A3 0 0D92                DC    PRA4       ADRS OF MSG
                     *
                     *                FUNCTION AND MODIFIER
                     *
05A4   0000                BSS   E  0
05A4 0 0500          LOGX8 DC    /0500      FUNCTION
05A5 0 0000          LOGX9 DC    /0000      MODIFIER
                     *
                     *                MASK CONSTANTS
                     *
                     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                     *XXXXXXXXXXXXXXXXX HEX TO DECIMAL CONVERSION X
                     *XXXXXXXXXXXXXXXXX ROUTINE                   X
                     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                     *
05A6 0 0000          HEDEC DC    0                                SE
05A7 0 6B21                STX   3 HEDE4&1    SAVE IX 3
05A8 0 6A22                STX   2 HEDE5&1    SAVE IX 2
05A9 0 6923                STX   1 HEDE6&1    SAVE IX 1
05AA 0 6500 05E1           LDX   L1 OPARA     OUTPUT AREA INDEX
05AC 0 6600 05DC           LDX   L2 CVTBL     CONVERSION TABLE IX
                     *
05AE 0 C036                LD    WDCON        SET WORD TO CONVERT
05AF 0 D028                STO   WORD         IN WORK AREA
                     *
05B0 0 6700 060E     HEDE1 LDX   L3 CODEH     CODE TABLE INDEX
                     *
05B2 0 C200                LD    2 0          SET CONVERSION
05B3 0 D025                STO   CONVO        CONSTANT IN SW AREA
                     *
05B4 0 C023          HEDE2 LD    WORD         CHECK WORD AGAINST
05B5 0 9023                S     CONVO        CONVERSION CONSTANT
05B6 0 4C28 05BF           BSC   L  HEDE3,&Z  BRANCH IF MINUS
                     *
05B8 0 8020                A     CONVO        RESTORE NUMBER
05B9 0 D01E                STO   WORD
                     *
05BA 0 C01E                LD    CONVO        SET UP FOR NEXT
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8B910750
8B910760
8B910770
8B910780
8B910790
8B910800
8B910810
8B910820
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8B910840
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8B911360
8B911370
8B911380
8B911390
8B911400
8B911410
8B911420
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05BB 0 8200                A     2 0          CHECK
05BC 0 D01C                STO   CONVO
                     *
05BD 0 7301                MDX   3 1          CODE TABLE INDEX & 1
05BE 0 70F5                MDX   HEDE2
                     *
                     *                NEGATIVE RESULT
                     *
05BF 0 8200          HEDE3 A     2 0          RESTORE LAST NUMBER
05C0 0 D017                STO   WORD
                     *
05C1 0 C300                LD    3 0          SET 1443 CODE IN
05C2 0 D100                STO   1 0          OUTPUT AREA
                     *
05C3 0 7101                MDX   1 1          OUTPUT AREA INDEX &1
05C4 0 7201                MDX   2 1          CONVERSION TBL IX &1
                     *
05C5 0 C200                LD    2 0
05C6 0 4C20 05B0           BSC   L  HEDE1,Z
                     *
05C8 0 6700 0000     HEDE4 LDX   L3 0          RESTORE INDEX REG 3
05CA 0 6600 0000     HEDE5 LDX   L2 0          RESTORE INDEX REG 2
05CC 0 6500 0000     HEDE6 LDX   L1 0          RESTORE INDEX REG 1
05CE 0 C012                LD    OPARA        GET 1ST CODE AND
05CF 0 1008                SLA   8            PACK WITH 2ND
05D0 0 E811                OR    OPARA&1
05D1 0 D008                STO   CODE
05D2 0 C010                LD    OPARA&2      GET 3RD CODE AND
05D3 0 1008                SLA   8            PACK WITH 4TH
05D4 0 E80F                OR    OPARA&3
05D5 0 D005                STO   CODE&1
                     *
05D6 0 4C80 05A6           BSC   I  HEDEC     RETURN TO USER          SX
                     *
                     *                CONVERSION CONSTANTS
                     *
05D8 0 0000          WORD  DC    0            WORK AREA
05D9 0 0000          CONVO DC    0            WORK AREA
                     *
05DA   0000                BSS   E  0
                     *
05DA 0 0000          CODE  DC    0            PACKED WORDS 1 AND 2
05DB 0 0000                DC    0            PACKED WORDS 3 AND 4
                     *
05DC 0 03E8          CVTBL DC    /03E8        1000
05DD 0 0064                DC    /0064        100
05DE 0 000A                DC    /000A        10
05DF 0 0001                DC    /0001        1
05E0 0 0000                DC    /0000        0
                     *
05E1 0 0000          OPARA DC    0            OUTPUT WORK AREA
05E2 0 0000                DC    0
05E3 0 0000                DC    0
05E4 0 0000                DC    0
                     *
05E5 0 0000          WDCON DC    0            STORAGE/WD TO CONVRT
                     *
                     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                     *XXXXXXXXXXXXXXXXX HEX TO 1443 HEX    XXXXXXXX
                     *XXXXXXXXXXXXXXXXX CONVERSION ROUTINE XXXXXXXX
                     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                     *
05E6 0 0000          HEXCV DC    0                                SE
05E7 0 6B1B                STX   3 HEXC3&1    SAVE IX 3
05E8 0 6A18                STX   2 HEXC2&1    SAVE IX 2
05E9 0 6204                LDX   2 4          CONVERSION INDEX
                     *
05EA 0 C01B                LD    HEXWD        GET WORD TO CONVERT
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8B911430
8B911440
8B911450
8B911460
8B911470
8B911480
8B911490
8B911500
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8B911520
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8B911990
8B912000
8B912010
8B912020
8B912030
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8B912060
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8B912080
8B912090
8B912100
```

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05EB 0 1890              SRT     16          SET A IN 0                    8B912110
05EC 0 1010              SLA     16                                        8B912120
05ED 0 1084    HEXC1     SLT     4           GET CHARACTER                 8B912130
05EE 0 D001              STO     HEXC1&3                                   8B912140
05EF 0 6700 0000         LDX   L3 0           SET CODE TABLE INDEX          8B912150
                         *                                                 8B912160
05F1 0 C700 060E         LD    L3 CODEH      GET CODED CHARACTER           8B912170
05F3 0 D600 0606         STO   L2 HEX00-1    AND SAVE                      8B912180
05F5 0 1010              SLA     16                                        8B912190
                         *                                                 8B912200
05F6 0 72FF              MDX     2 -1        CHECK IF DONE                 8B912210
05F7 0 70F5              MDX     HEXC1                                     8B912220
                         *                                                 8B912230
05F8 0 C011              LD      HEX00&3     PACK CODED WORDS              8B912240
05F9 0 1008              SLA     8                                         8B912250
05FA 0 E80E              OR      HEX00&2                                   8B912260
05FB 0 D010              STO     HEXCD                                     8B912270
05FC 0 C00B              LD      HEX00&1                                   8B912280
05FD 0 1008              SLA     8                                         8B912290
05FE 0 E808              OR      HEX00                                     8B912300
05FF 0 D00D              STO     HEXCD&1                                   8B912310
0600 0 6600 0000 HEXC2   LDX   L2 0           RESTORE IX 2                  8B912320
0602 0 6700 0000 HEXC3   LDX   L3 0           RESTORE IX 3                  8B912330
0604 0 4C80 05E6         BSC   I HEXCV       RETURN TO USER          SX    8B912340
                         *                                                 8B912350
                         *                   CONSTANTS                     8B912360
                         *                                                 8B912370
0606 0 0000      HEXWD   DC      0           WORD TO CONVERT               8B912380
0607 0 0000      HEX00   DC      0           *                             8B912390
0608 0 0000              DC      0           * UNPACKED CODED              8B912400
0609 0 0000              DC      0           * WORD                        8B912410
060A 0 0000              DC      0           *                             8B912420
                         *                                                 8B912430
060C   0000              BSS   E 0                                         8B912440
                         *                                                 8B912450
060C 0 0000      HEXCD   DC      0           * PACKED CODED WORD           8B912460
060D 0 0000              DC      0           *                             8B912470
                         *                                                 8B912480
                         *                   CONVERSION TABLE              8B912490
                         *                                                 8B912500
060E 0 000A      CODEH   DC      /000A       0                             8B912510
060F 0 0001              DC      /0001       1                             8B912520
0610 0 0002              DC      /0002       2                             8B912530
0611 0 0003              DC      /0003       3                             8B912540
0612 0 0004              DC      /0004       4                             8B912550
0613 0 0005              DC      /0005       5                             8B912560
0614 0 0006              DC      /0006       6                             8B912570
0615 0 0007              DC      /0007       7                             8B912580
0616 0 0008              DC      /0008       8                             8B912590
0617 0 0009              DC      /0009       9                             8B912600
0618 0 0031              DC      /0031       A                             8B912610
0619 0 0032              DC      /0032       B                             8B912620
061A 0 0033              DC      /0033       C                             8B912630
061B 0 0034              DC      /0034       D                             8B912640
061C 0 0035              DC      /0035       E                             8B912650
061D 0 0036              DC      /0036       F                             8B912660
                         *                                                 8B912670
                         *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  8B912680
                         *XXXXXXXXXXXXXXXX TYPEWRITER OUTPUT ROUTINE X     8B912690
                         *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  8B912700
                         *                                                 8B912710
061E 0 0000      LOG     DC      0                                   SE    8B912720
                         *                                                 8B912730
061F 0 0C00 043E         XIO   L MK15        MASK ALL LVLS                 8B912740
0621 0 0C00 0440         XIO   L MK27                                      8B912750
                         *                                                 8B912760
0623 0 0838              XIO     SENSE       SENSE FOR READY               8B912770
0624 0 180A              SRA     10                                        8B912780
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0625 0 4804              BSC     E                                         8B912790
                         *                                                 8B912800
0626 0 3004      WAIT4   WAIT    4           TYPEWRTR NOT RDY              8B912810
                         *                                                 8B912820
0627 0 1010              SLA     16                                        8B912830
0628 0 D036              STO     WRDSW       CLEAR 1/2 WD SWITCH           8B912840
                         *                                                 8B912850
0629 0 C036              LD      ADRS        GET MESSAGE ADDRESS           8B912860
062A 0 D010              STO     LOG01&1                                   8B912870
062B 0 D001              STO     LOG04&1                                   8B912880
062C 0 C400 0D92 LOG04   LD    L PRA4        GET MSG WORD                  8B912890
062E 0 F400 02E3         EOR   L TERM        CHECK FOR TERM                8B912900
0630 0 4C18 0654         BSC   L LOG02,&-    BRANCH IF TERM                8B912910
0632 0 C480 062D         LD    I LOG04&1     GET MSG WORD                  8B912920
0634 0 F02C              EOR     K2121       CK FOR BLANK                  8B912930
0635 0 4C20 063A         BSC   L LOG01,Z     BRANCH IF NOT BLANK           8B912940
0637 0 7401 062D LOG05   MDX   L LOG04&1,1   INCR SCAN ADRS                8B912950
0639 0 70F2              MDX     LOG04       LOOP                          8B912960
063A 0 C400 0D92 LOG01   LD    L PRA4        GET WORD TO PRINT             8B912970
063C 0 D021              STO     IOARA       SET IN OUTPUT AREA            8B912980
                         *                                                 8B912990
                         *                                                 8B913000
                         *           OUTPUT A CHARACTER                    8B913010
                         *                                                 8B913020
063D 0 081C      XIOWR   XIO     WRITE       WRITE CHARACTER               8B913030
                         *                                                 8B913040
063E 0 081D      XIOSN   XIO     SENSE       CHECK BUSY                    8B913050
                         *                                                 8B913060
063F 0 180B              SRA     11                                        8B913070
0640 0 4804              BSC     E                                         8B913080
0641 0 70FC              MDX     XIOSN       BUSY                          8B913090
                         *                                                 8B913100
                         *                                                 8B913110
                         *           CHECK FOR 1ST 1/2 WORD                8B913120
                         *                                                 8B913130
0642 0 C01C              LD      WRDSW       GET 1/2 WORD SWITCH           8B913140
0643 0 4804              BSC     E                                         8B913150
0644 0 7006              MDX     LOG03       GO SETUP FOR NEXT WD          8B913160
                         *                                                 8B913170
                         *                                                 8B913180
                         *           SET UP FOR 2ND 1/2 WORD               8B913190
                         *                                                 8B913200
0645 0 C018              LD      IOARA       GET WORD IN IO AREA           8B913210
0646 0 1008              SLA     8           POSITION 2ND 1/2 WD           8B913220
0647 0 D016              STO     IOARA                                     8B913230
0648 0 7401 065F         MDX   L WRDSW,1     BUMP WORD SWITCH              8B913240
064A 0 70F2              MDX     XIOWR       GO WRITE 2ND 1/2 WD           8B913250
                         *                                                 8B913260
                         *                                                 8B913270
                         *           SET UP FOR NEXT WORD                  8B913280
                         *                                                 8B913290
064B 0 7401 063B LOG03   MDX   L LOG01&1,1   INCR ADRS TO PRINT            8B913300
064D 0 7401 065F         MDX   L WRDSW,1     INCR WORD SW                  8B913310
064F 0 C0DD              LD      LOG04&1     GET SCAN ADRS                 8B913320
0650 0 90EA              S       LOG01&1     SUB PRINT ADRS                8B913330
0651 0 4C10 063A         BSC   L LOG01,-     BRANCH # MORE TO PRT          8B913340
0653 0 70E3              MDX     LOG05       BRANCH TO SCAN                8B913350
                         *                                                 8B913360
                         *                                                 8B913370
                         *           TERMINATOR FOUND EXIT                 8B913380
                         *                                                 8B913390
0654 0 0C00 0302 LOG02   XIO   L UNMK3       UNMASK ALL INTERRUPT          8B913400
0656 0 0C00 0304         XIO   L UNMK4       LEVELS                        8B913410
                         *                                                 8B913420
0658 0 4C80 061E         BSC   I LOG         EXIT                    SX    8B913430
                         *                                                 8B913440
                         *           LOG CONSTANTS                         8B913450
                         *                                                 8B913460
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065A   0000             BSS  E  0                                            8B913470
065A 0 065E      WRITE DC       IOARA       WRITE IOCC                       8B913480
065B 0 0902            DC       /0902                                        8B913490
065C 0 0000      SENSE DC       /0000       SENSE IOCC                       8B913500
065D 0 0F03            DC       /0F03                                        8B913510
065E 0 0000      IOARA DC       0           OUTPUT AREA                      8B913520
065F 0 0000      WRDSW DC       0           1/2 WORD SWITCH                  8B913530
0660 0 0D92      ADRS  DC       PRA4        MESSAGE ADDRESS                  8B913540
0661 0 2121      K2121 DC       /2121                                        8B913550
                 *                                                           8B913560
                 *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                8B913570
                 *XXXXXXXXXXXXXXXX END PROGRAM ROUTINE XXXXXXX               8B913580
                 *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                8B913590
                 *                                                           8B913600
0662 0 0000      END   DC       0                                     SE     8B913610
0663 0 C400 02E1       LD   L   SW0         GET SW FNC 0                     8B913620
0665 0 100B            SLA      11                                           8B913630
0666 0 4410 03B2       BSI  L   HALT,-      BRANCH # NOT LOOP                8B913640
0668 0 4C00 02EF       BSC  L   MONT        LOOP PROGRAM                     8B913650
                 *                                                           8B913660
                 *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                8B913670
                 *XXXXXXXXXXXXXXXX COMMON PROGRAM CONSTANTS XX               8B913680
                 *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                8B913690
066A   0000             BSS  E  0                                            8B913700
066A 0 0021      CONV  DC       33          2 MIC MEM CON MULT               8B913710
066B 0 0042      CONV1 DC       66          4 MIC MEM CON MULT               8B913720
066C 0 002C      SPEC  DC       /002C       SPACE                            8B913730
066D 0 0308      CON   DC       776         MIN RD TIME AT LD PT             8B913740
066E 0 0712            DC       1810        MAX RD TIME AT LD PT             8B913750
066F 0 0308            DC       776         MIN WT TIME AT LD PT             8B913760
0670 0 048B            DC       1163        MAX WT TIME AT LD PT             8B913770
0671 0 0080      CON1  DC       128         MIN RD TIME NOT LD               8B913780
0672 0 012F            DC       303         MAX RD TIME NOT LD               8B913790
0673 0 0080            DC       128         MIN WT TIME NOT LD               8B913800
0674 0 00C3            DC       195         MAX WT TIME NOT LD               8B913810
0675 0 00F8      MT5XA DC       248         UPPER GR LIMIT-9TR               8B913820
0676 0 0131            DC       305         UPPER GR LIMIT-7TR               8B913830
0677 0 00F5            DC       245         LOWER GR LIMIT-9TR               8B913840
0678 0 012E            DC       302         LOWER GR LIMIT-7TR               8B913850
0679 0 01E0      MT1X0 DC       480         BCKWRD TO FORWRD TME             8B913860
067A 0 0003      MT5X0 DC       3           DELAY # 5 SEC                    8B913870
067B 0 0D40            DC       3392                                         8B913880
067C 0 0002            DC       2                4                           8B913890
067D 0 7100            DC       28928                                        8B913900
067E 0 0001            DC       1                3                           8B913910
067F 0 D4C0            DC       54464                                        8B913920
0680 0 0001            DC       1                2                           8B913930
0681 0 3880            DC       14464                                        8B913940
0682 0 0000            DC       0                1                           8B913950
0683 0 9C40            DC       40000                                        8B913960
0684 0 0000            DC       0                500 MILLISEC                8B913970
0685 0 4E20            DC       20000                                        8B913980
0686 0 0000            DC       0                400                         8B913990
0687 0 3E80            DC       16000                                        8B914000
0688 0 0000            DC       0                300                         8B914010
0689 0 2EE0            DC       12000                                        8B914020
068A 0 0000            DC       0                200                         8B914030
068B 0 1F40            DC       8000                                         8B914040
068C 0 0000            DC       0                100                         8B914050
068D 0 0FA0            DC       4000                                         8B914060
068E 0 0000            DC       0                80.00                       8B914070
068F 0 0C80            DC       3200                                         8B914080
0690 0 0000            DC       0                60.00                       8B914090
0691 0 0960            DC       2400                                         8B914100
0692 0 0000            DC       0                40.00                       8B914110
0693 0 0640            DC       1600                                         8B914120
0694 0 0000            DC       0                35.00                       8B914130
0695 0 0578            DC       1400                                         8B914140
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0696 0 0000            DC       0                30.00                       8B914150
0697 0 04B0            DC       1200                                         8B914160
0698 0 0000            DC       0                25.00                       8B914170
0699 0 03E8            DC       1000                                         8B914180
069A 0 0000            DC       0                22.50                       8B914190
069B 0 0384            DC       900                                          8B914200
069C 0 0000            DC       0                20.00                       8B914210
069D 0 0320            DC       800                                          8B914220
069E 0 0000            DC       0                17.50                       8B914230
069F 0 02BC            DC       700                                          8B914240
06A0 0 0000            DC       0                15.00                       8B914250
06A1 0 0258            DC       600                                          8B914260
06A2 0 0000            DC       0                12.50                       8B914270
06A3 0 01F4            DC       500                                          8B914280
06A4 0 0000            DC       0                10.00                       8B914290
06A5 0 0190      MT540 DC       400                                          8B914300
06A6 0 0000            DC       0                09.00                       8B914310
06A7 0 0168            DC       360                                          8B914320
06A8 0 0000            DC       0                08.00                       8B914330
06A9 0 0140            DC       320                                          8B914340
06AA 0 0000            DC       0                07.00                       8B914350
06AB 0 0118            DC       280                                          8B914360
06AC 0 0000            DC       0                06.00                       8B914370
06AD 0 00F0            DC       240                                          8B914380
06AE 0 0000            DC       0                05.50                       8B914390
06AF 0 00DC            DC       220                                          8B914400
06B0 0 0000            DC       0                05.00                       8B914410
06B1 0 00C8      MT591 DC       200                                          8B914420
06B2 0 0000            DC       0                04.50                       8B914430
06B3 0 00B4            DC       180                                          8B914440
06B4 0 0000            DC       0                04.00                       8B914450
06B5 0 00A0            DC       160                                          8B914460
06B6 0 0000            DC       0                03.50                       8B914470
06B7 0 008C            DC       140                                          8B914480
06B8 0 0000            DC       0                03.00                       8B914490
06B9 0 0078            DC       120                                          8B914500
06BA 0 0000            DC       0                02.75                       8B914510
06BB 0 006E            DC       110                                          8B914520
06BC 0 0000            DC       0                02.50                       8B914530
06BD 0 0064            DC       100                                          8B914540
06BE 0 0000            DC       0                02.25                       8B914550
06BF 0 005A            DC       90                                           8B914560
06C0 0 0000            DC       0                02.00                       8B914570
06C1 0 0050            DC       80                                           8B914580
06C2 0 0000            DC       0                01.75                       8B914590
06C3 0 0046            DC       70                                           8B914600
06C4 0 0000            DC       0                01.50                       8B914610
06C5 0 003C            DC       60                                           8B914620
06C6 0 0000            DC       0                01.25                       8B914630
06C7 0 0032            DC       50                                           8B914640
06C8 0 0000            DC       0                01.10                       8B914650
06C9 0 002C            DC       44                                           8B914660
06CA 0 0000            DC       0                01.00                       8B914670
06CB 0 0028            DC       40                                           8B914680
06CC 0 0000            DC       0                00.90                       8B914690
06CD 0 0024            DC       36                                           8B914700
06CE 0 0000            DC       0                00.80                       8B914710
06CF 0 0020            DC       32                                           8B914720
06D0 0 0000            DC       0                00.70                       8B914730
06D1 0 001C            DC       28                                           8B914740
06D2 0 0000            DC       0                00.60                       8B914750
06D3 0 0018            DC       24                                           8B914760
06D4 0 0000            DC       0                00.55                       8B914770
06D5 0 0016            DC       22                                           8B914780
06D6 0 0000            DC       0                00.50                       8B914790
06D7 0 0014      MT506 DC       20                                           8B914800
06D8 0 03C0      TURA2 DC       960         MODEL 2 TURNAROUND               8B914810
06D9 0 0780      TURA1 DC       1920        MODEL 1 TURNAROUND               8B914820
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06DA 0 4D92        MD1LM DC    19858     MODEL 1 RD LIMIT          8B914830
06DB 0 0003        GPHLM DC    3         LINE LIMIT MODIFIER       8B914840
06DC 0 0000        MLGX7 DC    0         CONVERT MULTIPLIER        8B914850
06DD 0 0025        MOD1S DC    37        MODEL 1 TAPE SPEED        8B914860
06DE 0 004B        MOD2S DC    75        MODEL 2 TAPE SPEED        8B914870
06DF 0 0070        INPSE DC    112       MODEL 3 TAPE SPEED        8B914880
                   *                                               8B914890
                   *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX* 8B914900
                   *XXXXXXXXXXXXXXXX DEVICE STATUS TABLE XXXXXX    8B914910
                   *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX* 8B914920
                   *                                               8B914930
06E0 0 0000        DST   DC    0         0  MAX TIME FOR WRT       8B914940
06E1 0 0000              DC    0         1  MIN TIME FOR WRT       8B914950
06E2 0 0000              DC    0         2  MAX TIME FOR RD        8B914960
06E3 0 0000              DC    0         3  MIN TIME FOR RD        8B914970
06E4 0 0000              DC    0         4  ACTUAL WRT TIME        8B914980
06E5 0 0000              DC    0         5  ACTUAL RD TIME         8B914990
06E6 0 0000              DC    0         6  WD CT                  8B915000
06E7 0 0000              DC    0         7  LAST DSW               8B915010
06E8 0 0000              DC    0         8  AREA CODE              8B915020
06E9 0 0000              DC    0         9  FUNCTION               8B915030
06EA 0 0000              DC    0         10 MODIFIER               8B915040
06EB 0 06E8              DC    DST&8     11 ADRS OF AREA COD       8B915050
06EC 0 06E9              DC    DST&9     12 ADRS OF FUNCTION       8B915060
06ED 0 06EA              DC    DST&10    13 ADRS OF MODIFIER       8B915070
06EE 0 0E9C              DC    IOA       14 ADRS OF I/O AREA       8B915080
06EF 0 0000              DC    0         15 NUMBER OF TRACKS       8B915090
                   *                                               8B915100
                   *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 8B915110
                   *XXXXXXXXXXXXXXXXX SUPERVISOR ROUTINE XXXXXXXX 8B915120
                   *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 8B915130
                   *                                               8B915140
                   *                                               8B915150
                   *                CHECK FOR DRIVE READY          8B915160
                   *                                               8B915170
06F0 0 6100        MONT4 LDX   1 0         SET IXING FOR DR 0      8B915180
06F1 0 6600 06E0         LDX   L2 DST                              8B915190
06F3 0 C400 02E1         LD    L  SW0     GET CONTROL SWS         8B915200
06F5 0 4828              BSC   &Z         IS DR 0 TO BE RUN       8B915210
06F6 0 701A              MDX   MON25      NO                      8B915220
06F7 0 4400 0807         BSI   L  DSW0    SENSE DRIVE         SRC 8B915230
06F9 0 4804              BSC   E          IS DRIVE READY          8B915240
06FA 0 706F              MDX   MON11      NO                      8B915250
06FB 0 4400 014F         BSI   L  BEGIN    SET CONSTANTS       SRC 8B915260
                   *                                               8B915270
                   *                SET DSTO TO DRIVE 0            8B915280
                   *                                               8B915290
06FD 0 4400 04D3         BSI   L  RST     RESTORE PRINTER         8B915300
06FF 0 1010              SLA   16                                  8B915310
0700 0 D400 02DF         STO   L  RID     ZERO RTN NO             8B915320
0702 0 C400 02E8         LD    L  EDIT&4  GET NO TRACKS           8B915330
0704 0 D20F              STO   2  15      SET IN DST              8B915340
0705 0 C400 02E4         LD    L  EDIT    GET AREA CODE           8B915350
0707 0 D208              STO   2  8       SET IN DST              8B915360
0708 0 F500 075F         EOR   L1 MONXO   SET DR SELECTION        8B915370
070A 0 D400 02ED         STO   L  ACTI    SET                     8B915380
                   *                                               8B915390
                   *                CHECK PROG HALT SW-BIT 15      8B915400
                   *                                               8B915410
070C 0 C400 02E1   MONTD LD    L  SW0     GET SW FNC 0            8B915420
070E 0 4804              BSC   E          IS PROG HALT SW ON      8B915430
070F 0 7006              MDX   MON23      YES                     8B915440
0710 0 7007              MDX   MON22      NO                      8B915450
                   *                                               8B915460
0711 0 C400 093B   MON25 LD    L  PGSW    GET PROG SW             8B915470
0713 0 4820              BSC   Z          IS PROGRAM COMPLETE     8B915480
0714 0 7070              MDX   MON24      YES                     8B915490
0715 0 7027              MDX   MONTC      NO                      8B915500
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                   *****************************************       8B915510
0716 0 4400 03B2   MON23 BSI   L  HALT                      *      8B915520
                   *****************************************       8B915530
                   *                                               8B915540
                   *                                               8B915550
                   *                CHECK FOR ROUTINE SELECTED     8B915560
                   *                IN BIT SWITCHES                8B915570
                   *                                               8B915580
0718 0 C400 02E2   MON22 LD    L  SW1     GET SW FNC 1            8B915590
071A 0 4820              BSC   Z          IS A RTN SELECTED       8B915600
071B 0 7004              MDX   MONTF      YES                     8B915610
071C 0 C400 02DF   MONT6 LD    L  RID     GET RTN NO              8B915620
071E 0 8400 0925   MON10 A     L  MTTX1   ADD 1                   8B915630
0720 0 D00C        MONTF STO             MONT7&1                 8B915640
0721 0 D400 02DF         STO   L  RID     SAVE                    8B915650
0723 0 4400 07F0         BSI   L  RWD     GO REWIND           SRC 8B915660
0725 0 630A              LDX   3  10      SET UP I/O AREA         8B915670
0726 0 C400 0927         LD    L  MTTX6                            8B915680
0728 0 D700 0E9C   MONT8 STO   L3 IOA                             8B915690
072A 0 73FF              MDX   3  -1                              8B915700
072B 0 70FC              MDX   MONT8                              8B915710
072C 0 6700 0000   MONT7 LDX   L3 0       IX 3 # RTN NUMBER       8B915720
072E 0 C700 0734         LD    L3 MONT9   GET ROUTINE ADRS         8B915730
0730 0 D400 02E0         STO   L  RAD     SAVE FOR PRINT          8B915740
0732 0 4F80 0734         BSC   I3 MONT9   TRANSFER TO RTN          8B915750
                   *                                               8B915760
                   *                TABLE OF ROUTINE ADDRESSES     8B915770
                   *                                               8B915780
0734 0 0771        MONT9 DC              MONR1      ERROR           8B915790
0735 0 093C              DC              MTT01      ROUTINE NUMBER 1 8B915800
0736 0 0976              DC              MTT02                   2  8B915810
0737 0 09C2              DC              MTT03                   3  8B915820
0738 0 09C9              DC              MTT04                   4  8B915830
0739 0 09CF              DC              MTT05                   5  8B915840
073A 0 0C71              DC              MTT07                   6  8B915850
073B 0 0771              DC              MONR1      PROGRAM COMPLETE 8B915860
073C 0 0007        PGCM  DC              PGCM-MONT9-1 NO OF ROUTINES 8B915870
                   *                                               8B915880
                   *                SET UP TO CK DR 1              8B915890
                   *                                               8B915900
073D 0 6101        MONTC LDX   1 1       SET IXING FOR DR 1        8B915910
073E 0 6600 06E0         LDX   L2 DST                              8B915920
0740 0 C400 02E1         LD    L  SW0     GET CONTROL SWS         8B915930
0742 0 1001              SLA   1                                   8B915940
0743 0 4828              BSC   &Z         IS DR 1 TO BE RUN       8B915950
0744 0 70CC              MDX   MON25      NO                      8B915960
0745 0 C400 02E9         LD    L  EDIT&5  GET NO TRKS-DR 1        8B915970
0747 0 4C28 0711         BSC   L  MON25,&Z BRANCH # NOT AVAIL      8B915980
0749 0 4400 0807         BSI   L  DSW0    GO SENSE DR         SRC 8B915990
074B 0 4804              BSC   E          IS DRIVE READY          8B916000
074C 0 7014              MDX   MONTE      NO                      8B916010
074D 0 4400 014F         BSI   L  BEGIN    SET CONSTANTS       SRC 8B916020
                   *                                               8B916030
                   *                SET DSTO TO DRIVE 1            8B916040
                   *                                               8B916050
074F 0 4400 04D3         BSI   L  RST     RESTORE PRINTER         8B916060
0751 0 C400 02E9         LD    L  EDIT&5  GET NO TRACKS           8B916070
0753 0 D20F              STO   2  15      SET IN DST              8B916080
0754 0 C400 02E4         LD    L  EDIT    GET AREA CODE           8B916090
0756 0 D208              STO   2  8       SET IN DST              8B916100
0757 0 F500 075F         EOR   L1 MONXO   SET DR SEL              8B916110
0759 0 D400 02ED         STO   L  ACTI                            8B916120
075B 0 1010              SLA   16                                 8B916130
075C 0 D400 02DF         STO   L  RID     SAVE                    8B916140
075E 0 70AD              MDX   MONTD      GO TEST DR 1            8B916150
075F 0 0000        MONXO DC              0          DR 0 SELECTION 8B916160
0760 0 0020              DC              /0020      DR 1 SELECTION 8B916170
                   *                                               8B916180
```

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                          *                    DRIVE 1 IS NOT READY
                          *
0761 0 4400 083C    MONTE BSI  L  MLG          DR 1 NOT READY
0763 0 0F1D               DC      MSG5&4
0764 0 0E4B               DC      NOTE1&26
0765 0 C001         C001  DC      /C001        ID C1
0766 0 0000               DC      /0000        LINE 0-FORM 0
0767 0 7401 093B          MDX  L  PGSW,1
0769 0 70A7               MDX     MON25
                          *
                          *                    DRIVE 0 IS NOT READY
                          *
076A 0 4400 083C    MON11 BSI  L  MLG          DR 0 NOT READY
076C 0 0F1D               DC      MSG5&4
076D 0 0E4B               DC      NOTE1&26
076E 0 C000         C000  DC      /C000        ID C0
076F 0 0000               DC      /0000        LINE 0-FORM 0
0770 0 70A0               MDX     MON25
                          *
                          *                    RETURN FROM ROUTINES
                          *                    CHECK FOR ALL RTNS RUN
                          *
0771 0 4400 0306    MONR1 BSI  L  RDSWS        READ SWS
0773 0 C400 02DF          LD   L  RID          GET RTN NO
0775 0 90C6               S       PGCM         SUB TOTAL RTNS
0776 0 4820               BSC     Z            ARE ALL RTNS RUN
0777 0 7094               MDX     MONTD        NO
                          *
                          *                    ALL ROUTINES COMPLETE-CK
                          *                    FOR PROGRAM COMPLETE
                          *
0778 0 4400 07F0          BSI  L  RWD          REWIND DRIVE
077A 0 7401 093B          MDX  L  PGSW,1
077C 0 4400 083C          BSI  L  MLG          ALL RTNS RUN
077E 0 0F21               DC      MSG6&4
077F 0 0F49               DC      MSG15&8
0780 0 A000         A000  DC      /A000        ID A0
0781 0 0000               DC      /0000        LINE 0-FORM 0
0782 0 7100               MDX   1 0            WAS RUN ON DRIVE 0
0783 0 708D               MDX     MON25
0784 0 70B8               MDX     MONTC        YES
                          *
                          *                    PROGRAM IS COMPLETE
                          *
0785 0 4400 083C    MON24 BSI  L  MLG          PROGRAM COMPLETE
0787 0 0F21               DC      MSG6&4
0788 0 0F51               DC      MSG16&8
0789 0 A001         A001  DC      /A001        ID A1
078A 0 0000               DC      /0000        LINE 0-FORM 0
                    ***********************************************
078B 0 4400 0662          BSI  L  END          TERMINATE          *
                    ***********************************************
                    *
                    *
                    *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                    *XXXXXXXXXXXXXXXX TIMED WRITE ROUTINE XXXXXXX
                    *XXXXXXXXXXXXXXXX ROUTINE CALL        XXXXXXX
                    *XXXXXXXXXXXXXXXX BSI  L  TMWRT       XXXXXXX
                    *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                    *
078D 0 0000         TMWRT DC      0                               SE
078E 0 C030               LD      TWRX3        MODIFY TIME RTN/WRT
078F 0 D00F               STO     TMWR9
0790 0 C500 07BD    TMRD1 LD   L1 TWRX1        GET SENSE WD CTR
0792 0 F400 02E4          EOR  L  EDIT         SET AREA CODE
0794 0 D026               STO     SNWC1        SET IN IOCC
0795 0 6B10               STX   3 TMWR0&1      SAVE IX 3
0796 0 1010               SLA     16
```



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0797 0 D024               STO     TWRX0        CLEAR COUNT
                    ***********************************************
0798 0 4400 0373          BSI  L  DCC          GO WRITE           *
079A 0 06EB         TMWR1 DC      DST&11       ADR OF STRING      *
                    ***********************************************
                    *
                    *                    TIME A DOUBLE CHANGE IN
                    *                    THE WORD COUNTER
                    *
079B 0 0C00 07BA    TMWR2 XIO  L  SNWC         SENSE WD CTR
079D 0 8400 07C7          A    L  TMRX2        ADD DESIRED
079F 0 4C30 07A5    TMWR9 BSC  L  TMWR0,-Z     HAS CTR CHANGED
07A1 0 7401 07BC    TMWR3 MDX  L  TWRX0,1      NO-STEP COUNT
07A3 0 4C00 079B          BSC  L  TMWR2        LOOP
07A5 0 6700 0000    TMWR0 LDX  L3 0            RESTORE IX 3
07A7 0 3005         WAIT5 WAIT    5            WAIT FOR RD OR WRT
07A8 0 4C00 082A          BSC  L  INTR
                    *
                    *                    INTERRUPT RETURN
                    *
07AA 0 C207         TMWR4 LD    2 7            GET LAST DSW
07AB 0 E400 092B          AND  L  MTTY8        CK FOR CORRECT
07AD 0 4820               BSC     Z            IS IT CORRECT
07AE 0 7002               MDX     TMWR6        NO
07AF 0 4C80 078D    TMWR8 BSC  I  TMWRT        RETURN                  SX
                    *
                    *                    NOT CORRECT-ABORT THE TEST
                    *
07B1 0 4400 083C    TMWR6 BSI  L  MLG          TEST ABORTED
07B3 0 0F41               DC      MSG14&4
07B4 0 0F09               DC      MSG2&8
07B5 0 E004         E004  DC      /E004        ID E4
07B6 0 0002               DC      /0002        LINE 0- FORM 2
07B7 0 4C00 071C    TMWR7 BSC  L  MONT6        GO RESTART THE RTN
                    *
                    *                    SENSE WORD CTR IOCC
                    *
07BA   0000               BSS  E  0
07BA 0 0000         SNWC  DC      0
07BB 0 0000         SNWC1 DC      0
                    *
                    *                    WRITE TIME
                    *
07BC 0 0000         TWRX0 DC      0
07BD 0 0710         TWRX1 DC      /0710        SENSE WD CTR-DR 0
07BE 0 0730         TWRX2 DC      /0730                        1
07BF 0 4C30         TWRX3 DC      /4C30
                    *
                    *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                    *XXXXXXXXXXXXXXXX TIMED READ ROUTINE XXXXXXX
                    *XXXXXXXXXXXXXXXX ROUTINE CALL       XXXXXXX
                    *XXXXXXXXXXXXXXXX BSI  L  TMRDT      XXXXXXX
                    *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
07C0 0 0000         TMRDT DC      0                                SE
07C1 0 C006               LD      TMRX3        MODIFY TIME RTN/RD
07C2 0 D0DC               STO     TMWR9
07C3 0 70CC               MDX     TMRD1        GO TIME A READ
                    *
                    *                    INTERRUPT RETURN
                    *
07C4 0 C0FB         TMRD4 LD      TMRDT        GET RETURN
07C5 0 D0C7               STO     TMWRT        SET
07C6 0 70E3               MDX     TMWR4
07C7 0 000A         TMRX2 DC      /000A
07C8 0 4C10         TMRX3 DC      /4C10
                    *
                    *
                    *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
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                        *XXXXXXXXXXXXXXXXX COMMON BACKSPACE ROUTINE XX      8B917550
                        *XXXXXXXXXXXXXXXXX ROUTINE CALL             XX      8B917560
                        *XXXXXXXXXXXXXXXXX BSI  L  BSP              XX      8B917570
                        *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX    8B917580
                        *                                                   8B917590
07C9 0 0000             BSP   DC      0                             SE      8B917600
07CA 0 6B08                   STX   3 BSP2&1      SAVE IX 3                 8B917610
07CB 0 403B             BSP3  BSI     DSW0        SENSE DRIVE           SRC 8B917620
07CC 0 4C04 07CB              BSC  L  BSP3,E      BRANCH # NOT READY        8B917630
07CE 0 1803                   SRA     3                                     8B917640
07CF 0 4C04 07D2              BSC  L  BSP2,E      IS DR AT LD PT            8B917650
07D1 0 7004                   MDX     BSP4        NO                        8B917660
07D2 0 6700 0000        BSP2  LDX  L3 0           RESTORE IX 3              8B917670
07D4 0 4C80 07C9              BSC  I  BSP         EXIT                  SX  8B917680
                        *                                                   8B917690
                        *                DRIVE IS NOT READY                 8B917700
                        *                                                   8B917710
                        *                                                   8B917720
                        *                DRIVE IS NOT AT LOAD POINT         8B917730
                        *                                                   8B917740
07D6 0 C500 07E0        BSP4  LD   L1 BSPX1       GET MODIFIER              8B917750
07D8 0 D20A                   STO   2 10          SET IN DST                8B917760
07D9 0 C02A                   LD      RWDX0       GET FUNCTION              8B917770
07DA 0 D209                   STO   2 9           SET IN DST                8B917780
                        ********************************************      8B917790
07DB 0 4400 0373              BSI  L  DCC         GO BACKSPACE          *   8B917800
07DD 0 06EB             BSP6  DC      DST&11      ADRS OF STRING        *   8B917810
                        ********************************************      8B917820
07DE 0 3006             WAIT6 WAIT    6           WAIT FOR BSP INTRPT       8B917830
07DF 0 7002                   MDX     BSPI2                                 8B917840
                        *                                                   8B917850
                        *                BACKSPACE CONSTANTS                8B917860
                        *                                                   8B917870
07E0 0 000B             BSPX1 DC      /000B                                 8B917880
07E1 0 002B                   DC      /002B                                 8B917890
                        *                                                   8B917900
                        *                CHECK DRIVE                        8B917910
                        *                                                   8B917920
07E2 0 C207             BSPI2 LD    2 7           GET LAST DSW              8B917930
07E3 0 4804                   BSC     E           IS DRIVE READY            8B917940
07E4 0 7003                   MDX     BSPI3       NO                        8B917950
07E5 0 1806                   SRA     6                                     8B917960
07E6 0 4804                   BSC     E           IS OP COMPLETE ON         8B917970
07E7 0 70EA                   MDX     BSP2                                  8B917980
07E8 0 4400 083C        BSPI3 BSI  L  MLG         BACKSPACE ERROR           8B917990
07EA 0 0F3D                   DC      MSG13&4                               8B918000
07EB 0 0F09                   DC      MSG2&8                                8B918010
07EC 0 E003             E003  DC      /E003       ID E3                     8B918020
07ED 0 0002                   DC      /0002       LINE 0-FORM 2             8B918030
                        ********************************************      8B918040
07EE 0 4400 0662              BSI  L  END         TERMINATE             *   8B918050
                        ********************************************      8B918060
                        *                                                   8B918070
                        *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX    8B918080
                        *XXXXXXXXXXXXXXXX COMMON REWIND ROUTINE XXXXX       8B918090
                        *XXXXXXXXXXXXXXXX ROUTINE CALL          XXXXX       8B918100
                        *XXXXXXXXXXXXXXXX BSI  L  RWD           XXXXX       8B918110
                        *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX    8B918120
                        *                                                   8B918130
07F0 0 0000             RWD   DC      0                             SE      8B918140
07F1 0 4015             RWD3  BSI     DSW0        SENSE DRIVE           SRC 8B918150
07F2 0 C011                   LD      RWDX0       GET FUNCTION              8B918160
07F3 0 D209                   STO   2 9           SET IN DST                8B918170
07F4 0 C500 0805              LD   L1 RWDX1       GET MODIFIER              8B918180
07F6 0 D20A                   STO   2 10          SET IN DST                8B918190
07F7 0 C207                   LD    2 7           GET LAST DSW              8B918200
07F8 0 4C04 07F1              BSC  L  RWD3,E      BRANCH-DR NOT READY       8B918210
07FA 0 1803                   SRA     3           YES                       8B918220
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07FB 0 4C04 07FE              BSC  L  RWD2,E      IS DR AT LOAD PT          8B918230
07FD 0 7002                   MDX     RWD4        NO                        8B918240
07FE 0 4C80 07F0        RWD2  BSC  I  RWD         RETURN TO PROG        SX  8B918250
                        *                                                   8B918260
                        *                DRIVE IS NOT AT LD                 8B918270
                        *                                                   8B918280
                        ********************************************      8B918290
0800 0 4400 0373        RWD4  BSI  L  DCC         GO REWIND             $   8B918300
0802 0 06EB                   DC      DST&11      ADRS OF STRING        *   8B918310
                        ********************************************      8B918320
0803 0 70ED                   MDX     RWD3                                  8B918330
                        *                                                   8B918340
                        *                REWIND CONSTANTS                   8B918350
                        *                                                   8B918360
0804 0 0400             RWDX0 DC      /0400       FUNCTION CNTRL            8B918370
0805 0 0004             RWDX1 DC      /0004       RWD DR 0                  8B918380
0806 0 0024                   DC      /0024       RWD DR 1                  8B918390
                        *                                                   8B918400
                        *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX    8B918410
                        *XXXXXXXXXXXXXXXX SENSE DEVICE ROUTINE      X       8B918420
                        *XXXXXXXXXXXXXXXX ROUTINE CALL              X       8B918430
                        *XXXXXXXXXXXXXXXX BSI  L  DSW               X       8B918440
                        *XXXXXXXXXXXXXXXX DC  0 OR 1                X       8B918450
                        *XXXXXXXXXXXXXXXX 0 # RETURN WHEN READY     X       8B918460
                        *XXXXXXXXXXXXXXXX 1 # RETURN WITH SENSE WD  X       8B918470
                        *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX    8B918480
                        *                                                   8B918490
0807 0 0000             DSW0  DC      0                             SE      8B918500
0808 0 6302                   LDX   3 2           SET FOR DOUBLE SENSE      8B918510
0809 0 C500 081D        DSW5  LD   L1 DSWX1       GET MODIFIER              8B918520
080B 0 D20A                   STO   2 10          SET MOD                   8B918530
080C 0 C20B                   LD    2 11          GET ADR AREA CODE         8B918540
080D 0 D005                   STO     DSW1        SET IN CALL               8B918550
080E 0 C20D                   LD    2 13          GET MOD ADR               8B918560
080F 0 D004                   STO     DSW2        SET IN CALL               8B918570
0810 0 6B06             DSW7  STX   3 DSW8&1      SAVE INDEX 3              8B918580
                        ********************************************      8B918590
0811 0 4400 03A2              BSI  L  DIND        GO SENSE              *   8B918600
0813 0 0000             DSW1  DC      0           AREA CODE ADRS        *   8B918610
0814 0 0000             DSW2  DC      0           MODIFIER              *   8B918620
0815 0 0000                   DC      0           LOAD A RETURN         *   8B918630
                        ********************************************      8B918640
0816 0 6700 0000        DSW8  LDX  L3 0           RESTORE INDEX 3           8B918650
0818 0 73FF                   MDX   3 -1          IS THIS THE SECOND        8B918660
0819 0 70F6                   MDX     DSW7        NO-GO SENSE AGAIN         8B918670
081A 0 D207                   STO   2 7           SET IN DST                8B918680
081B 0 4C80 0807              BSC  I  DSW0        RETURN                SX  8B918690
                        *                                                   8B918700
                        *                CONSTANTS USED BY DSW              8B918710
                        *                                                   8B918720
081D 0 0000             DSWX1 DC      0           MODIFIER FOR DRIVE 0      8B918730
081E 0 0020                   DC      /0020       MODIFIER FOR DRIVE 1      8B918740
                        *                                                   8B918750
                        *                                                   8B918760
                        *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX    8B918770
                        *XXXXXXXXXXXXXXXX ROUTINE TO SET NORMAL     XX      8B918780
                        *XXXXXXXXXXXXXXXX INTERRUPT RETURN          XX      8B918790
                        *XXXXXXXXXXXXXXXX ROUTINE CALL              XX      8B918800
                        *XXXXXXXXXXXXXXXX BSI  L  INTRT             XX      8B918810
                        *XXXXXXXXXXXXXXXX DC  RETURN ADRS           XX      8B918820
                        *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX    8B918830
                        *                                                   8B918840
081F 0 0000             INTRT DC      0                             SE      8B918850
0820 0 6D00 082B              STX  L1 INTR&1      SAVE IX 1                 8B918860
0822 0 C480 081F              LD   I  INTRT       GET FINAL RETURN          8B918870
0824 0 D004                   STO     INTR2       SAVE                      8B918880
0825 0 7401 081F              MDX  L  INTRT,1     ADD 1 TO RETURN           8B918890
0827 0 4C80 081F              BSC  I  INTRT       EXIT                  SX  8B918900
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0829 0 0000          INTR2 DC      0           DRIVE 0 FINAL RETURN          8B918910
082A 0 6500 0000     INTR  LDX  L1 0           RESTORE IXING                 8B918920
082C 0 6600 06E0           LDX  L2 DST                                       8B918930
082E 0 4C80 0829           BSC  I  INTR2                                     8B918940
                           ^                                                 8B918950
                            XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 8B918960
                           *XXXXXXXXXXXXXXXX ROUTINE TO SET UP FOR   XXX   8B918970
                           *XXXXXXXXXXXXXXXX READ OR WRITE           XXX   8B918980
                           *XXXXXXXXXXXXXXXX ROUTINE CALL            XXX   8B918990
                           *XXXXXXXXXXXXXXXX BSI  L  PRDWT           XXX   8B919000
                           *XXXXXXXXXXXXXXXX ACCUM MUST # FUNCTION   XXX   8B919010
                           *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 8B919020
                           *                                                 8B919030
0830 0 0000          PRDWT DC      0                                    SE    8B919040
0831 0 D209                STO   2 9           SET FUNC                      8B919050
0832 0 C500 081D           LD   L1 DSWX1       GET MODIFIER                  8B919060
0834 0 D20A                STO   2 10          SET IN DST                    8B919070
0835 0 C400 0929           LD   L  MTTY4       GET WORD COUNT OF 5           8B919080
0837 0 D206                STO   2 6           SET WD CT                     8B919090
0838 0 D400 0E9C           STO  L  IOA         SET IN IO AREA                8B919100
083A 0 4C80 0830           BSC  I  PRDWT                                SX   8B919110
                           *                                                 8B919120
                           ~XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 8B919130
                           *XXXXXXXXXXXXXXXX COMMON LOG ROUTINE      XXX   8B919140
                           *XXXXXXXXXXXXXXXX ROUTINE CALL            XXX   8B919150
                           *XXXXXXXXXXXXXXXX BSI  L  MLG             XXX   8B919160
                           !XXXXXXXXXXXXXXXX DC  MESSAGE ID          XXX   8B919170
                           *XXXXXXXXXXXXXXXX DC  LINE NO.-FORM NO.   XXX   8B919180
                           *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 8B919190
                           ;                                                 8B919200
083C 0 0000          MLG   DC      0                                         8B919210
083D 0 4400 0306           BSI  L  RDSWS       READ SWS                      8B919220
083F 0 C400 02E1           LD   L  SW0         GET SWS                       8B919230
0841 0 1802                SRA     2           CK FOR BYPASS                 8B919240
0842 0 4C04 08C7           BSC  L  MLG18,E     BRANCH # BYPASS               8B919250
0844 0 4400 0EC9           BSI  L  LDSP        PRINT HEADING                 8B919260
0846 0 6780 083C           LDX  I3 MLG         IX # ADRS CALL                8B919270
0848 0 C300                LD    3 0           GET MSG ID                    8B919280
0849 0 D400 08FB           STO  L  MOD4        SET IN MSG                    8B919290
084B 0 C301                LD    3 1           GET LINE AND FORM NO          8B919300
084C 0 D400 0901           STO  L  MLGX0       SAVE                          8B919310
084E 0 6D00 08B8           STX  L1 MLG05&1     SAVE IX 1                     8B919320
0850 0 C400 02DF           LD   L  RID         GET RTN NO                    8B919330
0852 0 D400 08FA           STO  L  MOD3        SET IN MSG                    8B919340
0854 0 6D00 08FC           STX  L1 MOD5        SET DR NO IN MSG              8B919350
0856 0 C400 02DE           LD   L  PID         GET PROG NUMBER               8B919360
0858 0 D400 08F9           STO  L  MOD2        SET IN MSG                    8B919370
085A 0 C400 0901           LD   L  MLGX0       GET LINE/FORM NO              8B919380
085C 0 1008                SLA     8           SAVE FORM NO                  8B919390
085D 0 1808                SRA     8                                         8B919400
085E 0 D001                STO     MLG00&1                                   8B919410
085F 0 6700 0000     MLG00 LDX  L3 0           IX 3 # FORM NUMBER            8B919420
0861 0 4F80 0863           BSC  I3 MLG02       GO TO SET UP MSG              8B919430
0863 0 0869          MLG02 DC      FORM0       ADRS OF FORM 0 SETUP          8B919440
0864 0 08D1                DC      FORM1                     1               8B919450
0865 0 08D9                DC      FORM2                     2               8B919460
0866 0 08DF                DC      FORM3                     3               8B919470
0867 0 08E5                DC      FORM4                     4               8B919480
0868 0 08EB                DC      FORM5                     5               8B919490
                           *                                                 8B919500
                           *                FORM IS 0                        8B919510
                           *                                                 8B919520
0869 0 6300          FORM0 LDX   3 0                                         8B919530
                           *                                                 8B919540
                           *              SET LINE NO AND WD CT              8B919550
                           *                                                 8B919560
086A 0 C500 02EA     MLG03 LD   L1 EDIT&6      GET DR MODEL                  8B919570
086C 0 4820                BSC     Z           IS THIS MODEL 3               8B919580
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086D 0 701F                MDX     MLG11       NO                            8B919590
086E 0 6104                LDX   1 4                                         8B919600
086F 0 10A0          MLG10 SLT     32          CLEAR A AND Q                 8B919610
0870 0 C500 08FC           LD   L1 MOD00-1     GET MSG WD                    8B919620
0872 0 A400 06DC           M    L  MLGX7       CALCULATE TIME                8B919630
0874 0 AC00 0D84           D    L  MT7X0       SCALE BY 10                   8B919640
0876 0 D500 08FC           STO  L1 MOD00-1     SAVE THE TIME                 8B919650
0878 0 71FF                MDX   1 -1          DECR IX 1                     8B919660
0879 0 70F5                MDX     MLG10       LOOP                          8B919670
087A 0 C400 02DF           LD   L  RID         GET RTN NO                    8B919680
087C 0 9400 0902           S    L  MLGX1       SUB 4                         8B919690
087E 0 4808                BSC     &           IS THIS RTN 5, 6, 7           8B919700
087F 0 702F                MDX     MLG07       NO-PRINT TIME                 8B919710
0880 0 6104                LDX   1 4                                         8B919720
0881 0 10A0          MLG16 SLT     32          CLEAR A AND Q                 8B919730
0882 0 C500 08FC           LD   L1 MOD00-1     GET TIME                      8B919740
0884 0 A400 06DF           M    L  INPSE       CALCULATE GAP                 8B919750
0886 0 AC00 0907           D    L  MLGX9       SCALE BY 1000                 8B919760
0888 0 D500 08FC           STO  L1 MOD00-1     SAVE GAP                      8B919770
088A 0 71FF                MDX   1 -1          DECR IX 1                     8B919780
088B 0 70F5                MDX     MLG16       LOOP                          8B919790
088C 0 7022                MDX     MLG07       GO PRINT                      8B919800
088D 0 6104          MLG11 LDX   1 4                                         8B919810
088E 0 10A0          MLG12 SLT     32          CLEAR A AND Q                 8B919820
088F 0 C500 08FC           LD   L1 MOD00-1     GET MSG WD                    8B919830
0891 0 18D0                RTE     16          SET IN Q                      8B919840
0892 0 AC00 0D84           D    L  MT7X0       SCALE BY 10                   8B919850
0894 0 18D0                RTE     16          SET IN Q                      8B919860
0895 0 1090                SLT     16          CLEAR Q/SET Q IN A            8B919870
0896 0 A400 06DC           M    L  MLGX7       CALCULATE TIME                8B919880
0898 0 1010                SLA     16          CLEAR ACCUM                   8B919890
0899 0 AC00 0D84           D    L  MT7X0       SCALE BY 10                   8B919900
089B 0 D500 08FC           STO  L1 MOD00-1     SAVE THE TIME                 8B919910
089D 0 71FF                MDX   1 -1          DECR IX 1                     8B919920
089E 0 70EF                MDX     MLG12       LOOP                          8B919930
089F 0 C400 02DF           LD   L  RID         GET RTN NO                    8B919940
08A1 0 9060                S       MLGX1       SUB 4                         8B919950
08A2 0 4808                BSC     &           IS THIS RTN 5,6, OR7          8B919960
08A3 0 700B                MDX     MLG07       NO-PRINT TIME                 8B919970
08A4 0 6104                LDX   1 4                                         8B919980
08A5 0 10A0          MLG15 SLT     32          CLEAR A AND Q                 8B919990
08A6 0 C500 08FC           LD   L1 MOD00-1     GET TIME                      8B920000
08A8 0 A400 06DF           M    L  INPSE       CALCULATE GAP                 8B920010
08AA 0 A85D                D       MLGX9&1     SCALE BY 100                  8B920020
08AB 0 D500 08FC           STO  L1 MOD00-1     SAVE GAP                      8B920030
08AD 0 71FF                MDX   1 -1          DECR IX 1                     8B920040
08AE 0 70F6                MDX     MLG15       LOOP                          8B920050
08AF 0 C051          MLG07 LD      MLGX0       GET LINE AND FORM NO          8B920060
08B0 0 1808                SRA     8           SAVE LINE NUMBER              8B920070
08B1 0 1008                SLA     8                                         8B920080
08B2 0 EF00 0902           OR   L3 MLGX1       INSERT WD CT                  8B920090
08B4 0 D042                STO     MOD0        SET IN MSG                    8B920100
                           *************************************************** 8B920110
08B5 0 4400 03BF     MLG04 BSI  L  LOGC        GO PRINT                  *   8B920120
                           *************************************************** 8B920130
08B7 0 6500 0000     MLG05 LDX  L1 0           RESTORE IX 1                  8B920140
08B9 0 6600 06E0     MLG06 LDX  L2 DST                                       8B920150
08BB 0 7402 083C     MLG0A MDX  L  MLG,2                                     8B920160
08BD 0 C400 036E           LD   L  ONE         GET 0001                      8B920170
08BF 0 D038                STO     MOD1        RESTORE HEX/DEC SW            8B920180
08C0 0 C03A          CKERR LD      MOD4        GET MSG ID                    8B920190
08C1 0 180C                SRA     12          SAVE MSG TYPE                 8B920200
08C2 0 F00D                EOR     K000E       CK FOR E                      8B920210
08C3 0 4818                BSC     &-          SKIP # NOT E                  8B920220
08C4 0 7005                MDX     CKHLT       BRANCH                        8B920230
08C5 0 4C80 083C     MLGE  BSC  I  MLG         RETURN                    SX  8B920240
08C7 0 7402 083C     MLG18 MDX  L  MLG,2       INCR RETURN                   8B920250
08C9 0 70F1                MDX     MLG0A       BRANCH                        8B920260
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08CA 0 C400 02E1   CKHLT LD    L  SW0        GET SWS                    8B920270
08CC 0 1801              SRA      1                                     8B920280
08CD 0 4404 03B2         BSI   L  HALT,E     BRANCH IF HLT ON ERR       8B920290
08CF 0 70F5              MDX      MLGE       CONTINUE                   8B920300
08D0 0 000E        K000E DC       /000E                                 8B920310
                   *                                                    8B920320
                   *                   FORM IS ONE                      8B920330
                   *                                                    8B920340
08D1 0 C201        FORM1 LD     2 1          GET MIN WRT TIME           8B920350
08D2 0 D02A              STO      MOD00      SET IN MSG                 8B920360
08D3 0 C204              LD     2 4          GET ACTUAL WRT TIME        8B920370
08D4 0 D029              STO      MOD01      SET IN MSG                 8B920380
08D5 0 C200              LD     2 0          GET MAX WRT TIME           8B920390
08D6 0 D028        COM00 STO      MOD02      SET IN MSG                 8B920400
08D7 0 6303              LDX    3 3          SET IX FOR WD CT           8B920410
08D8 0 7091              MDX      MLG03      GO COMPLETE MSG            8B920420
                   *                                                    8B920430
                   *                   FORM IS 2                        8B920440
                   *                                                    8B920450
08D9 0 C207        FORM2 LD     2 7          GET DSW                    8B920460
08DA 0 D022              STO      MOD00      SET IN MSG                 8B920470
08DB 0 1010              SLA      16         ZERO ACCUM                 8B920480
08DC 0 D01B              STO      MOD1       SET TO HEX                 8B920490
08DD 0 6301        COM01 LDX    3 1          SET IX FOR WD CT           8B920500
08DE 0 70D0              MDX      MLG07      GO COMPLETE MESSAGE        8B920510
                   *                                                    8B920520
                   *                   FORM IS 3                        8B920530
                   *                                                    8B920540
08DF 0 C203        FORM3 LD     2 3          GET MIN RD TIME            8B920550
08E0 0 D01C              STO      MOD00      SFT IN MSG                 8B920560
08E1 0 C205              LD     2 5          GET ACTUAL RD TIME         8B920570
08E2 0 D01B              STO      MOD01      SET IN MSG                 8B920580
08E3 0 C202              LD     2 2          GET MAX RD TIME            8B920590
08E4 0 70F1              MDX      COM00      GO COMPLETE MSG            8B920600
                   *                                                    8B920610
                   *                   FORM IS 4                        8B920620
                   *                                                    8B920630
08E5 0 C048        FORM4 LD       MTTYC      GET 10 MSEC GDT AVG        8B920640
08E6 0 D016              STO      MOD00      SET IN MSG                 8B920650
08E7 0 C048              LD       MTTYD      GET VAR GDT AVG            8B920660
08E8 0 D015              STO      MOD01      SET IN MSG                 8B920670
08E9 0 C048              LD       MTTYE      GET MIN GDT AVG            8B920680
08EA 0 70EB              MDX      COM00      GO COMPLETE MSG            8B920690
                   *                                                    8B920700
                   *                   FORM IS 5                        8B920710
                   *                                                    8B920720
08EB 0 C400 0D89   FORM5 LD    L  MT7X5      GET AVERAGE CREEP          8B920730
08ED 0 D010              STO      MOD01      SET IN MSG                 8B920740
08EE 0 C400 0D90         LD    L  MT7Y1      GET LOW VALUE              8B920750
08F0 0 D00C              STO      MOD00      SET IN MSG                 8B920760
08F1 0 C400 0D91         LD    L  MT7Y2      GET HIGH VALUE             8B920770
08F3 0 D00B              STO      MOD02      SET IN MSG                 8B920780
08F4 0 6303              LDX   3  3          SET TO WORD COUNT          8B920790
08F5 0 4C00 086A         BSC   L  MLG03      GO COMPLETE MSG            8B920800
                   *                                                    8B920810
                   *                   LOG MESSAGE STORAGE              8B920820
                   *                                                    8B920830
08F7 0 0000        MOD0   DC       0          LINE NO/WORD CT            8B920840
08F8 0 0001        MOD1   DC       1          HEX/DEC                    8B920850
08F9 0 0000        MOD2   DC       0          PROGRAM NUMBER             8B920860
08FA 0 0000        MOD3   DC       0          ROUTINE NUMBER             8B920870
08FB 0 0000        MOD4   DC       0          MESSAGE ID                 8B920880
08FC 0 0000        MOD5   DC       0          DRIVE NUMBER               8B920890
08FD 0 0000        MOD00  DC       0          DATA WORD 0                8B920900
08FE 0 0000        MOD01  DC       0                    1                8B920910
08FF 0 0000        MOD02  DC       0                    2                8B920920
0900 0 0000        MOD03  DC       0                    3                8B920930
                   *                                                    8B920940
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                   *                   ROUTINE CONSTANTS                8B920950
                   *                                                    8B920960
0901 0 0000        MLGX0  DC       0          LINE AND FORM TEMP         8B920970
0902 0 0004        MLGX1  DC       4          WD CT # 4                  8B920980
0903 0 0005        MLGX2  DC       5                  5                  8B920990
0904 0 0006        MLGX3  DC       6                  6                  8B921000
0905 0 0007        MLGX4  DC       7                  7                  8B921010
0906 0 0002        MLGX8  DC       2                                     8B921020
0907 0 03E8        MLGX9  DC       1000                                  8B921030
0908 0 0064               DC       100                                   8B921040
                   *                                                    8B921050
                   *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX     8B921060
                   *XXXXXXXXXXXXXXXXX SET AT LD PT CONSTANTS XXXX       8B921070
                   *XXXXXXXXXXXXXXXXX ROUTINE CALL           XXXX       8B921080
                   *XXXXXXXXXXXXXXXXX BSI  L  CN1            XXXX       8B921090
                   *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX     8B921100
                   *                                                    8B921110
0909 0 0000        CN1    DC       0                                SE   8B921120
090A 0 C004              LD       RTN1X      GET ADRS                   8B921130
090B 0 D00E              STO      STCN1&1    SET                        8B921140
090C 0 400A              BSI      STCN       SET DST                SRC 8B921150
090D 0 4C80 0909         BSC   I  CN1        EXIT                   SX  8B921160
090F 0 066C        RTN1X  DC       CON-1      DR 0 ADRS                  8B921170
                   *                                                    8B921180
                   *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX     8B921190
                   *XXXXXXXXXXXXXXXXX SET NOT AT LD PT CONSTANT X       8B921200
                   *XXXXXXXXXXXXXXXXX ROUTINE CALL           X          8B921210
                   *XXXXXXXXXXXXXXXXX BSI  L  CN2            X          8B921220
                   *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX     8B921230
                   *                                                    8B921240
0910 0 0000        CN2    DC       0                                SE   8B921250
0911 0 C004              LD       RTN2X      GET ADRS                   8B921260
0912 0 D007              STO      STCN1&1    SET                        8B921270
0913 0 4003              BSI      STCN       SET DST                SRC 8B921280
0914 0 4C80 0910         BSC   I  CN2        EXIT                   SX  8B921290
0916 0 0670        RTN2X  DC       CON1-1                               8B921300
                   *                                                    8B921310
                   *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX     8B921320
                   *XXXXXXXXXXXXXXXXX SET CONSTANTS XXXXXXXXXXXXX       8B921330
                   *XXXXXXXXXXXXXXXXX ROUTINE CALL  XXXXXXXXXXXXX       8B921340
                   *XXXXXXXXXXXXXXXXX BSI  L  STCN  XXXXXXXXXXXX        8B921350
                   *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX     8B921360
                   *                                                    8B921370
0917 0 0000        STCN   DC       0                                SE   8B921380
0918 0 6304              LDX    3 4          IX 3 # NUMBER WDS          8B921390
0919 0 C700 0000   STCN1  LD     L3 0         GET CONSTANT               8B921400
091B 0 D200              STO    2 0          SET IN DST                 8B921410
091C 0 73FF              MDX    3 -1         DECR IX 3                  8B921420
091D 0 7001              MDX      STCN2                                 8B921430
091E 0 7002              MDX      STCN3      FINISHED                   8B921440
091F 0 7201        STCN2 MDX    2 1          INCR IX 2                  8B921450
0920 0 70F8              MDX      STCN1      LOOP                       8B921460
0921 0 6600 06E0   STCN3  LDX    L2 DST       RESTORE IX 2               8B921470
0923 0 4C80 0917         BSC   I  STCN       EXIT                   SX  8B921480
                   *                                                    8B921490
                   *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX     8B921500
                   *XXXXXXXXXXXXXXXXX COMMON CONSTANTS USED BY XX       8B921510
                   *XXXXXXXXXXXXXXXXX THE PROGRAM               XX      8B921520
                   *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX     8B921530
                   *                                                    8B921540
0925 0 0001        MTTX1  DC       /0001                                8B921550
0926 0 0000        MTTX3  DC       0          TEMP                       8B921560
0927 0 FFFF        MTTX6  DC       /FFFF                                8B921570
0928 0 0500        MTTX9  DC       /0500      FUNCTION # WRT             8B921580
0929 0 400A        MTTY4  DC       /400A                                8B921590
092A 0 002F        MTTY5  DC       47         CONSTANT                   8B921600
092B 0 2003        MTTY8  DC       /2003      DSW CK                     8B921610
092C 0 0600        MTTY9  DC       /0600      FUNCTION # READ            8B921620
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092D 0 0E6C          MTTYB  DC      TOTA&3      ADRS OF COUNTS              8B921630
092E   0000                BSS   E  0                                       8B921640
092E 0 0000          MTTYC  DC      0           10 MSEC AVG                 8B921650
092F 0 0000                 DC      0                                       8B921660
0930 0 0000          MTTYD  DC      0           VARIABLE AVG                8B921670
0931 0 0000                 DC      0                                       8B921680
0932 0 0000          MTTYE  DC      0           MIN AVG                     8B921690
0933 0 0000                 DC      0                                       8B921700
0934 0 0000          MTTYA  DC      0                                       8B921710
0935 0 0000                 DC      0                                       8B921720
0936 0 4C00 0B2E     MTTYF  BSC   L  MT51E       PROG MODIFIER               8B921730
0938 0 00EB          MTTZ0  DC      235         CONSTANT                    8B921740
0939 0 9400 0C43     MTTZ1  S     L  MT5XE                                  8B921750
093B 0 0000          PGSW   DC      0                                       8B921760
                     *                                                      8B921770
                     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX     8B921780
                     *XXXXXXXXXXXXXXXX ROUTINE NUMBER ONE XXXXXXXX          8B921790
                     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX     8B921800
                     *                                                      8B921810
093C 0 C0E8          MTT01  LD      MTTX1       GET 0001                    8B921820
093D 0 D0E8                 STO     MTTX3       SET RTN 1 SW                8B921830
093E 0 40CA                 BSI     CN1         GO SET CONSTANTS      SRC   8B921840
                     *                                                      8B921850
                     *              PORTION COMMON TO RTNS 1-3              8B921860
                     *              PREPARE TO WRITE                        8B921870
                     *                                                      8B921880
093F 0 C0E8          MT101  LD      MTTX9       GET WRT FNC                 8B921890
0940 0 4400 0830            BSI   L  PRDWT       GO SET UP             SRC   8B921900
                     *                                                      8B921910
                     *              DETERMINE RTN BEING RUN                 8B921920
                     *                                                      8B921930
0942 0 C0E3                 LD      MTTX3       GET RTN 1 SW                8B921940
0943 0 4820                 BSC     Z           IS THIS RTN 1               8B921950
0944 0 7005                 MDX     MT102       YES-SKIP WRT                8B921960
                     *                                                      8B921970
                     *              ROUTINE 3 RUNNING                       8B921980
                     *                                                      8B921990
0945 0 4400 081F            BSI   L  INTRT       GO SET INTR RETURN    SRC   8B922000
0947 0 07AA                 DC      TMWR4                                   8B922010
0948 0 4400 078D            BSI   L  TMWRT       WRITE                       8B922020
                     *                                                      8B922030
                     *              COMMON TO RTNS 1 AND 3                  8B922040
                     *                                                      8B922050
                     *                                                      8B922060
                     *              TIME A WRITE                            8B922070
                     *                                                      8B922080
094A 0 4400 081F     MT102  BSI   L  INTRT       GO SET RETURN         SRC   8B922090
094C 0 07AA                 DC      TMWR4                                   8B922100
094D 0 4400 078D            BSI   L  TMWRT       GO TIME A WRT         SRC   8B922110
                     *                                                      8B922120
                     *              CHECK THE TIMING                        8B922130
                     *                                                      8B922140
094F 0 C0D6                 LD      MTTX3       GET RTN 1 SW                8B922150
0950 0 4820                 BSC     Z           IS THIS RTN 1               8B922160
0951 0 7011                 MDX     MT105       YES                         8B922170
0952 0 C400 07BC            LD    L  TWRX0       GET TIME                    8B922180
0954 0 D204          MT108  STO     2 4         SAVE                        8B922190
0955 0 9200                 S       2 0         SUB MAX TIME                8B922200
0956 0 4830                 BSC       -Z        IS TIME TOO LONG            8B922210
0957 0 7010                 MDX     MT104       YES                         8B922220
0958 0 C201                 LD      2 1         GET MIN TIME                8B922230
0959 0 9204                 S       2 4         SUB ACTUAL TIME             8B922240
095A 0 4830                 BSC       -Z        IS TIME TOO SHORT           8B922250
095B 0 700C                 MDX     MT104       YES                         8B922260
                     *                                                      8B922270
                     *              CHECK PRINT REQUEST SW                  8B922280
                     *                                                      8B922290
095C 0 C400 02E1            LD    L  SW0         GET SW FNC 0                8B922300
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095E 0 1809                 SRA     9                                       8B922310
095F 0 4804                 BSC     E           IS DATA PRINT REQ.          8B922320
0960 0 700E                 MDX     MT107       YES                         8B922330
                     *                                                      8B922340
                     *              ROUTINE IS COMPLETE                     8B922350
                     *                                                      8B922360
0961 0 4C00 0771     MT103  BSC   L  MONR1       EXIT                        8B922370
0963 0 C400 07BC     MT105  LD    L  TWRX0                                   8B922380
0965 0 9400 0679            S     L  MT1X0       SUB TURNAROUND              8B922390
0967 0 70EC                 MDX     MT108                                   8B922400
                     *                                                      8B922410
                     *              ERROR FOUND IN TIMING                   8B922420
                     *                                                      8B922430
0968 0 4400 083C     MT104  BSI   L  MLG         PRINT ERROR                 8B922440
096A 0 0F25                 DC      MSG7&4                                  8B922450
096B 0 0F11                 DC      MSG3&8                                  8B922460
096C 0 E005          E005   DC      /E005       ID E5                       8B922470
096D 0 0001                 DC      /0001       LINE 0-FORM 1               8B922480
096E 0 70F2                 MDX     MT103                                   8B922490
                     *                                                      8B922500
                     *              DATA PRINT IS REQUESTED                 8B922510
                     *                                                      8B922520
096F 0 4400 083C     MT107  BSI   L  MLG         PRINT DATA                  8B922530
0971 0 0F25                 DC      MSG7&4                                  8B922540
0972 0 0F11                 DC      MSG3&8                                  8B922550
0973 0 A002          A002   DC      /A002       ID A2                       8B922560
0974 0 0001                 DC      /0001       LINE 0-FORM 1               8B922570
0975 0 70EB                 MDX     MT103                                   8B922580
                     *                                                      8B922590
                     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX     8B922600
                     *XXXXXXXXXXXXXXXX ROUTINE NUMBER TWO XXXXXXXX          8B922610
                     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX     8B922620
                     *                                                      8B922630
0976 0 C0AE          MTT02  LD      MTTX1       GET 0001                    8B922640
0977 0 D0AE                 STO     MTTX3       SET RTN 2 SW                8B922650
0978 0 4400 0909            BSI   L  CN1         GO SET CONSTANTS      SRC   8B922660
                     *                                                      8B922670
                     *              COMMON TO RTNS 2 AND 4                  8B922680
                     *                                                      8B922690
097A 0 C0AD          MT200  LD      MTTX9       GET WRT FNC                 8B922700
097B 0 4400 0830            BSI   L  PRDWT       GO SET UP             SRC   8B922710
097D 0 4400 081F            BSI   L  INTRT       SET INTRPT RETURN     SRC   8B922720
097F 0 07AA                 DC      TMWR4                                   8B922730
0980 0 4400 078D            BSI   L  TMWRT       WRITE                       8B922740
                     *                                                      8B922750
                     *              DETERMINE RTN BEING RUN                 8B922760
                     *                                                      8B922770
0982 0 C0A3                 LD      MTTX3       GET RTN 2 SW                8B922780
0983 0 4820                 BSC     Z           IS THIS RTN 2               8B922790
0984 0 702C                 MDX     MT203       YES                         8B922800
                     *                                                      8B922810
                     *              THIS IS RTN 4                           8B922820
                     *                                                      8B922830
0985 0 4400 078D            BSI   L  TMWRT       WRITE                       8B922840
                     *                                                      8B922850
                     *              WRITE IS COMPLETE                       8B922860
                     *                                                      8B922870
0987 0 4400 07F0            BSI   L  RWD         GO REWIND             SRC   8B922880
0989 0 C0A2          MT208  LD      MTTY9       GET READ FNCT               8B922890
098A 0 4400 0830            BSI   L  PRDWT       GO SET UP             SRC   8B922900
098C 0 4400 081F            BSI   L  INTRT       GO SET TIME INT RET   SRC   8B922910
098E 0 07C4                 DC      TMRD4                                   8B922920
098F 0 C400 0926            LD    L  MTTX3       GET RTN 2 SW                8B922930
0991 0 4820                 BSC     Z           IS THIS RTN 2               8B922940
0992 0 7002                 MDX     MT209       YES                         8B922950
0993 0 4400 07C0            BSI   L  TMRDT       GO READ               SRC   8B922960
0995 0 4400 07C0     MT209  BSI   L  TMRDT       GO READ               SRC   8B922970
                     *                                                      8B922980
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                        *                   READ IS COMPLETE                  8B922990
                        *                                                     8B923000
0997 0 C400 0926              LD    L  MTTX3      GET RTN 2 SW                8B923010
0999 0 4820                   BSC      Z          IS THIS RTN 2               8B923020
099A 0 7011                   MDX      MT201      YES                         8B923030
099B 0 C400 07BC              LD    L  TWRX0      GET TIME                    8B923040
099D 0 D205             MT202 STO   2 5           SAVE                        8B923050
099E 0 9202                   S     2 2           SUB MAX TIME                8B923060
099F 0 4830                   BSC      -Z         IS TIME TOO LONG            8B923070
09A0 0 7013                   MDX      MT204      YES                         8B923080
09A1 0 C203                   LD    2 3           GET MIN TIME                8B923090
09A2 0 9205                   S     2 5           SUB ACTUAL                  8B923100
09A3 0 4830                   BSC      -Z         IS TIME TOO SHORT           8B923110
09A4 0 700F                   MDX      MT204      YES                         8B923120
                        *                                                     8B923130
                        *                   CHECK PRINT REQ SW                8B923140
                        *                                                     8B923150
09A5 0 C400 02E1              LD    L  SW0        GET SW FNC 0                8B923160
09A7 0 1809                   SRA      9                                      8B923170
09A8 0 4804                   BSC      E          IS SW SET                   8B923180
09A9 0 7011                   MDX      MT205      YES                         8B923190
                        *                                                     8B923200
                        *                   PRINT NOT REQUESTED               8B923210
                        *                                                     8B923220
09AA 0 4C00 0771        MT206 BSC   L  MONR1      EXIT                        8B923230
09AC 0 C400 07BC        MT201 LD    L  TWRX0      GET TIME                    8B923240
09AE 0 9400 0679              S     L  MT1X0                                  8B923250
09B0 0 70EC                   MDX      MT202                                  8B923260
                        *                                                     8B923270
                        *                   THIS IS RTN 2                     8B923280
                        *                                                     8B923290
09B1 0 4400 07F0        MT203 BSI   L  RWD        REWIND DRIVE           SRC  8B923300
09B3 0 70D5                   MDX      MT208                                  8B923310
                        *                                                     8B923320
                        *                   TIMING ERROR                      8B923330
                        *                                                     8B923340
09B4 0 4400 083C        MT204 BSI   L  MLG        PRINT ERROR                 8B923350
09B6 0 0F29                   DC       MSG8&4                                 8B923360
09B7 0 0F11                   DC       MSG3&8                                 8B923370
09B8 0 E006             E006  DC       /E006      ID E6                       8B923380
09B9 0 0003                   DC       /0003      LINE 0-FORM 3               8B923390
09BA 0 70EF                   MDX      MT206                                  8B923400
                        *                                                     8B923410
                        *                   PRINT REQUEST SW IS ON            8B923420
                        *                                                     8B923430
09BB 0 4400 083C        MT205 BSI   L  MLG        PRINT DATA                  8B923440
09BD 0 0F29                   DC       MSG8&4                                 8B923450
09BE 0 0F11                   DC       MSG3&8                                 8B923460
09BF 0 A003             A003  DC       /A003      ID A3                       8B923470
09C0 0 0003                   DC       /0003      LINE 0-FORM 3               8B923480
09C1 0 70E8                   MDX      MT206                                  8B923490
                        *                                                     8B923500
                        *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX           8B923510
                        *XXXXXXXXXXXXXXXX ROUTINE NUMBER THREE XXXXXX         8B923520
                        *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX           8B923530
                        *                                                     8B923540
09C2 0 1010             MTT03 SLA      16         ZERO ACCUM             SE   8B923550
09C3 0 D400 0926              STO   L  MTTX3      CLEAR RTN 1 SW              8B923560
09C5 0 4400 0910              BSI   L  CN2        GO SET CONSTANTS       SRC  8B923570
09C7 0 4C00 093F              BSC   L  MT101      GO TO COMMON RTN            8B923580
                        *                                                     8B923590
                        *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX           8B923600
                        *XXXXXXXXXXXXXXXX ROUTINE NUMBER FOUR XXXXXXX         8B923610
                        *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX           8B923620
                        *                                                     8B923630
09C9 0 1010             MTT04 SLA      16         ZERO ACCUM             SE   8B923640
09CA 0 D400 0926              STO   L  MTTX3      CLEAR RTN 2 SW              8B923650
09CC 0 4400 0910              BSI   L  CN2        GO SET CONSTANTS       SRC  8B923660
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09CE 0 70AB                   MDX      MT200      GO TO COMMON RTN            8B923670
                        *                                                     8B923680
                        *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX           8B923690
                        *XXXXXXXXXXXXXXXX ROUTINE NUMBER FIVE XXXXXXX         8B923700
                        *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX           8B923710
                        *                                                     8B923720
                        *                                                     8B923730
                        *                   SET UP FOR WRITE                  8B923740
                        *                                                     8B923750
09CF 0 1010             MTT05 SLA      16         ZERO ACCUM                  8B923760
09D0 0 D400 0926              STO   L  MTTX3                                  8B923770
09D2 0 18D0                   RTE      16         CLEAR Q REG                 8B923780
09D3 0 1010                   SLA      16         CLEAR ACCUM                 8B923790
09D4 0 DC00 092E              STD   L  MTTYC      CLEAR ALL TOTALS            8B923800
09D6 0 DC00 0930              STD   L  MTTYD                                  8B923810
09D8 0 DC00 0932              STD   L  MTTYE                                  8B923820
09DA 0 D400 0B6B              STO   L  GRL1&1                                 8B923830
09DC 0 D400 0B7A              STO   L  MT526&1                                8B923840
09DE 0 D400 0B9E              STO   L  LNSW                                   8B923850
09E0 0 63D1                   LDX   3 -47                                     8B923860
09E1 0 D700 0E9B        MT573 STO   L3 TOTA&50                                8B923870
09E3 0 7301                   MDX   3 1           DECR IX 3                   8B923880
09E4 0 70FC                   MDX      MT573      LOOP                        8B923890
09E5 0 C400 0D2D              LD    L  MT730      RESTORE RTN CONSTANT        8B923900
09E7 0 D400 0B9F              STO   L  PRSW                                   8B923910
09E9 0 CC00 06D6              LDD   L  MT506-1                                8B923920
09EB 0 DC00 0C36              STD   L  DLYC                                   8B923930
09ED 0 C400 0C38              LD    L  ADRS1                                  8B923940
09EF 0 D040                   STO      MT50A&1                                8B923950
09F0 0 C400 0C3A              LD    L  K0086                                  8B923960
09F2 0 D03B                   STO      MT509&1                                8B923970
09F3 0 CC00 0C30              LDD   L  MT5Q6                                  8B923980
09F5 0 D826                   STD      MT5Q7                                  8B923990
09F6 0 C400 0C3D              LD    L  MT5X3                                  8B924000
09F8 0 D400 0462              STO   L  SW                                     8B924010
09FA 0 1010                   SLA      16                                     8B924020
09FB 0 D400 0C42              STO   L  LINE                                   8B924030
09FD 0 D400 0926              STO   L  MTTX3                                  8B924040
09FF 0 D400 0C3E              STO   L  MT5X4                                  8B924050
0A01 0 C400 0939              LD    L  MTTZ1                                  8B924060
0A03 0 D400 0B27              STO   L  MT51D                                  8B924070
0A05 0 C400 093A              LD    L  MTTZ1&1                                8B924080
0A07 0 D400 0B28              STO   L  MT51D&1                                8B924090
0A09 0 C400 0928              LD    L  MTTX9                                  8B924100
0A0B 0 4400 0830              BSI   L  PRDWT      GO SET UP              SRC  8B924110
0A0D 0 4400 081F              BSI   L  INTRT      GO SET TIME INT RET    SRC  8B924120
0A0F 0 07AA                   DC       TMWR4                                  8B924130
                        *                                                     8B924140
                        *                   WRITE FIRST RECORD                8B924150
                        *                                                     8B924160
0A10 0 4400 078D        MT502 BSI   L  TMWRT      WRITE                       8B924170
                        *                                                     8B924180
                        *                   DELAY 10 MILLISEC                 8B924190
                        *                                                     8B924200
0A12 0 C400 06A5              LD    L  MT540      GET DELAY CT                8B924210
0A14 0 D400 0C33              STO   L  DLY1       SET                         8B924220
                        ******************************************            8B924230
0A16 0 4400 038C              BSI   L  DELAY      GO DELAY               *    8B924240
0A18 0 0C32                   DC       DLY1-1     ADRS OF COUNT          *    8B924250
                        ******************************************            8B924260
                        *                                                     8B924270
                        *                   WRITE SECOND RECORD               8B924280
                        *                                                     8B924290
0A19 0 4400 078D        MT503 BSI   L  TMWRT      WRITE                       8B924300
0A1B 0 7000                   MDX      MT5Q7      BRANCH                      8B924310
                        *                                                     8B924320
                        *                   VARIABLE DELAY .5 MILLISEC        8B924330
                        *                   TO 5 SECS.                        8B924340
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                          *                                                  8B924350
0A1C   0000                     BSS  E  0                                    8B924360
0A1C 0 1000               MT5Q7 NOP     0         REPLACED BY BRANCH         8B924370
0A1D 0 1000                     NOP     0         *DURING LFT COL TST        8B924380
0A1E 0 4400 078D                BSI  L  TMWRT     WRITE 3RD RECORD           8B924390
0A20 0 CC00 0C36                LDD  L  DLYC      GET DELAY COUNT            8B924400
0A22 0 DC00 0C34                STD  L  DLY2-1    SET                        8B924410
                          *************************************************  8B924420
0A24 0 4400 038C          MT505 BSI  L  DELAY     GO DELAY              *    8B924430
0A26 0 0C34                     DC      DLY2-1    ADRS OF COUNT         *    8B924440
                          *************************************************  8B924450
0A27 0 6600 06E0          MT508 LDX  L2 DST                                  8B924460
                          *                                                  8B924470
                          *                WRITE FOURTH RECORD               8B924480
                          *                                                  8B924490
0A29 0 4400 078D                BSI  L  TMWRT     WRITE                      8B924500
                          *                                                  8B924510
                          *                WRITE FIFTH RECORD                8B924520
                          *                                                  8B924530
0A2B 0 4400 078D                BSI  L  TMWRT     WRITE                      8B924540
                          *                                                  8B924550
                          *                PREPARE FOR NEXT SERIES           8B924560
                          *                                                  8B924570
0A2D 0 6700 0056          MT509 LDX  L3 86        SET IXING                  8B924580
0A2F 0 CF00 067E          MT50A LDD  L3 MT5X0&4   GET NEXT DELAY             8B924590
0A31 0 DC00 0C36                STD  L  DLYC      SET                        8B924600
0A33 0 74FE 0A2E                MDX  L  MT509&1,-2 DECR IX                   8B924610
0A35 0 70DA                     MDX     MT502     GO WRITE NEXT SERIES       8B924620
                          *                                                  8B924630
0A36 0 C400 0C3A                LD   L  K0086     RESTORE ROUTINE            8B924640
0A38 0 D0F5                     STO     MT509&1   *                          8B924650
0A39 0 C400 0C38                LD   L  ADRS1     *                          8B924660
0A3B 0 D0F4                     STO     MT50A&1   *                          8B924670
0A3C 0 CC00 06D6                LDD  L  MT506-1   *                          8B924680
0A3E 0 DC00 0C36                STD  L  DLYC      *                          8B924690
                          *                                                  8B924700
0A40 0 74FF 0462                MDX  L  SW,-1     CK FOR SERIES COMPLT       8B924710
0A42 0 7014                     MDX     MT590     SET FOR LOAD LFT COL       8B924720
0A43 0 C400 0C3D                LD   L  MT5X3     GET 2                      8B924730
0A45 0 D400 0462                STO  L  SW        SET IN SW                  8B924740
0A47 0 CC00 0C30                LDD  L  MT5Q6     RESTORE PROGRAM            8B924750
0A49 0 D8D2                     STD     MT5Q7     *                          8B924760
0A4A 0 7401 0926                MDX  L  MTTX3,1   CK FOR 5 PASSES            8B924770
0A4C 0 C400 0926                LD   L  MTTX3     *                          8B924780
0A4E 0 9400 0C45                S    L  MT5XF     *                          8B924790
0A50 0 4820                     BSC     Z         SKIP IF FINISHED           8B924800
0A51 0 70BE                     MDX     MT502     GO WRT NEW PASS            8B924810
0A52 0 D400 0926                STO  L  MTTX3     CLEAR PASS COUNT           8B924820
0A54 0 4400 07F0                BSI  L  RWD       REWIND                     8B924830
0A56 0 700A                     MDX     MT583     GO READ                    8B924840
                          *                                                  8B924850
0A57 0 C400 0C3B          MT590 LD   L  K0010     SET IX FOR FINAL DLY       8B924860
0A59 0 D0D4                     STO     MT509&1   * 4 DELAYS                 8B924870
0A5A 0 C400 0C39                LD   L  ADRS2     GET LOAD ADRS              8B924880
0A5C 0 D0D3                     STO     MT50A&1   SET                        8B924890
0A5D 0 CC00 0C2E                LDD  L  KBSC      SET BRANCH TO LOAD         8B924900
0A5F 0 D8BC                     STD     MT5Q7     * LEFT COLUMN              8B924910
0A60 0 70CC                     MDX     MT509     GO FINISH SERIES           8B924920
                          *                                                  8B924930
                          *                SET UP TO READ                    8B924940
                          *                                                  8B924950
0A61 0 C400 092C          MT583 LD   L  MTTY9     GET FNC READ               8B924960
0A63 0 4400 0830                BSI  L  PRDWT     GO SET UP                  8B924970
0A65 0 4400 081F                BSI  L  INTRT     GO SET TIME INT RET   SRC  8B924980
0A67 0 07C4                     DC      TMRD4                                8B924990
0A68 0 4400 0910          MT50D BSI  L  CN2       GO SET CONSTANTS      SRC  8B925000
                          *                                                  8B925010
                          *                READ FIRST RECORD                 8B925020
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                          *                                                  8B925030
0A6A 0 4400 07C0                BSI  L  TMRDT     GO READ               SRC  8B925040
                          *                                                  8B925050
                          *                READ SECOND RECORD                8B925060
                          *                                                  8B925070
0A6C 0 4400 07C0                BSI  L  TMRDT     GO READ               SRC  8B925080
0A6E 0 C400 07BC                LD   L  TWRX0     GET THE TIME               8B925090
0A70 0 D400 0E69                STO  L  TOTA      SAVE                       8B925100
0A72 0 4400 07C0                BSI  L  TMRDT     READ 3RD RECORD            8B925110
0A74 0 4400 07C0                BSI  L  TMRDT     READ 4TH RECORD            8B925120
0A76 0 C400 07BC                LD   L  TWRX0     GET THE TIME               8B925130
0A78 0 D400 0E6A                STO  L  TOTA&1    SAVE                       8B925140
                          *                                                  8B925150
                          *                READ FIFTH RECORD                 8B925160
                          *                                                  8B925170
0A7A 0 4400 07C0                BSI  L  TMRDT     GO READ               SRC  8B925180
0A7C 0 C400 07BC                LD   L  TWRX0     GET THE TIME               8B925190
0A7E 0 D400 0E6B                STO  L  TOTA&2    SAVE                       8B925200
0A80 0 C400 0E69                LD   L  TOTA      GET 10 MSEC GDT            8B925210
0A82 0 1890                     SRT     16                                   8B925220
0A83 0 8C00 092E                AD   L  MTTYC     ADD TOTAL                  8B925230
0A85 0 DC00 092E                STD  L  MTTYC     SAVE                       8B925240
0A87 0 C400 0E6A                LD   L  TOTA&1    GET VAR GDT CT             8B925250
0A89 0 1890                     SRT     16                                   8B925260
0A8A 0 8C00 0930                AD   L  MTTYD     ADD TO TOTAL               8B925270
0A8C 0 DC00 0930                STD  L  MTTYD     SAVE                       8B925280
0A8E 0 6700 0E6C          MT50F LDX  L3 TOTA&3    IX 3 # ADRS TOTALS         8B925290
0A90 0 C400 0E6A                LD   L  TOTA&1    GET A COUNT                8B925300
0A92 0 8300                     A     3 0         ADD TO TOTAL               8B925310
0A93 0 D300                     STO   3 0         SAVE                       8B925320
0A94 0 7301                     MDX   3 1         STEP IX 3                  8B925330
0A95 0 6BF9                     STX   3 MT50F&1   SAVE IX  3                 8B925340
0A96 0 C400 0E6B                LD   L  TOTA&2    GET MIN GDT COUNT          8B925350
0A98 0 1890                     SRT     16                                   8B925360
0A99 0 8C00 0932                AD   L  MTTYE     ADD TO TOTAL               8B925370
0A9B 0 DC00 0932                STD  L  MTTYE     SAVE                       8B925380
0A9D 0 7401 0C3E                MDX  L  MT5X4,1   ADD 1 TO SERIES CT         8B925390
0A9F 0 C400 0C3E                LD   L  MT5X4     GET SERIES CT              8B925400
0AA1 0 9400 092A                S    L  MTTY5     SUB 81                     8B925410
0AA3 0 4820                     BSC     Z         IS A SERIES COMPLETE       8B925420
0AA4 0 70C3                     MDX     MT50D     NO                         8B925430
0AA5 0 D400 0C3E                STO  L  MT5X4     CLEAR SERIES CTR           8B925440
0AA7 0 C400 092D                LD   L  MTTYB                                8B925450
0AA9 0 D0E5                     STO     MT50F&1   RESTORE LDX                8B925460
0AAA 0 7401 0926                MDX  L  MTTX3,1   ADD 1 TO PASS CT           8B925470
0AAC 0 C400 0926                LD   L  MTTX3     GET PASS CT                8B925480
0AAE 0 9400 0C45                S    L  MT5XF     SUB 5                      8B925490
0AB0 0 4820                     BSC     Z         IS THIS FIVE PASSES        8B925500
0AB1 0 70B6                     MDX     MT50D     NO                         8B925510
0AB2 0 D400 0926                STO  L  MTTX3     CLEAR PASS CT              8B925520
                          *                                                  8B925530
                          *                5 PASSES COMPLETE-- OUTPUT        8B925540
                          *                A PLOT OF VAR DELAYS              8B925550
                          *                                                  8B925560
0AB4 0 6306                     LDX   3 6                                    8B925570
0AB5 0 CF00 092C          MT524 LDD  L3 MTTYC-2   GET A COUNT                8B925580
0AB7 0 AC00 0938                D    L  MTTZ0     AVG IT                     8B925590
0AB9 0 D700 092C                STO  L3 MTTYC-2   SAVE                       8B925600
0ABB 0 73FE                     MDX   3 -2        ARE ALL AVCED              8B925610
0ABC 0 70F8                     MDX     MT524     NO-LOOP                    8B925620
0ABD 0 C400 02E1                LD   L  SW0       GET SW FNC 0               8B925630
0ABF 0 1808                     SRA     8                                    8B925640
0AC0 0 4804                     BSC     E         IS BYPASS GRAPH ON         8B925650
0AC1 0 7001                     MDX     MT580     YES                        8B925660
0AC2 0 7002                     MDX     MT525-2   NO                         8B925670
0AC3 0 4C00 0BC5          MT580 BSC  L  MT521                                8B925680
0AC5 0 6700 FFD1                LDX  L3 -47                                  8B925690
0AC7 0 C700 0E9B          MT525 LD   L3 TOTA&50   GET VAR TOTAL              8B925700
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0AC9 0 1890              SRT    16                                  8B925710
0ACA 0 AC00 0C45         D    L MT5XF      AVG IT                   8B925720
0ACC 0 D700 0E9B         STO  L3 TOTA&50   SAVE                     8B925730
0ACE 0 7301              MDX   3 1                                  8B925740
0ACF 0 70F7              MDX     MT525      NO-LOOP                  8B925750
0AD0 0 6D00 0BC4         STX  L1 MT520&1    SAVE IX 1                8B925760
0AD2 0 1010              SLA     16         PRINT BLANK LINE         8B925770
0AD3 0 4400 0C19         BSI  L  LOADK      *                        8B925780
0AD5 0 4400 044C         BSI  L  PCCO       *                        8B925790
0AD7 0 6700 0DB1         LDX  L3 PR3-1      IX # MSG ADRS            8B925800
0AD9 0 4400 0C21         BSI  L  LOADV      SET MSG - PRINT          8B925810
0ADB 0 62D4              LDX   2 -44                                 8B925820
0ADC 0 6580 06EF         LDX   I1 DST&15    IX 1 # NO TRACKS         8B925830
0ADE 0 C500 0675         LD   L1 MT5XA      SET LINE LIMITS          8B925840
0AE0 0 D400 0C43         STO  L  MT5XE                               8B925850
0AE2 0 C500 0677         LD   L1 MT5XA&2                             8B925860
0AE4 0 D400 0C44         STO  L  MT5XE&1                             8B925870
0AE6 0 C400 0C43 MT516   LD   L  MT5XE                               8B925880
0AE8 0 9400 06DB         S    L  GPHLM      SET TO NEXT LINE         8B925890
0AEA 0 D400 0C43         STO  L  MT5XE                               8B925900
0AEC 0 C400 0C44         LD   L  MT5XE&1                             8B925910
0AEE 0 9400 06DB         S    L  GPHLM      SET TO NEXT LINE         8B925920
0AF0 0 D400 0C44         STO  L  MT5XE&1                             8B925930
0AF2 0 7401 0C42         MDX  L  LINE,1     INCR LINE COUNT          8B925940
0AF4 0 C400 06EF         LD   L  DST&15     GET NO TRACKS            8B925950
0AF6 0 4C18 0B04         BSC  L  TRK9,&-    BCH IF 9 TRK             8B925960
0AF8 0 C400 0C42         LD   L  LINE       GET LINE COUNT           8B925970
0AFA 0 9400 0461         S    L  PCCX1      SUB 9                    8B925980
0AFC 0 4C18 0B0B         BSC  L  MT517,&-   BCH IF 9                 8B925990
0AFE 0 9400 0C3C NTDSH   S    L  MT5X2      SUB 30                   8B926000
0B00 0 4C18 0B0B         BSC  L  MT517,&-   BCH IF 39                8B926010
0B02 0 1010              SLA     16         CLEAR ACC                8B926020
0B03 0 7009              MDX     MT517&2    BRANCH                   8B926030
0B04 0 C400 0C42 TRK9    LD   L  LINE       GET LINE COUNT           8B926040
0B06 0 9400 0463         S    L  K007       SUB 7                    8B926050
0B08 0 4C18 0B0B         BSC  L  MT517,&-   BCH IF 7                 8B926060
0B0A 0 70F3              MDX     NTDSH                               8B926070
0B0B 0 C400 0C41 MT517   LD   L  KDASH      GET DASH                 8B926080
0B0D 0 4400 0C19         BSI  L  LOADK      SET I/O AREA             8B926090
0B0F 0 1010              SLA     16         CLEAR ACC                8B926100
0B10 0 D400 0D93         STO  L  PRA3       *                        8B926110
0B12 0 D400 0D94         STO  L  PRA1       *                        8B926120
0B14 0 C400 0C41         LD   L  KDASH      SET FINAL DASH           8B926130
0B16 0 1008              SLA     8                                   8B926140
0B17 0 D400 0DB0         STO  L  PRA&26                              8B926150
0B19 0 C400 036E         LD   L  ONE        GET ONE                  8B926160
0B1B 0 D400 0BA0         STO  L  CKHLW      SET SW # ODD             8B926170
0B1D 0 C400 066C         LD   L  SPEC       GET *                    8B926180
0B1F 0 D400 0D95         STO  L  PRA4&3     SET IN I/O               8B926190
0B21 0 63E5              LDX   3 -27        IX # MSG                 8B926200
0B22 0 61D1              LDX   1 -47                                 8B926210
0B23 0 C500 0E9B MT519   LD   L1 TOTA&50    GET A COUNT              8B926220
0B25 0 4C18 0B59         BSC  L  MT51B,&-   IS IT ZERO               8B926230
0B27 0 9400 0C43 MT51D   S    L  MT5XE      SUB GRAPH LIMIT          8B926240
0B29 0 4C28 0B3C         BSC  L  MT51A,&Z   IS COUNT LESS            8B926250
0B2B 0 1010              SLA     16         ZERO ACCUM               8B926260
0B2C 0 D500 0E9B         STO  L1 TOTA&50    ZERO THE COUNT           8B926270
0B2E 0 C071              MT51E LD   CKHLW    GET HALF WD SW           8B926280
0B2F 0 4804              BSC     E          IS THIS FIRST HALF       8B926290
0B30 0 7008              MDX     MT51F      YES                      8B926300
0B31 0 C400 0C3F         LD   L  MT5X8      GET AN E                 8B926310
0B33 0 1808              SRA     8          SET TO SECOND HALF       8B926320
0B34 0 EF00 0DB1         OR   L3 PRA&27     SET IN MSG               8B926330
0B36 0 D700 0DB1 MTAAA   STO  L3 PRA&27     *                        8B926340
0B38 0 7020              MDX     MT51B                               8B926350
0B39 0 C400 0C3F MT51F   LD   L  MT5X8      GET AN E                 8B926360
0B3B 0 70F8              MDX     MTAAA-2                             8B926370
                         *                                           8B926380
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0B3C 0 C500 0E9B MT51A   LD   L1 TOTA&50    GET A COUNT              8B926390
0B3E 0 9400 0C43         S    L  MT5XE                               8B926400
0B40 0 4830              BSC     -Z         IS COUNT LESS/EQUAL      8B926410
0B41 0 7017              MDX     MT51B      NO                       8B926420
0B42 0 C500 0E9B         LD   L1 TOTA&50    GET A COUNT              8B926430
0B44 0 9400 0C44         S    L  MT5XE&1                             8B926440
0B46 0 4828              BSC     &Z         IS COUNT FOR THIS LN     8B926450
0B47 0 7011              MDX     MT51B      NO                       8B926460
0B48 0 C057              LD      CKHLW      GET HALF WD SW           8B926470
0B49 0 4804              BSC     E          IS THIS FIRST HALF       8B926480
0B4A 0 7008              MDX     MTAAB      YES                      8B926490
0B4B 0 C400 0C40         LD   L  MT5X9      GET A ZERO               8B926500
0B4D 0 1808              SRA     8                                   8B926510
0B4E 0 EF00 0DB1         OR   L3 PRA&27     SET IN MSG               8B926520
0B50 0 D700 0DB1 MTAAC   STO  L3 PRA&27                             8B926530
0B52 0 7003              MDX     MTAAD                               8B926540
0B53 0 C400 0C40 MTAAB   LD   L  MT5X9      GET A ZERO               8B926550
0B55 0 70F8              MDX     MTAAC-2                             8B926560
0B56 0 1010              MTAAD SLA  16         ZERO ACCUM           8B926570
0B57 0 D500 0E9B         STO  L1 TOTA&50    ZERO THE COUNT           8B926580
0B59 0 7401 0BA0 MT51B   MDX  L  CKHLW,1    INCR HALF WD SW          8B926590
0B5B 0 C044              LD      CKHLW      GET HALF WD SW           8B926600
0B5C 0 4804              BSC     E          IS IT EVEN               8B926610
0B5D 0 7301              MDX   3 1          NO-DECR IX 3             8B926620
0B5E 0 1000              NOP                                         8B926630
0B5F 0 7101              MDX   1 1          DECR IX 1                8B926640
0B60 0 70C2              MDX     MT519      LOOP                     8B926650
                         *                                           8B926660
                         *          A LINE IS SET UP-PRINT           8B926670
                         *                                           8B926680
0B61 0 7401 0B9E         MDX  L  LNSW,1     ADD ONE TO LINE SW       8B926690
0B63 0 6A25              STX   2 MT51C&1                             8B926700
0B64 0 C039              LD      LNSW       GET LINE SW              8B926710
0B65 0 9039              S       PRSW       SUB PRINT SW             8B926720
0B66 0 4820              BSC     Z          ARE THEY EQUAL           8B926730
0B67 0 7011              MDX     MT526      NO                       8B926740
0B68 0 740A 0B9F         MDX  L  PRSW,10    ADD TEN TO PRINT SW      8B926750
0B6A 0 6600 0000 GRL1    LDX  L2 0          IX 2 # CHARACTER         8B926760
0B6C 0 C400 06EF         LD   L  DST&15     GET NO TRACKS            8B926770
0B6E 0 4820              BSC     Z          IS THIS 9 TRACK          8B926780
0B6F 0 7003              MDX     MT518      NO                       8B926790
0B70 0 C600 0BA1 MT572   LD   L2 PR6        GET 9 TRACK CHAR         8B926800
0B72 0 7002              MDX     MT50B                               8B926810
0B73 0 C600 0BA5 MT518   LD   L2 PR7        GET 7 TRACK CHAR         8B926820
0B75 0 D400 0D94 MT50B   STO  L  PRA1       SET IN MSG               8B926830
0B77 0 7401 0B6B         MDX  L  GRL1&1,1   SELECT NEXT CHAR         8B926840
0B79 0 6600 0000 MT526   LDX  L2 0          IX I # CHARACTER         8B926850
0B7B 0 C600 0E06         LD   L2 PR8        GET CHARACTER            8B926860
0B7D 0 D400 0D93         STO  L  PRA3       SET IN MSG               8B926870
0B7F 0 7401 0B7A         MDX  L  MT526&1,1  INCR IX 2                8B926880
                         ********************************************* 8B926890
0B81 0 4400 044C         BSI  L  PCCO       GO PRINT                 * 8B926900
                         ********************************************* 8B926910
0B83 0 1010              MT50C SLA  16                                 8B926920
0B84 0 D400 0D93         STO  L  PRA3       RESTORE                  8B926930
0B86 0 D400 0D94         STO  L  PRA1       SET IN MSG               8B926940
0B88 0 6600 0000 MT51C   LDX  L2 0          RESTORE IX 2             8B926950
0B8A 0 7201              MDX   2 1          ARE ALL LINES DONE       8B926960
0B8B 0 7010              MDX     MT584      LOOP                     8B926970
0B8C 0 C400 0926         LD   L  MTTX3      GET LAST LINE SW         8B926980
0B8E 0 F400 0925         EOR  L  MTTX1      EOR WITH 0001            8B926990
0B90 0 D400 0926         STO  L  MTTX3      SAVE                     8B927000
0B92 0 4C18 0BA9         BSC  L  MT562,&-   BRANCH IF DONE           8B927010
0B94 0 C400 0936         LD   L  MTTYF      NO                       8B927020
0B96 0 D090              STO     MT51D      MODIFY PROG              8B927030
0B97 0 C400 0937         LD   L  MTTYF&1                             8B927040
0B99 0 D08E              STO     MT51D&1    MODIFY PROG              8B927050
0B9A 0 6600 FFFF         LDX  L2 -1         IX 2 # FFFF              8B927060
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0B9C 0 4C00 0AE6    MT584 BSC  L  MT516       LOOP                          8B927070
0B9E 0 0000         LNSW  DC      0                                         8B927080
0B9F 0 0007         PRSW  DC      7                                         8B927090
0BA0 0 0000         CKHLW DC      0           HALF WD SW                    8B927100
0BA1 0 3B08         PR6   DC      /3B08       PRINTER .8                    8B927110
0BA2 0 3B07               DC      /3B07       PRINTER .7                    8B927120
0BA3 0 3B06               DC      /3B06       PRINTER .6                    8B927130
0BA4 0 3B05               DC      /3B05       PRINTER .5                    8B927140
                    *                                                       8B927150
0BA5 0 013B         PR7   DC      /013B       PRINTER 1.                    8B927160
0BA6 0 3B09               DC      /3B09       PRINTER .9                    8B927170
0BA7 0 3B08               DC      /3B08       PRINTER .8                    8B927180
0BA8 0 3B07               DC      /3B07       PRINTER .7                    8B927190
                    *                                                       8B927200
                    *                GRAPH COMPLETE-PRINT AVGS              8B927210
                    *                                                       8B927220
                    *                                                       8B927230
                    ********************************************            8B927240
0BA9 0 6700 0DB1    MT562 LDX  L3 PR3-1       LOAD MSG ADRS                 8B927250
0BAB 0 4400 0C21          BSI  L  LOADV       SET MSG -PRINT                8B927260
0BAD 0 6700 0DCD          LDX  L3 PR4-1       LOAD MSG ADRS                 8B927270
0BAF 0 4400 0C21          BSI  L  LOADV       SET MSG - PRINT               8B927280
0BB1 0 C400 02E1          LD   L  SW0         GET SWITCHES                  8B927290
0BB3 0 1005               SLA     5           CK HEADING BYPASS             8B927300
0BB4 0 4C28 0BBE          BSC  L  BY,&Z       BCH IF ON                     8B927310
0BB6 0 6700 0DE9          LDX  L3 NOTE-1      LOAD MSG ADRS                 8B927320
0BB8 0 4400 0C21          BSI  L  LOADV       SET MSG - PRINT               8B927330
0BBA 0 6700 0E30          LDX  L3 NOTE1-1     IX # MSG ADRS                 8B927340
0BBC 0 4400 0C21          BSI  L  LOADV       SET MSG - PRINT               8B927350
0BBE 0 1010         BY    SLA     16          CLEAS ACC                     8B927360
0BBF 0 4400 0C19          BSI  L  LOADK       SET BLANK MSG                 8B927370
0BC1 0 4400 044C          BSI  L  PCCO        PRINT                         8B927380
0BC3 0 6500 0000    MT520 LDX  L1 *-*         RESTORE IX 1                  8B927390
0BC5 0 6600 06E0    MT521 LDX  L2 DST         RESTORE IX 2                  8B927400
0BC7 0 1010               SLA     16          CLEAR A REG                   8B927410
0BC8 0 D400 0B6B          STO  L  GRL1&1                                    8B927420
0BCA 0 D0D3               STO     LNSW                                      8B927430
0BCB 0 D0AE               STO     MT526&1                                   8B927440
0BCC 0 C400 0D2D          LD   L  MT730       GET 0007                      8B927450
0BCE 0 D0D0               STO     PRSW                                      8B927460
0BCF 0 4400 083C          BSI  L  MLG         PRINT AVERAGES                8B927470
0BD1 0 0F35               DC      MSG10&4                                   8B927480
0BD2 0 0F19               DC      MSG4&8                                    8B927490
0BD3 0 A004         A004  DC      /A004       ID A4                         8B927500
0BD4 0 0004               DC      /0004       LINE 0-FORM 4                 8B927510
                    *                                                       8B927520
                    *                REWIND THE DRIVE-RESTORE               8B927530
                    *                                                       8B927540
0BD5 0 C400 0939          LD   L  MTTZ1                                     8B927550
0BD7 0 D400 0B27          STO  L  MT51D       RESTORE PROG                  8B927560
0BD9 0 C400 093A          LD   L  MTTZ1&1                                   8B927570
0BDB 0 D400 0B28          STO  L  MT51D&1     RESTORE PROG                  8B927580
0BDD 0 4400 07F0    MT581 BSI  L  RWD         GO REWIND              SRC    8B927590
0BDF 0 C400 02E1          LD   L  SW0         GET SW FNC 0                  8B927600
0BE1 0 1008               SLA     8                                         8B927610
0BE2 0 4810               BSC     -           IS LOOP RD ON                 8B927620
0BE3 0 702F               MDX     MT582       NO                            8B927630
0BE4 0 1010               SLA     16          RESTORE NECESSARY             8B927640
0BE5 0 D400 0926          STO  L  MTTX3       *VALUES IN RTN                8B927650
0BE7 0 D05A               STO     LINE                                      8B927660
0BE8 0 D0B5               STO     LNSW                                      8B927670
0BE9 0 18D0               RTE     16                                        8B927680
0BEA 0 1010               SLA     16                                        8B927690
0BEB 0 DC00 092E          STD  L  MTTYC                                     8B927700
0BED 0 DC00 0930          STD  L  MTTYD                                     8B927710
0BEF 0 DC00 0932          STD  L  MTTYE                                     8B927720
0BF1 0 D400 0B6B          STO  L  GRL1&1                                    8B927730
0BF3 0 D400 0B7A          STO  L  MT526&1                                   8B927740
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0BF5 0 6700 FFD1          LDX  L3 -47                                       8B927750
0BF7 0 D700 0E9B    MT585 STO  L3 TOTA&50                                   8B927760
0BF9 0 7301               MDX  3  1                                         8B927770
0BFA 0 70FC               MDX     MT585                                     8B927780
0BFB 0 D042               STO     MT5X4                                     8B927790
0BFC 0 C400 0D2D          LD   L  MT730                                     8B927800
0BFE 0 D400 0B9F          STO  L  PRSW                                      8B927810
0C00 0 C400 0939          LD   L  MTTZ1                                     8B927820
0C02 0 D400 0B27          STO  L  MT51D                                     8B927830
0C04 0 C400 093A          LD   L  MTTZ1&1                                   8B927840
0C06 0 D400 0B28          STO  L  MT51D&1                                   8B927850
0C08 0 C827               LDD     MT5Q6                                     8B927860
0C09 0 DC00 0A1C          STD  L  MT5Q7                                     8B927870
0C0B 0 C031               LD      MT5X3                                     8B927880
0C0C 0 D400 0462          STO  L  SW                                        8B927890
0C0E 0 C029               LD      ADRS1                                     8B927900
0C0F 0 D400 0A30          STO  L  MT50A&1                                   8B927910
0C11 0 4C00 0A61          BSC  L  MT583       LOOP READ                     8B927920
0C13 0 4C00 0771    MT582 BSC  L  MONR1       EXIT                          8B927930
                    *                                                       8B927940
                    *                                                       8B927950
                    *              INTRPT RETURN ON WRITE                   8B927960
                    *                                                       8B927970
0C15 0 4C80 078D    MT522 BSC  I  TMWRT       GO TO CALLING RTN             8B927980
                    *                                                       8B927990
                    *              INTRPT RETURN ON TM READ                 8B928000
                    *                                                       8B928010
0C17 0 4C80 07C0    MT523 BSC  I  TMRDT                                     8B928020
                    *                                                       8B928030
                    *          LOAD I/O AREA WITH CONSTANT                  8B928040
0C19 0 0000         LOADK DC      *-*         RETURN ADRS                   8B928050
0C1A 0 631C               LDX   3 28                                        8B928060
0C1B 0 D700 0D92    LOAD1 STO  L3 PRA3-1      STORE IN MSG AREA             8B928070
0C1D 0 73FF               MDX   3 -1                                        8B928080
0C1E 0 70FC               MDX     LOAD1                                     8B928090
0C1F 0 4C80 0C19          BSC  I  LOADK       RETURN TO MAINLINE            8B928100
                    *                                                       8B928110
                    *          LOAD I/O AREA WITH MESSAGE                   8B928120
                    *                                                       8B928130
0C21 0 0000         LOADV DC      *-*         RETURN ADDR                   8B928140
0C22 0 6B02               STX   3 MT510&1                                   8B928150
0C23 0 631C               LDX   3 28                                        8B928160
0C24 0 C700 0000    MT510 LD   L3 *-*         LOAD MESSAGE                  8B928170
0C26 0 D700 0D92          STO  L3 PRA3-1      STORE IN MSG AREA             8B928180
0C28 0 73FF               MDX   3 -1                                        8B928190
0C29 0 70FA               MDX     MT510                                     8B928200
0C2A 0 4400 044C          BSI  L  PCCO        PRINT MESSAGE                 8B928210
0C2C 0 4C80 0C21          BSC  I  LOADV       RETURN TO MAINLINE            8B928220
                    *                                                       8B928230
                    *                                                       8B928240
                    *            ROUTINE 5 CONSTANTS                        8B928250
                    *                                                       8B928260
                          BSS  E  0                                         8B928270
0C2E    0000        KBSC  BSI  L  LDLFT       BRANCH TO LFT COL LD          8B928280
0C2E 0 4400 0C46    MT5Q6 NOP     0           PROG RESTORE                  8B928290
0C30 0 1000               NOP     0           *                             8B928300
0C31 0 1000               DC      0           DELAY COUNT 1                 8B928310
0C32 0 0000         DLY1  DC      0           *                             8B928320
0C33 0 0000               DC      0           DELAY COUNT 2                 8B928330
0C34 0 0000         DLY2  DC      0           *                             8B928340
0C35 0 0000         DLYC  DC      0           DELAY STORAGE                 8B928350
0C36 0 0000               DC      0           *                             8B928360
0C37 0 0000         ADRS1 DC      MT5X0&4     CONSTANTS                     8B928370
0C38 0 067E         ADRS2 DC      MT5X0-4     *                             8B928380
0C39 0 0676         K0086 DC      86          *                             8B928390
0C3A 0 0056         K0010 DC      10          *                             8B928400
0C3B 0 000A         MT5X2 DC      30          *                             8B928410
0C3C 0 001E         MT5X3 DC      2           *                             8B928420
0C3D 0 0002
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0C3E 0 0000          MT5X4 DC      0          SERIES COUNT                    8B928430
0C3F 0 3500          MT5X8 DC      /3500      PRINTER   E                     8B928440
0C40 0 2600          MT5X9 DC      /2600      PRINTER O                       8B928450
0C41 0 2020          KDASH DC      /2020       PRINTER DASH                   8B928460
0C42 0 0000          LINE  DC      0          LINE COUNT                      8B928470
0C43 0 0000          MT5XE DC      0          UPPER LIMIT STORAGE             8B928480
0C44 0 0000                DC      0          LOWER LIMIT STORAGE             8B928490
0C45 0 0005          MT5XF DC      5          NUMBER PASSES                   8B928500
                     *                                                        8B928510
                     *                                                        8B928520
                     *              ROUTINE TO LOAD THE LEFT                  8B928530
                     *              * COLUMN                                  8B928540
                     *                                                        8B928550
0C46 0 0000          LDLFT DC      0                                   SE     8B928560
0C47 0 6B22                STX   3 LDLFE&1    SAVE INDEXING                   8B928570
0C48 0 6323                LDX   3 35         IX 3 # NUMBER OF REC            8B928580
0C49 0 4400 078D     LDLFA BSI   L TMWRT      WRITE                           8B928590
0C4B 0 73FF                MDX   3 -1         DECR INDEX                      8B928600
0C4C 0 70FC                MDX     LDLFA      LOOP                            8B928610
0C4D 0 6323                LDX   3 35         SET BACKSPACE INDEX             8B928620
0C4E 0 6600 06E0     LDLFB LDX   L2 DST       RESTORE IX 2                    8B928630
0C50 0 4400 07C9           BSI   L BSP        BACKSPACE 1 REC           SRC   8B928640
0C52 0 620A                LDX   2 10         SET DLY LOOP IX                 8B928650
0C53 0 C400 06B1           LD    L MT591      GET DLY CONSTANT                8B928660
0C55 0 D019                STO     LDLFX      SET                             8B928670
0C56 0 6B06                STX   3 LDLFY&1    SAVE IX 3                       8B928680
0C57 0 4400 038C     LDLFC BSI   L DELAY      GO DELAY                  SRC   8B928690
0C59 0 0C6E                DC      LDLFX-1    ADRS OF DELAY COUNT             8B928700
0C5A 0 72FF                MDX   2 -1         DECR INDEX                      8B928710
0C5B 0 70FB                MDX     LDLFC      LOOP                            8B928720
0C5C 0 6700 0000     LDLFY LDX   L3 0         RESTORE IX 3                    8B928730
0C5E 0 73FF                MDX   3 -1         DECR BSP INDEX                  8B928740
0C5F 0 70EE                MDX     LDLFB      LOOP                            8B928750
0C60 0 6600 06E0           LDX   L2 DST       RESTORE IX 2                    8B928760
0C62 0 C400 0928           LD    L MTTX9      GET WRT FUNCTION                8B928770
0C64 0 4400 0830           BSI   L PRDWT      SET UP TO WRT                   8B928780
0C66 0 4400 081F           BSI   L INTRT      SET INTRPT RETURN               8B928790
0C68 0 07AA                DC      TMWR4                                      8B928800
0C69 0 6700 0000     LDLFE LDX   L3 0         RESTORE IX 3                    8B928810
0C6B 0 4C80 0C46           BSC   I LDLFT      EXIT                            8B928820
0C6E   0000                BSS   E 0                                          8B928830
0C6E 0 0000                DC      0          DELAY CONSTANT                  8B928840
0C6F 0 0000          LDLFX DC      0          * STORAGE                       8B928850
                     *                                                        8B928860
                     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   8B928870
                     *XXXXXXXXXXXXXXXX ROUTINE SIX XXXXXXXXXXXXXX            8B928880
                     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   8B928890
                     *                                                        8B928900
0C70 0 7FFF          MT6X8 DC      /7FFF      CONSTANT                        8B928910
0C71 0 1010          MTT07 SLA     16         ZERO ACCUM                      8B928920
0C72 0 D400 0926           STO   L MTTX3      SET DELAY COND # 0              8B928930
0C74 0 D400 0D87           STO   L MT7X3      CLEAR ALL TOTALS                8B928940
0C76 0 D400 0D88           STO   L MT7X4                                      8B928950
0C78 0 D400 0D89           STO   L MT7X5                                      8B928960
0C7A 0 D400 0D8A           STO   L MT7X6                                      8B928970
0C7C 0 D400 0D2E           STO   L LOW                                        8B928980
0C7E 0 D400 0D2F           STO   L HI                                         8B928990
0C80 0 D400 0D30           STO   L AVG                                        8B929000
0C82 0 C400 0925           LD    L MTTX1      GET 1                           8B929010
0C84 0 D400 0D8B           STO   L MT7X7      SET FIRST PASS SW               8B929020
0C86 0 D400 0D86           STO   L MT7X2      SET RD/RERD SW # RD             8B929030
0C88 0 C0E7                LD      MT6X8      GET LOW CONSTANT                8B929040
0C89 0 D400 0D90           STO   L MT7Y1      SET AS LOW                      8B929050
0C8B 0 1010                SLA     16         ZERO ACCUM                      8B929060
0C8C 0 D400 0D91           STO   L MT7Y2      SET AS HIGH                     8B929070
0C8E 0 C400 0D84     MT700 LD    L MT7X0                                      8B929080
0C90 0 D400 0D85           STO   L MT7X1      SET IN LOOP CONTROL             8B929090
                     *                                                        8B929100
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                     *              PREPARE TO WRITE                          8B929110
                     *                                                        8B929120
0C92 0 C400 0928     MT719 LD    L MTTX9      GET WRITE FUNCTION              8B929130
0C94 0 4400 0830           BSI   L PRDWT      GO SET UP                 SRC   8B929140
0C96 0 4400 081F           BSI   L INTRT      GO SET INTR RETURN        SRC   8B929150
0C98 0 0C15                DC      MT522                                      8B929160
                     *                                                        8B929170
                     *              WRITE FIRST RECORD                        8B929180
                     *                                                        8B929190
0C99 0 4400 078D           BSI   L TMWRT      WRITE                           8B929200
                     *                                                        8B929210
                     *              WRITE SECOND RECORD                       8B929220
                     *                                                        8B929230
0C9B 0 4400 078D           BSI   L TMWRT      WRITE                           8B929240
                     *                                                        8B929250
                     *              WRITE THIRD RECORD                        8B929260
                     *                                                        8B929270
0C9D 0 4400 078D           BSI   L TMWRT      WRITE                           8B929280
                     *                                                        8B929290
                     *              WRITE LONG RECORD                         8B929300
                     *                                                        8B929310
0C9F 0 C400 0D8C           LD    L MT7XA                                      8B929320
0CA1 0 D206                STO   2 6          SET WD CT                       8B929330
0CA2 0 D400 0E9C           STO   L IOA        SET IN I/O AREA                 8B929340
0CA4 0 4400 078D           BSI   L TMWRT      WRITE                           8B929350
0CA6 0 4400 0910           BSI   L CN2        GO SET CONSTANTS          SRC   8B929360
                     *                                                        8B929370
                     *              POSITION TAPE                             8B929380
                     *                                                        8B929390
0CA8 0 6304          MT702 LDX     3 4                                        8B929400
0CA9 0 6B03          MT703 STX     3 MT704&1    SAVE IX 3                     8B929410
0CAA 0 4400 07C9           BSI   L BSP        GO BACKSPACE              SRC   8B929420
0CAC 0 6700 0000     MT704 LDX   L3 0         RESTORE IX 3                    8B929430
0CAE 0 73FF                MDX   3 -1         IS TAPE POSITIONED              8B929440
0CAF 0 70F9                MDX     MT703      NO-LOOP                         8B929450
                     *                                                        8B929460
                     *              SET UP TO READ                            8B929470
                     *                                                        8B929480
0CB0 0 C400 092C           LD    L MTTY9      GET READ FUNCTION               8B929490
0CB2 0 4400 0830           BSI   L PRDWT      GO SET UP                 SRC   8B929500
0CB4 0 4400 081F           BSI   L INTRT      GO SET TIME INT RET       SRC   8B929510
0CB6 0 07C4                DC      TMRD4                                      8B929520
                     *                                                        8B929530
                     *              READ FIRST RECORD                         8B929540
                     *                                                        8B929550
0CB7 0 4400 07C0           BSI   L TMRDT      GO READ                   SRC   8B929560
                     *                                                        8B929570
                     *              READ SECOND RECORD                        8B929580
                     *                                                        8B929590
0CB9 0 4400 07C0           BSI   L TMRDT      GO READ                   SRC   8B929600
                     *                                                        8B929610
                     *              READ THIRD RECORD                         8B929620
                     *                                                        8B929630
0CBB 0 4400 07C0           BSI   L TMRDT      GO READ                   SRC   8B929640
                     *                                                        8B929650
                     *              CHECK READ/REREAD AND                     8B929660
                     *              FIRST PASS SWITCHES                       8B929670
                     *                                                        8B929680
0CBD 0 C400 0D8B           LD    L MT7X7      GET FIRST PASS SW               8B929690
0CBF 0 4C18 0CC3           BSC   L MT713,&-   IS THIS FIRST PASS              8B929700
0CC1 0 4C00 0D3E           BSC   L MT711      YES                             8B929710
0CC3 0 C400 0D86     MT713 LD    L MT7X2      GET RD/RERD SW                  8B929720
0CC5 0 D001                STO     MT710&1    SET IN PROG                     8B929730
0CC6 0 6700 0000     MT710 LDX   L3 0         IX 3 # RD/RERD SW               8B929740
0CC8 0 C400 07BC           LD    L TWRX0      GET THE TIME                    8B929750
0CCA 0 D205                STO   2 5          SAVE                            8B929760
0CCB 0 D700 0D87           STO   L3 MT7X3     SAVE                            8B929770
0CCD 0 7300                MDX   3 0          IS RD/RERD SW # RD              8B929780
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OCCE 0 7001              MDX     MT705     YES                          8B929790
OCCF 0 700D              MDX     MT70F     NO                           8B929800
OCD0 0 4400 07C9  MT705  BSI  L  BSP       GO BACKSPACE          SRC    8B929810
                  *                                                    8B929820
                  *                PREPARE TO WRITE                    8B929830
                  *                                                    8B929840
OCD2 0 C400 0928  MT70B  LD   L  MTTX9     GET WRITE FUNCTION           8B929850
OCD4 0 4400 0830         BSI  L  PRDWT     GO SET UP             SRC    8B929860
OCD6 0 4400 07C0         BSI  L  TMRDT     GO WRT                SRC    8B929870
OCD8 0 1010              SLA     16        ZERO ACCUM                   8B929880
OCD9 0 D400 0D86         STO  L  MT7X2     CLEAR RD/RERD SW             8B929890
OCDB 0 6303              LDX     3 3       SET TO BACKSPACE 3           8B929900
OCDC 0 70CC              MDX     MT703                                  8B929910
                  *                                                    8B929920
                  *             READ/REREAD SW # REREAD                8B929930
                  *                                                    8B929940
OCDD 0 C400 0D8A  MT70F  LD   L  MT7X6     GET REF TIME                 8B929950
OCDF 0 9400 0D87         S    L  MT7X3     SUB REREAD TIME              8B929960
OCE1 0 D400 0D8F         STO  L  MT7Y0     SAVE                         8B929970
OCE3 0 8400 0D89         A    L  MT7X5     ADD TO TOTAL                 8B929980
OCE5 0 D400 0D89         STO  L  MT7X5     SAVE                         8B929990
OCE7 0 C400 0D87         LD   L  MT7X3     GET NEW COUNT                8B930000
OCE9 0 9400 0D90         S    L  MT7Y1     SUB LOW VALUE                8B930010
OCEB 0 4810              BSC      -        IS NEW COUNT LOW             8B930020
OCEC 0 7004              MDX      MT750    NO                           8B930030
OCED 0 C400 0D87         LD   L  MT7X3     SET NEW CT AS LOW            8B930040
OCEF 0 D400 0D90         STO  L  MT7Y1                                  8B930050
OCF1 0 C400 0D87  MT750  LD   L  MT7X3     GET NEW CT                   8B930060
OCF3 0 9400 0D91         S    L  MT7Y2     SUB HIGH                     8B930070
OCF5 0 4808              BSC      &        IS NEW COUNT HIGH            8B930080
OCF6 0 7004              MDX      MT751    NO                           8B930090
OCF7 0 C400 0D87         LD   L  MT7X3     SET NEW CT AS HIGH           8B930100
OCF9 0 D400 0D91         STO  L  MT7Y2     *                            8B930110
OCFB 0 74FF 0D85  MT751  MDX  L  MT7X1,-1  DECR LOOP CONTROL            8B930120
OCFD 0 7079              MDX      MT718    LOOP CNTRL NOT ZERO          8B930130
                  *                                                    8B930140
                  *                OUTPUT RESULTS                      8B930150
                  *                                                    8B930160
OCFE 0 1010       MT744  SLA      16        CLEAR SWITCH                 8B930170
OCFF 0 D400 0D88         STO  L  MT7X4     *                            8B930180
OD01 0 C400 0D8A         LD   L  MT7X6     GET REF TIME                 8B930190
OD03 0 9400 0D90         S    L  MT7Y1     SUB LOW COUNT                8B930200
OD05 0 D400 0D90         STO  L  MT7Y1     SET AS LOW                   8B930210
OD07 0 4810              BSC      -        SKIP IF NEG                  8B930220
OD08 0 7029              MDX      ERR      BRANCH TO ERROR              8B930230
OD09 0 1010              SLA      16       CLEAR A REG                  8B930240
OD0A 0 9400 0D90         S    L  MT7Y1     MAKE POSITIVE                8B930250
OD0C 0 D400 0D90         STO  L  MT7Y1     SAVE                         8B930260
OD0E 0 C400 0D91  MT754  LD   L  MT7Y2     GET HIGH COUNT               8B930270
OD10 0 9400 0D8A         S    L  MT7X6     SUB REG TIME                 8B930280
OD12 0 D400 0D91         STO  L  MT7Y2     SET AS HIGH                  8B930290
OD14 0 4C10 0D1A         BSC  L  MT755,-   BRANCH IF POS                8B930300
OD16 0 1010              SLA      16       CLEAR A REG                  8B930310
OD17 0 9079              S        MT7Y2    MAKE POSITIVE                8B930320
OD18 0 D078              STO      MT7Y2    SAVE                         8B930330
OD19 0 701E              MDX      ERR1     BRANCH                       8B930340
OD1A 0 C06E       MT755  LD       MT7X5    GET TOTAL CREEP              8B930350
OD1B 0 1890              SRT      16       CALCULATE AVG CREEP          8B930360
OD1C 0 A871              D        MT7XE                                 8B930370
OD1D 0 4820              BSC      Z                                     8B930380
OD1E 0 7001              MDX      MT715                                 8B930390
OD1F 0 18D0              RTE      16                                    8B930400
OD20 0 D068       MT715  STO      MT7X5                                 8B930410
OD21 0 4C28 0D45         BSC  L  MT714,&Z  IS CREEP NEG                 8B930420
OD23 0 4820              BSC      Z        IS CREEP ZERO                8B930430
OD24 0 7016              MDX      ERR2     NO                           8B930440
OD25 0 4400 083C         BSI  L  MLG       PRINT ZERO CREEP             8B930450
OD27 0 0F39              DC       MSG11&4                               8B930460
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OD28 0 0F01              DC       MSG1&8                                8B930470
OD29 0 E007       E007   DC       /E007     ID E7                       8B930480
OD2A 0 0005              DC       /0005     LINE 0- FORM 5              8B930490
OD2B 0 4C00 0771  MT712  BSC  L  MONR1      EXIT                        8B930500
OD2D 0 0007       MT730  DC       7                                     8B930510
OD2E 0 0000       LOW    DC       0         NEG CREEP SWS               8B930520
OD2F 0 0000       HI     DC       0         *                           8B930530
OD30 0 0000       AVG    DC       0         *                           8B930540
OD31 0 8000       K8000  DC       /8000     CONSTANT                    8B930550
                  *                                                    8B930560
                  *             SET ERROR SWITCH                       8B930570
                  *                                                    8B930580
OD32 0 C0FE       ERR    LD       K8000     SET LOW SW                  8B930590
OD33 0 D0FA              STO      LOW       *                           8B930600
OD34 0 C400 036E         LD   L   ONE       GET ONE                     8B930610
OD36 0 D051              STO      MT7X4     SET NEG CREEP SW            8B930620
OD37 0 70D6              MDX      MT754     BRANCH                      8B930630
OD38 0 C0F8       ERR1   LD       K8000     SET HI SW                   8B930640
OD39 0 D0F5              STO      HI        *                           8B930650
OD3A 0 70DF              MDX      MT755                                 8B930660
OD3B 0 C0F5       ERR2   LD       K8000     SET AVG SW                  8B930670
OD3C 0 D0F3              STO      AVG       *                           8B930680
OD3D 0 7032              MDX      MT716                                 8B930690
                  *                                                    8B930700
                  *             FIRST PASS SW IS ON                    8B930710
                  *                                                    8B930720
OD3E 0 C400 07BC  MT711  LD   L   TWRX0     GET THE TIME                8B930730
OD40 0 D049              STO      MT7X6     SAVE                        8B930740
OD41 0 1010              SLA      16        ZERO ACCUM                  8B930750
OD42 0 D048              STO      MT7X7     CLEAR 1ST PASS SW           8B930760
OD43 0 4C00 0CC3         BSC  L   MT713                                  8B930770
                  *                                                    8B930780
                  *             CREEP IS FORWARD PRINT FFF             8B930790
                  *                                                    8B930800
OD45 0 1010       MT714  SLA      16                                    8B930810
OD46 0 9042              S        MT7X5                                 8B930820
OD47 0 D041              STO      MT7X5                                 8B930830
OD48 0 7400 0D88         MDX  L   MT7X4,0   CK NEG CREEP SW              8B930840
OD4A 0 7025              MDX      MT716     BRANCH IF SET               8B930850
OD4B 0 C500 02EA         LD   L1  EDIT&6    GET DR MODEL                8B930860
OD4D 0 D005              STO      MT760&1   SET IN IX                   8B930870
OD4E 0 C400 02EC         LD   L   EDIT&8    GET MEM SPEED               8B930880
OD50 0 4C30 0D60         BSC  L   MT761,Z-  BRANCH IF 4 MIC        $ 8B930890
OD52 0 6700 0000  MT760  LDX  L3  0         IX # MODEL                  8B930900
OD54 0 C700 0D63         LD   L3  MT762     GET CONSTANT                8B930910
OD56 0 9039              S        MT7Y1     SUB LOW CREEP               8B930920
OD57 0 4C30 0D69         BSC  L   MT763,-Z  BRANCH IF TOO LOW           8B930930
OD59 0 4400 083C         BSI  L   MLG       PRINT CREEP                 8B930940
OD5B 0 0F39              DC       MSG11&4                               8B930950
OD5C 0 0F01              DC       MSG1&8                                8B930960
OD5D 0 A007       A007   DC       /A007                                 8B930970
OD5E 0 0005              DC       /0005     LINE 0- FORM 5              8B930980
OD5F 0 70CB              MDX      MT712     BRANCH                      8B930990
OD60 0 7403 0D53  MT761  MDX  L   MT760&1,3  INCR IX TO 4 MIC            8B931000
OD62 0 70EF              MDX      MT760     BRANCH                      8B931010
OD63 0 000E       MT762  DC       14        CONSTANTS                   8B931020
OD64 0 002A              DC       42        *                           8B931030
OD65 0 0015              DC       21        *                           8B931040
OD66 0 0007              DC       7         *                           8B931050
OD67 0 0015              DC       21        *                           8B931060
OD68 0 000A              DC       10        *                           8B931070
OD69 0 4400 083C  MT763  BSI  L   MLG       CREEP TOO LOW               8B931080
OD6B 0 0F39              DC       MSG11&4                               8B931090
OD6C 0 0F01              DC       MSG1&8                                8B931100
OD6D 0 E001       E001   DC       /E001                                 8B931110
OD6E 0 0005              DC       /0005     LINE 0- FORM 5              8B931120
OD6F 0 70BB              MDX      MT712     BRANCH                      8B931130
                  *                                                    8B931140
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                         *                CREEP IS BCKWARD PRINT BBB          8B931150
                         *                                                    8B931160
0D70 0 4400 083C    MT716 BSI  L  MLG      BACKWARD CREEP                     8B931170
0D72 0 0F39               DC     MSG1I&4                                      8B931180
0D73 0 0F01               DC     MSG1I&8                                      8B931190
0D74 0 E008         E008  DC     /E008     ID E8                              8B931200
0D75 0 0005               DC     /0005     LINE 0- FORM 5                     8B931210
0D76 0 70B4               MDX    MT712                                        8B931220
0D77 0 C400 0925    MT718 LD   L  MTTX1     GET 0001                           8B931230
0D79 0 D00C               STO    MT7X2     SET RD/RERD # RD                   8B931240
0D7A 0 6303               LDX    3 3                                          8B931250
0D7B 0 6B03         MT746 STX    3 MT745&1                                    8B931260
0D7C 0 4400 07C9          BSI  L BSP       GO BACKSPACE          SRC          8B931270
0D7E 0 6700 0000    MT745 LDX  L3 0                                           8B931280
0D80 0 73FF               MDX    3 -1                                         8B931290
0D81 0 70F9               MDX    MT746                                        8B931300
0D82 0 4C00 0C92          BSC  L MT719                                        8B931310
                         *                                                    8B931320
                         *                ROUTINE CONSTANTS                   8B931330
                         *                                                    8B931340
0D84 0 000A         MT7X0 DC       10        CONSTANT                          8B931350
0D85 0 0000         MT7X1 DC       0         LOOP CONTROL                      8B931360
0D86 0 0000         MT7X2 DC       0         RD/RERD SW                        8B931370
0D87 0 0000         MT7X3 DC       0         2ND READ TIME                     8B931380
0D88 0 0000         MT7X4 DC       0         1ST READ TIME                     8B931390
0D89 0 0000         MT7X5 DC       0         TOTAL CREEP                       8B931400
0D8A 0 0000         MT7X6 DC       0         REFERENCE TIME                    8B931410
0D8B 0 0001         MT7X7 DC       1         FIRST PASS SW                     8B931420
0D8C 0 40C8         MT7XA DC       /40C8     WD CT # 200                       8B931430
0D8D 0 0003         MT7XC DC       3                                           8B931440
0D8E 0 000A         MT7XE DC       10                                          8B931450
0D8F 0 0000         MT7Y0 DC       0         TEMP STORAGE                      8B931460
0D90 0 7FFF         MT7Y1 DC       /7FFF     LOW VALUE STORAGE                 8B931470
0D91 0 0000         MT7Y2 DC       0         HIGH VALUE STORAGE                8B931480
                         *                                                    8B931490
                         *                                                    8B931500
                         *                                                    8B931510
                         *                                                    8B931520
                         *                PRINT AREA                          8B931530
                         *                                                    8B931540
0D92   0000               BSS  E 0                                            8B931550
0D92 0 0000         PRA4  DC       /0000                                      8B931560
0D93 0 0000         PRA3  DC       /0000                                      8B931570
0D94 0 0000         PRA1  DC       /0000                                      8B931580
0D95 0 2C00               DC       /2C00     *                               8B931590
0D96   001B         PRA   BSS      27        PRINT AREA                      8B931600
0DB1 0 FFFF               DC       /FFFF                                     8B931610
                         *                                                    8B931620
                         *                SPECIAL MESSAGES                    8B931630
                         *                                                    8B931640
0DB2 0 0000         PR3   DC       /0000                                      8B931650
0DB3 0 0000               DC       /0000                                     8B931660
0DB4 0 002C               DC       /002C     *                               8B931670
0DB5 0 2020               DC       /2020     --                              8B931680
0DB6 0 2020               DC       /2020     --                              8B931690
0DB7 0 2020               DC       /2020     --                              8B931700
0DB8 0 0120               DC       /0120     1-                              8B931710
0DB9 0 2020               DC       /2020     --                              8B931720
0DBA 0 2002               DC       /2002     -2                              8B931730
0DBB 0 2020               DC       /2020     --                              8B931740
0DBC 0 2003               DC       /2003     -3                              8B931750
0DBD 0 2004               DC       /2004     -4                              8B931760
0DBE 0 2005               DC       /2005     -5                              8B931770
0DBF 0 2006               DC       /2006     -6                              8B931780
0DC0 0 2008               DC       /2008     -8                              8B931790
0DC1 0 2001               DC       /2001     -1                              8B931800
0DC2 0 0A20               DC       /0A20     0-                              8B931810
0DC3 0 2002               DC       /2002     -2                              8B931820
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0DC4 0 0A20               DC       /0A20     0-                              8B931830
0DC5 0 030A               DC       /030A     30                              8B931840
0DC6 0 2006               DC       /2006     -6                              8B931850
0DC7 0 0A20               DC       /0A20     0-                              8B931860
0DC8 0 3B02               DC       /3B02     .2                              8B931870
0DC9 0 2020               DC       /2020     --                              8B931880
0DCA 0 0120               DC       /0120     1-                              8B931890
0DCB 0 0320               DC       /0320     3-                              8B931900
0DCC 0 052C               DC       /052C     5*                              8B931910
0DCD 0 FFFF               DC       /FFFF                                     8B931920
0DCE 0 0000         PR4   DC       /0000                                     8B931930
0DCF 0 0000               DC       /0000                                     8B931940
0DD0 0 002C               DC       /002C     *                               8B931950
0DD1 0 1629               DC       /1629     WR                              8B931960
0DD2 0 3913               DC       /3913     IT                              8B931970
0DD3 0 3500               DC       /3500     E                               8B931980
0DD4 0 3726               DC       /3726     GO                              8B931990
0DD5 0 0034               DC       /0034      D                              8B932000
0DD6 0 2616               DC       /2616     OW                              8B932010
0DD7 0 2500               DC       /2500     N                               8B932020
0DD8 0 1339               DC       /1339     TI                              8B932030
0DD9 0 2435               DC       /2435     ME                              8B932040
0DDA 0 0000               DC       /0000                                     8B932050
0DDB 0 0000               DC       /0000                                     8B932060
0DDC 0 0000               DC       /0000                                     8B932070
0DDD 0 0024               DC       /0024      M                              8B932080
0DDE 0 3923               DC       /3923     IL                              8B932090
0DDF 0 2339               DC       /2339     LI                              8B932100
0DE0 0 1235               DC       /1235     SE                              8B932110
0DE1 0 3326               DC       /3326     CO                              8B932120
0DE2 0 2534               DC       /2534     ND                              8B932130
0DE3 0 1200               DC       /1200     S                               8B932140
0DE4 0 2C12               DC       /2C12     *S                              8B932150
0DE5 0 3533               DC       /3533     EC                              8B932160
0DE6 0 2625               DC       /2625     ON                              8B932170
0DE7 0 3412               DC       /3412     DS                              8B932180
0DE8 0 002C               DC       /002C     *                               8B932190
0DE9 0 FFFF               DC       /FFFF                                     8B932200
0DEA 0 2526         NOTE  DC       /2526     NO                              8B932210
0DEB 0 1335               DC       /1335     TE                              8B932220
0DEC 0 2023               DC       /2023     -L                              8B932230
0DED 0 3613               DC       /3613     FT                              8B932240
0DEE 0 0033               DC       /0033      C                              8B932250
0DEF 0 2623               DC       /2623     OL                              8B932260
0DF0 0 0039               DC       /0039      I                              8B932270
0DF1 0 1200               DC       /1200     S                               8B932280
0DF2 0 2326               DC       /2326     LO                              8B932290
0DF3 0 3134               DC       /3134     AD                              8B932300
0DF4 0 3534               DC       /3534     ED                              8B932310
0DF5 0 0034               DC       /0034      D                              8B932320
0DF6 0 1429               DC       /1429     UR                              8B932330
0DF7 0 3925               DC       /3925     IN                              8B932340
0DF8 0 3700               DC       /3700     G                               8B932350
0DF9 0 1338               DC       /1338     TH                              8B932360
0DFA 0 3500               DC       /3500     E                               8B932370
0DFB 0 2331               DC       /2331     LA                              8B932380
0DFC 0 1213               DC       /1213     ST                              8B932390
0DFD 0 0004               DC       /0004      4                              8B932400
0DFE 0 0037               DC       /0037      G                              8B932410
0DFF 0 2600               DC       /2600     O                               8B932420
0E00 0 3426               DC       /3426     DO                              8B932430
0E01 0 1625               DC       /1625     WN                              8B932440
0E02 0 0013               DC       /0013      T                              8B932450
0E03 0 3924               DC       /3924     IM                              8B932460
0E04 0 3512               DC       /3512     ES                              8B932470
0E05 0 FFFF               DC       /FFFF                                     8B932480
0E06 0 0000         PR8   DC       /0000                                     8B932490
0E07 0 0000               DC       /0000                                     8B932500
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0E08 0 0000          DC    /0000
0E09 0 0000          DC    /0000
0E0A 0 3900          DC    /3900      I
0E0B 0 2500          DC    /2500      N
0E0C 0 1300          DC    /1300      T
0E0D 0 3500          DC    /3500      E
0E0E 0 2900          DC    /2900      R
0E0F 0 0000          DC    /0000
0E10 0 2900          DC    /2900      R
0E11 0 3500          DC    /3500      E
0E12 0 3300          DC    /3300      C
0E13 0 2600          DC    /2600      O
0E14 0 2900          DC    /2900      R
0E15 0 3400          DC    /3400      D
0E16 0 0000          DC    /0000
0E17 0 3700          DC    /3700      G
0E18 0 3100          DC    /3100      A
0E19 0 2700          DC    /2700      P
0E1A 0 0000          DC    /0000
0E1B 0 3900          DC    /3900      I
0E1C 0 2500          DC    /2500      N
0E1D 0 0000          DC    /0000
0E1E 0 3800          DC    /3800      H
0E1F 0 2500          DC    /2500      N
0E20 0 3400          DC    /3400      D
0E21 0 2900          DC    /2900      R
0E22 0 1300          DC    /1300      T
0E23 0 3800          DC    /3800      H
0E24 0 1200          DC    /1200      S
0E25 0 0000          DC    /0000
0E26 0 2600          DC    /2600      O
0E27 0 3600          DC    /3600      F
0E28 0 0000          DC    /0000
0E29 0 3900          DC    /3900      I
0E2A 0 2500          DC    /2500      N
0E2B 0 3300          DC    /3300      C
0E2C 0 3800          DC    /3800      H
0E2D 0 3500          DC    /3500      E
0E2E 0 1200          DC    /1200      S
0E2F 0 0000          DC    /0000
0E30 0 0000          DC    /0000
0E31 0 0000    NOTE1 DC    /0000
0E32 0 0000          DC    /0000
0E33 0 0020          DC    /0020      -
0E34 0 2020          DC    /2020      --
0E35 0 3431          DC    /3431      DA
0E36 0 1238          DC    /1238      SH
0E37 0 3512          DC    /3512      ES
0E38 0 0039          DC    /0039       I
0E39 0 2534          DC    /2534      ND
0E3A 0 3933          DC    /3933      IC
0E3B 0 3113          DC    /3113      AT
0E3C 0 3500          DC    /3500      E
0E3D 0 3929          DC    /3929      IR
0E3E 0 3700          DC    /3700      G
0E3F 0 2339          DC    /2339      LI
0E40 0 2439          DC    /2439      MI
0E41 0 1312          DC    /1312      TS
0E42 0 0000          DC    /0000
0E43 0 0000          DC    /0000
0E44 0 0000          DC    /0000
0E45 0 0000          DC    /0000
0E46 0 0000          DC    /0000
0E47 0 0000          DC    /0000
0E48 0 0000          DC    /0000
0E49 0 0000          DC    /0000
0E4A 0 0000          DC    /0000
0E4B 0 0000          DC    /0000
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8B932510
8B932520
8B932530
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8B932550
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8B932600
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8B933100
8B933110
8B933120
8B933130
8B933140
8B933150
8B933160
8B933170
8B933180
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0E4C 0 FFFF          DC    /FFFF
0E4D 0 2C2C    LN3   DC    /2C2C      **
0E4E 0 2426          DC    /2426      MO
0E4F 0 3420          DC    /3420      D-
0E50 0 0000    LN3A  DC    /0000      MODEL
0E51 0 0000    LN3B  DC    /0000      TRACK
0E52 0 2013          DC    /2013      -T
0E53 0 2922          DC    /2922      RK
0E54 0 0000          DC    /0000
0E55 0 1218          DC    /1218      SY
0E56 0 1200          DC    /1200      S
0E57 0 3429          DC    /3429      DR
0E58 0 0000    LN3D  DC    /0000      DRIVE NUMBER
0E59 0 0000          DC    /0000
0E5A 0 0000    LN3C  DC    /0000      MEM SPEED
0E5B 0 0000          DC    /0000      *
0E5C 0 0024          DC    /0024       M
0E5D 0 3933          DC    /3933      IC
0E5E 0 0012          DC    /0012       S
0E5F 0 3533          DC    /3533      EC
0E60 0 0024          DC    /0024       M
0E61 0 3524          DC    /3524      EM
0E62 0 0000          DC    /0000
0E63 0 3431          DC    /3431      DA
0E64 0 1335          DC    /1335      TE
0E65 0 2000          DC    /2000      -
0E66 0 0000          DC    /0000
0E67 0 0000          DC    /0000
0E68 0 FFFF          DC    /FFFF
0E69   0033    TOTA  BSS   51         VAR TOTAL STORAGE
0E9C   002D    IOA   BSS   45         INPUT/OUTPUT AREA
*XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
*XXXXXXXXXXXXXXXX SET UP AND PRINT HDINGS XXX
*XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
0EC9 0 0000    LDSP  DC    0
0ECA 0 C480 083C     LD    I  MLG       GET TYPE ADRS
0ECC 0 D016          STO     LDSP1&1    SET
0ECD 0 7401 083C     MDX   L  MLG,1     INCR RETURN
0ECF 0 C480 083C     LD    I  MLG       GET HDING ADRS
0ED1 0 D015          STO     LDSP3&1    SET
0ED2 0 7401 083C     MDX   L  MLG,1     INCR RETURN
0ED4 0 6A21          STX     2 LDSP2&1  SAVE IX 2
0ED5 0 C400 02E1     LD    L  SW0       GET SWS
0ED7 0 180A          SRA     10
0ED8 0 4C04 0EF5     BSC   L  LDSP2,E   BRANCH # BYPASS
0EDA 0 631C          LDX     3 28       CLEAR MSG AREA
0EDB 0 1010          SLA     16         *
0EDC 0 D700 0D92 LDSP5 STO   L3 PRA4    *
0EDE 0 73FF          MDX     3 -1       *
0EDF 0 70FC          MDX       LDSP5    *
0EE0 0 63F8          LDX     3 -8       SET MESSAGE
0EE1 0 62FC          LDX     2 -4       *
0EE2 0 C600 0000 LDSP1 LD    L2 *-*     *
0EE4 0 D600 0D9A     STO   L2 PRA&4     *
0EE6 0 C700 0000 LDSP3 LD    L3 *-*     *
0EE8 0 D700 0DAE     STO   L3 PRA3&27   *
0EEA 0 C700 0F31     LD    L3 MSG9&8    *
0EEC 0 D700 0DA4     STO   L3 PRA&14    *
0EEE 0 7201          MDX     2 1        *
0EEF 0 7001          MDX       LDSP4    *
0EF0 0 62FC          LDX     2 -4       *
0EF1 0 7301    LDSP4 MDX     3 1        *
0EF2 0 70EF          MDX       LDSP1    *
0EF3 0 4400 044C     BSI   L  PCCO      PRINT MESSAGE
0EF5 0 6600 0000 LDSP2 LDX   L2 *-*     RESTORE IX 2
0EF7 0 4C80 0EC9     BSC   I  LDSP      EXIT
*
*                    HEADING MESSAGES
```

```
8B933190
8B933200
8B933210
8B933220
8B933230
8B933240
8B933250
8B933260
8B933270
8B933280
8B933290
8B933300
8B933310
8B933320
8B933330
$ 8B933331
$ 8B933332
8B933340
8B933350
8B933360
8B933370
8B933380
8B933390
8B933400
8B933410
8B933420
8B933430
8B933440
8B933470
8B933480
8B933490
8B933500
8B933510
8B933520
8B933530
8B933540
8B933550
8B933560
8B933570
8B933580
8B933590
8B933600
8B933610
8B933620
8B933630
8B933640
8B933650
8B933660
8B933670
8B933680
8B933690
8B933700
8B933710
8B933720
8B933730
8B933740
8B933750
8B933760
8B933770
8B933780
8B933790
8B933800
8B933810
8B933820
8B933830
8B933840
8B933850
8B933860
```

```
                        *
0EF9 0 2439     MSG1    DC      /2439       MI
0EFA 0 2500             DC      /2500       N
0EFB 0 0000             DC      /0000
0EFC 0 3115             DC      /3115       AV
0EFD 0 3700             DC      /3700       G
0EFE 0 0000             DC      /0000
0EFF 0 2431             DC      /2431       MA
0F00 0 1700             DC      /1700       X
                        *
0F01 0 3412     MSG2    DC      /3412       DS
0F02 0 1600             DC      /1600       W
0F03 0 0000             DC      /0000
0F04 0 0000             DC      /0000
0F05 0 0000             DC      /0000
0F06 0 0000             DC      /0000
0F07 0 0000             DC      /0000
0F08 0 0000             DC      /0000
                        *
0F09 0 2439     MSG3    DC      /2439       MI
0F0A 0 2500             DC      /2500       N
0F0B 0 0000             DC      /0000
0F0C 0 3133             DC      /3133       AC
0F0D 0 1323             DC      /1323       TL
0F0E 0 0000             DC      /0000
0F0F 0 2431             DC      /2431       MA
0F10 0 1700             DC      /1700       X
                        *
0F11 0 010A     MSG4    DC      /010A       10
0F12 0 2412             DC      /2412       MS
0F13 0 0000             DC      /0000
0F14 0 1531             DC      /1531       VA
0F15 0 2900             DC      /2900       R
0F16 0 0000             DC      /0000
0F17 0 2439             DC      /2439       MI
0F18 0 2500             DC      /2500       N
                        *
                        *
0F19 0 2526     MSG5    DC      /2526       NO
0F1A 0 1300             DC      /1300       T
0F1B 0 2934             DC      /2934       RD
0F1C 0 1800             DC      /1800       Y
                        *
0F1D 0 3326     MSG6    DC      /3326       CO
0F1E 0 2427             DC      /2427       MP
0F1F 0 2335             DC      /2335       LE
0F20 0 1335             DC      /1335       TE
                        *
0F21 0 1629     MSG7    DC      /1629       WR
0F22 0 1300             DC      /1300       T
0F23 0 3423             DC      /3423       DL
0F24 0 1800             DC      /1800       Y
                        *
0F25 0 2935     MSG8    DC      /2935       RE
0F26 0 3134             DC      /3134       AD
0F27 0 0034             DC      /0034        D
0F28 0 2318             DC      /2318       LY
                        *
0F29 0 2939     MSG9    DC      /2939       RI
0F2A 0 3400             DC      /3400       D
0F2B 0 0000             DC      /0000
0F2C 0 2931             DC      /2931       RA
0F2D 0 3400             DC      /3400       D
0F2E 0 0000             DC      /0000
0F2F 0 1425             DC      /1425       UN
0F30 0 3913             DC      /3913       IT
                        *
0F31 0 3115     MSG10   DC      /3115       AV
```

```
8B933870
8B933880
8B933890
8B933900
8B933910
8B933920
8B933930
8B933940
8B933950
8B933960
8B933970
8B933980
8B933990
8B934000
8B934010
8B934020
8B934030
8B934040
8B934050
8B934060
8B934070
8B934080
8B934090
8B934100
8B934110
8B934120
8B934130
8B934140
8B934150
8B934160
8B934170
8B934180
8B934190
8B934200
8B934210
8B934220
8B934230
8B934240
8B934250
8B934260
8B934270
8B934280
8B934290
8B934300
8B934310
8B934320
8B934330
8B934340
8B934350
8B934360
8B934370
8B934380
8B934390
8B934400
8B934410
8B934420
8B934430
8B934440
8B934450
8B934460
8B934470
8B934480
8B934490
8B934500
8B934510
8B934520
8B934530
8B934540
```



```
0F32 0 3700             DC      /3700       G
0F33 0 3929             DC      /3929       IR
0F34 0 3700             DC      /3700       G
                        *
0F35 0 3329     MSG11   DC      /3329       CR
0F36 0 3535             DC      /3535       EE
0F37 0 2700             DC      /2700       P
0F38 0 0000             DC      /0000
                        *
0F39 0 3212     MSG13   DC      /3212       BS
0F3A 0 2700             DC      /2700       P
0F3B 0 3529             DC      /3529       ER
0F3C 0 2900             DC      /2900       R
                        *
0F3D 0 3132     MSG14   DC      /3132       AB
0F3E 0 2629             DC      /2629       OR
0F3F 0 1335             DC      /1335       TE
0F40 0 3400             DC      /3400       D
                        *
0F41 0 1425     MSG15   DC      /1425       UN
0F42 0 3913             DC      /3913       IT
0F43 0 0033             DC      /0033        C
0F44 0 2624             DC      /2624       OM
0F45 0 2723             DC      /2723       PL
0F46 0 3513             DC      /3513       ET
0F47 0 3500             DC      /3500       E
0F48 0 0000             DC      /0000
                        *
0F49 0 2729     MSG16   DC      /2729       PR
0F4A 0 2637             DC      /2637       OG
0F4B 0 2931             DC      /2931       RA
0F4C 0 2400             DC      /2400       M
0F4D 0 3326             DC      /3326       CO
0F4E 0 2427             DC      /2427       MP
0F4F 0 2335             DC      /2335       LE
0F50 0 1335             DC      /1335       TE
                        *
0F52   012D                     END     BEGN
  NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY
```

```
8B934550
8B934560
8B934570
8B934580
8B934590
8B934600
8B934610
8B934620
8B934630
8B934640
8B934650
8B934660
8B934670
8B934680
8B934690
8B934700
8B934710
8B934720
8B934730
8B934740
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8B934760
8B934770
8B934780
8B934790
8B934800
8B934810
8B934820
8B934830
8B934840
8B934850
8B934860
8B934870
8B934880
8B934890
8B934900
8B934910
8B934920
```

```
ACTI    02ED  0147 02FA 031F 070A 0759
ADRS    0660  0629
ADRS1   0C38  09ED 0A39 0C0E
ADRS2   0C39  0A5A
ARIA1   01E1  01D6 01D7 01DD
ARIA2   025C  024B 024E 0251 0254 0257
ARIA3   0281  0270 0273 0276 0279 027C
ARIA4   02CB  02BB 02BE 02C1 02C4 02C7
ARIA5   01F8  01E6 01E9 01EC 01EF 01F2
AVG     0D30  0428 0C80 0D3C
A000    0780
A001    0789
A002    0973
A003    09BF
A004    0BD3
A007    0D5D
BAK     01D2  01DC
BEGAC   01CB  0157
BEGAD   0203  01CD 0209
BEGAE   020F  01CF
BEGAF   0213  01F5 020E
BEGAG   022B  0236
BEGAI   0291  021A
BEGAJ   02A2  02A9
BEGAK   02D5  0249 025A 0268 027F 0288 0290 0296 02B9 02CA
BEGAM   0269  0216
BEGAN   0151  0156
BEGAP   013D  0138 02D8
BEGAR   023C  0244
BEGAS   02AB  02B3
BEGBA   013F  0142
BEGIN   014F  02D5 06FB 074D
BEGN    012D  0F52
BEGN1   0132  012D
BEGN2   0133  0137
BEGX3   014E  013E
BEGX4   02D8  0143
BEGX5   02DA  0307
BEGX7   02DC  0308
BEGX8   0158  0151
BSP     07C9  07D4 0C50 0CAA 0CD0 0D7C
BSPI2   07E2  07DF
BSPI3   07E8  07E4
BSPX1   07E0  07D6
BSP2    07D2  07CA 07CF 07E7
BSP3    07CB  07CC
BSP4    07D6  07D1
BSP6    07DD
BY      0BBE  0BB4
CKERR   08C0
CKHLT   08CA  08C4
CKHLW   0BA0  0B1B 0B2E 0B48 0B59 0B5B
CN1     0909  090D 093E 0978
CN2     0910  0914 09C5 09CC 0A68 0CA6
CODE    05DA  03EF 0406 05D1 05D5
CODEH   060E  0293 05B0 05F1
COM00   08D6  08E4 08EA
COM01   08DD
CON     066D  0153 0203 0206 022C 0233 0239 02A3 02A6 090F
CONV    066A  020F
CONV0   05D9  05B3 05B5 05B8 05BA 05BC
CONV1   066B  020A
CON1    0671  023C 023F 0241 02AB 02AE 02B0 0916
CVTBL   05DC  05AC
C000    076E
C001    0765
DCC     0373  0375 0378 0379 047B 0798 07DB 0800
DCC2    0384  0374
```



```
DCC3    038A  0383 0386
DELAY   038C  038D 039A 039C 0A16 0A24 0C57
DIND    03A2  03A3 0811
DLYC    0C36  09EB 0A20 0A31 0A3E
DLY1    0C33  0A14 0A18
DLY2    0C35  0A22 0A26
DR9     04E4  04E0 04E3
DST     06E0  02F1 02FB 0327 0335 06EB 06EC 06ED 06F1 073E 079A 07DD 0802 082C
              08B9 0921 0A27 0ADC 0AF4 0B6C 0BC5 0C4E 0C60
DSW     036A  031E 0320 0321 0322 0324 0325
DSWSP   0330
DSWX1   081D  0809 0832
DSW0    0807  06F7 0749 07CB 07F1 081B
DSW1    0813  080D
DSW2    0814  080F
DSW5    0809
DSW7    0810  0819
DSW8    0816  0810
EDIT    02E4  0134 0149 01CB 0213 0245 0269 0291 02B6 02F9 0319 0473 04DE 04E7
              04F0 05A0 0702 0705 0745 0751 0754 0792 086A 0D4B 0D4E
END     0662  078B 07EE
ERR     0D32  0D08
ERRI    036F  032C
ERR1    0D38  0D19
ERR2    0D3B  0D24
E001    0D6D
E003    07EC
E004    07B5
E005    096C
E006    09B8
E007    0D29
E008    0D74
FNC     03AE  03A7
FORM0   0869  0863
FORM1   08D1  0864
FORM2   08D9  0865
FORM3   08DF  0866
FORM4   08E5  0867
FORM5   08EB  0868
FWD1    0287  026F
FWD2    02D1  02B7
FWRD    0262  0247
GPHLM   06DB  01F3 0223 0226 0228 0258 0266 026D 027D 028A 029F 02D3 0AE8 0AEE
GRL1    0B6A  09DA 0B77 0BC8 0BF1
HALT    03B2  03BC 0666 0716 08CD
HEDEC   05A6  03ED 0404 05D6
HEDE1   05B0  05C6
HEDE2   05B4  05BE
HEDE3   05BF  05B6
HEDE4   05C8  05A7
HEDE5   05CA  05A8
HEDE6   05CC  05A9
HERE    0436  0420 0432
HERE1   0428  0424
HERE2   042F  042B
HEXCD   060C  0416 049E 04A7 04B4 04BE 04CA 05FB 05FF
HEXCV   05E6  0414 049C 04A5 04B2 04BC 04C8 0604
HEXC1   05ED  05EE 05F7
HEXC2   0600  05E8
HEXC3   0602  05E7
HEXWD   0606  0412 049A 04A3 04B0 04BA 04C6 05EA
HEX00   0607  05F3 05F8 05FA 05FC 05FE
HI      0D2F  042F 0C7E 0D39
H0205   0528  04FA
H023B   0527  04F6
H0400   0526  04FD
H2020   0529  0503
ILSW    0366  0316 0337
```

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L


```
INPSE   06DF  0221 029D 0884 08A8
INTR    082A  07A8 0820
INTRR   031E  031A
INTRT   081F  0822 0825 0827 0945 094A 097D 098C 0A0D 0A65 0C66 0C96 0CB4
INTR2   0829  0824 082E
INTR3   0312  02EE
IOA     0E9C  06EE 0728 0838 0CA2
IOARA   065E  063C 0645 0647 065A
IOCC1   03B0  03AA 03AB
JDLY2   0391  0399
JDLY3   0398  0393
JDLY4   039A  0396
KBSC    0C2E  0A5D
KDASH   0C41  0B0B 0B14
K000E   08D0  08C2
K0010   0C3B  0A57
K0020   0465  0425 042C 0433
K006    0464  041E
K007    0463  03E5 0B06
K0086   0C3A  09F0 0A36
K0200   0525  0500
K0300   0524  04ED
K0700   0522  04E2
K0900   0523  04E4
K2121   0661  0634
K8000   0D31  0D32 0D38 0D3B
LDLFA   0C49  0C4C
LDLFB   0C4E  0C5F
LDLFC   0C57  0C5B
LDLFE   0C69  0C47
LDLFT   0C46  0C2E 0C6B
LDLFX   0C6F  0C55 0C59
LDLFY   0C5C  0C56
LDSP    0EC9  0844 0EF7
LDSP1   0EE2  0ECC 0EF2
LDSP2   0EF5  0ED4 0ED8
LDSP3   0EE6  0ED1
LDSP4   0EF1  0EEF
LDSP5   0EDC  0EDF
LINE    0C42  09FB 0AF2 0AF8 0B04 0BE7
LNSW    0B9E  09DE 0B61 0B64 0BCA 0BE8
LN3     0E4D  0511
LN3A    0E50  04EE
LN3B    0E51  04E5
LN3C    0E5A  04F8 0501 0505
LN3D    0E58  050F
LOADK   0C19  0516 0AD3 0B0D 0BBF 0C1F
LOADV   0C21  0513 0AD9 0BAB 0BAF 0BB8 0BBC 0C2C
LOAD1   0C1B  0C1E
LOG     061E  0561 0658
LOGAB   047E  0466
LOGAC   0466  0439 045D
LOGAD   046C  046B
LOGAE   0480  0483
LOGAF   0488  048B
LOGBC   052A  043B 045F
LOGC    03BF  044A 0454 08B5
LOGCA   0556  053B
LOGCB   055C
LOGCC   0561  0539
LOGC1   0534  0560
LOGC2   053A  0555
LOGC3   053F  053E
LOGC4   0548  0547 0556 0559
LOGC5   054A  0543 0558
LOGC6   055A  054E
LOGC7   0563  03C0 052C
LOGC8   0565  03C2 052D
```



```
LOGC9   0567  03C4 052E
LOGD0   0499  03D4
LOGIC   03CC  03CF
LOGV1   03E0  03DE
LOGV2   03EA  03F8 03FC
LOGX3   05A0  047D
LOGX8   05A4  05A1
LOGX9   05A5  05A2
LOG01   063A  062A 0635 064B 0650 0651
LOG02   0654  0630
LOG03   064B  0644
LOG04   062C  062B 0632 0637 0639 064F
LOG05   0637  0653
LOG2C   03D6  04D1
LOG3C   03FE  03E7 040F
LOG4C   0408  0418
LOG5C   0411  03FF
LOG6C   0419  03DF 03FD 0410
LOG7C   0444  044D 0490 0569
LOG8C   0446  044E
LOG9C   0448  044F
LOW     0D2E  0421 0C7C 0D33
LOX00   056B  052B 054C 0550 055E
LOX02   056C  0535 053A 0544 0552 0554
LOX03   056D  054F 055B
LOX04   056E  0541 0557
MD1LM   06DA  0237
MD3     04ED  04E9 04EC
MK15    043E  03B3 0476 061F
MK27    0440  03B5 0477 0621
MLG     083C  0761 076A 077C 0785 07B1 07E8 0846 08BB 08C5 08C7 0968 096F 09B4
              09BB 0BCF 0D25 0D59 0D69 0D70 0ECA 0ECD 0ECF 0ED2
MLGE    08C5  08CF
MLGX0   0901  084C 085A 08AF
MLGX1   0902  087C 08A1 08B2
MLGX2   0903
MLGX3   0904
MLGX4   0905
MLGX7   06DC  01DE 020C 0211 0872 0896
MLGX8   0906
MLGX9   0907  0886 08AA
MLG0A   08BB  08C9
MLG00   085F  085E
MLG02   0863  0861
MLG03   086A  08D8 08F5
MLG04   08B5
MLG05   08B7  084E
MLG06   08B9
MLG07   08AF  087F 088C 08A3 08DE
MLG10   086F  0879
MLG11   088D  086D
MLG12   088E  089E
MLG15   08A5  08AE
MLG16   0881  088B
MLG18   08C7  0842
MOD0    08F7  03C6 03D0 0451 0467 08B4
MOD00   08FD  0870 0876 0882 0888 088F 089B 08A6 08AB 08D2 08DA 08E0 08E6 08F0
MOD01   08FE  08D4 08E2 08E8 08ED
MOD02   08FF  08D6 08F3
MOD03   0900
MOD1    08F8  08BF 08DC
MOD1S   06DD  021F
MOD2    08F9  0858
MOD2S   06DE  029B
MOD3    08FA  0852
MOD4    08FB  0849 08C0
MOD5    08FC  0854
MONE    039E  0391
```

```
MONR1   0771  0734 073B 0961 09AA 0C13 0D2B
MONT    02EF  014C 0668
MONTC   073D  0715 0784
MONTD   070C  075E 0777
MONTE   0761  074C
MONTF   0720  071B
MONT1   02F1  02F4
MONT4   06F0  0300
MONT6   071C  07B7
MONT7   072C  0720
MONT8   0728  072B
MONT9   0734  072E 0732 073C
MONX0   075F  0708 0757
MON10   071E
MON11   076A  06FA
MON22   0718  0710
MON23   0716  070F
MON24   0785  0714
MON25   0711  06F6 0744 0747 0769 0770 0783
MSG1    0EF9  0D28 0D5C 0D6C 0D73
MSG10   0F31  0BD1
MSG11   0F35  0D27 0D5B 0D6B 0D72
MSG13   0F39  07EA
MSG14   0F3D  07B3
MSG15   0F41  077F
MSG16   0F49  0788
MSG2    0F01  07B4 07EB
MSG3    0F09  096B 0972 09B7 09BE
MSG4    0F11  0BD2
MSG5    0F19  0763 076C
MSG6    0F1D  077E 0787
MSG7    0F21  096A 0971
MSG8    0F25  09B6 09BD
MSG9    0F29  0EEA
MST     03A0  0392 0398
MTAAA   0B36  0B3B
MTAAB   0B53  0B4A
MTAAC   0B50  0B55
MTAAD   0B56  0B52
MTTX1   0925  071E 093C 0976 0B8E 0C82 0D77
MTTX3   0926  093D 0942 094F 0977 0982 098F 0997 09C3 09CA 09D0 09FD 0A4A 0A4C
              0A52 0AAA 0AAC 0AB2 0B8C 0B90 0BE5 0C72
MTTX6   0927  0726
MTTX9   0928  093F 097A 0A09 0C62 0C92 0CD2
MTTYA   0934
MTTYB   092D  0AA7
MTTYC   092E  08E5 09D4 0A83 0A85 0AB5 0AB9 0BEB
MTTYD   0930  03E8 08E7 09D6 0A8A 0A8C 0BED
MTTYE   0932  08E9 09D8 0A99 0A9B 0BEF
MTTYF   0936  0B94 0B97
MTTY4   0929  0835
MTTY5   092A  0AA1
MTTY8   092B  07AB
MTTY9   092C  0989 0A61 0CB0
MTTZ0   0938  0AB7
MTTZ1   0939  0A01 0A05 0BD5 0BD9 0C00 0C04
MTT01   093C  0735
MTT02   0976  0736
MTT03   09C2  0737
MTT04   09C9  0738
MTT05   09CF  0739
MTT07   0C71  073A
MT1X0   0679  021D 0231 0299 0965 09AE
MT101   093F  09C7
MT102   094A  0944
MT103   0961  096E 0975
MT104   0968  0957 095B
MT105   0963  0951
```



```
MT107   096F  0960
MT108   0954  0967
MT200   097A  09CE
MT201   09AC  099A
MT202   099D  09B0
MT203   09B1  0984
MT204   09B4  09A0 09A4
MT205   09BB  09A9
MT206   09AA  09BA 09C1
MT208   0989  09B3
MT209   0995  0992
MT5Q6   0C30  09F3 0A47 0C08
MT5Q7   0A1C  09F5 0A1B 0A49 0A5F 0C09
MT5XA   0675  024C 024F 0252 0255 0262 0264 0271 0274 0277 027A 028C 028E 02B4
              02BC 02BF 02C2 02C5 02C8 02D1 0ADE 0AE2
MT5XE   0C43  0939 0AE0 0AE4 0AE6 0AEA 0AEC 0AF0 0B27 0B3E 0B44
MT5XF   0C45  0A4E 0AAE 0ACA
MT5X0   067A  01E7 01EA 01ED 01F0 0A2F 0C38 0C39
MT5X2   0C3C  0AFE
MT5X3   0C3D  09F6 0A43 0C0B
MT5X4   0C3E  09FF 0A9D 0A9F 0AA5 0BFB
MT5X8   0C3F  0B31 0B39
MT5X9   0C40  0B4B 0B53
MT50A   0A2F  09EF 0A3B 0A5C 0C0F
MT50B   0B75  0B72
MT50C   0B83
MT50D   0A68  0AA4 0AB1
MT50F   0A8E  0A95 0AA9
MT502   0A10  0A35 0A51
MT503   0A19
MT505   0A24
MT506   06D7  09E9 0A3C
MT508   0A27
MT509   0A2D  09F2 0A33 0A38 0A59 0A60
MT51A   0B3C  0B29
MT51B   0B59  0B25 0B38 0B41 0B47
MT51C   0B88  0B63
MT51D   0B27  0A03 0A07 0B96 0B99 0BD7 0BDB 0C02 0C06
MT51E   0B2E  0936
MT51F   0B39  0B30
MT510   0C24  0C22 0C29
MT516   0AE6  0B9C
MT517   0B0B  0AFC 0B00 0B03 0B08
MT518   0B73  0B6F
MT519   0B23  0B60
MT520   0BC3  0AD0
MT521   0BC5  0AC3
MT522   0C15  0C98
MT523   0C17
MT524   0AB5  0ABC
MT525   0AC7  0AC2 0ACF
MT526   0B79  09DC 0B67 0B7F 0BCB 0BF3
MT540   06A5  0A12
MT562   0BA9  0B92
MT572   0B70
MT573   09E1  09E4
MT580   0AC3  0AC1
MT581   0BDD
MT582   0C13  0BE3
MT583   0A61  0A56 0C11
MT584   0B9C  0B8B
MT585   0BF7  0BFA
MT590   0A57  0A42
MT591   06B1  0C53
MT6X8   0C70  0C88
MT7XA   0D8C  0C9F
MT7XC   0D8D
MT7XE   0D8E  0D1C
```

F
L


```
MT7X0   0D84  022E 0874 0892 0899 0C8E
MT7X1   0D85  0C90 0CFB
MT7X2   0D86  0C86 0CC3 0CD9 0D79
MT7X3   0D87  0C74 0CCB 0CDF 0CE7 0CED 0CF1 0CF7
MT7X4   0D88  0C76 0CFF 0D36 0D48
MT7X5   0D89  08EB 0C78 0CE3 0CE5 0D1A 0D20 0D46 0D47
MT7X6   0D8A  0C7A 0CDD 0D01 0D10 0D40
MT7X7   0D8B  0C84 0CBD 0D42
MT7Y0   0D8F  0CE1
MT7Y1   0D90  08EE 0C89 0CE9 0CEF 0D03 0D05 0D0A 0D0C 0D56
MT7Y2   0D91  08F1 0C8C 0CF3 0CF9 0D0E 0D12 0D17 0D18
MT70B   0CD2
MT70F   0CDD  0CCF
MT700   0C8E
MT702   0CA8
MT703   0CA9  0CAF 0CDC
MT704   0CAC  0CA9
MT705   0CD0  0CCE
MT710   0CC6  0CC5
MT711   0D3E  0CC1
MT712   0D2B  0D5F 0D6F 0D76
MT713   0CC3  0CBF 0D43
MT714   0D45  0D21
MT715   0D20  0D1E
MT716   0D70  0D3D 0D4A
MT718   0D77  0CFD
MT719   0C92  0D82
MT730   0D2D  09E5 0BCC 0BFC
MT744   0CFE
MT745   0D7E  0D7B
MT746   0D7B  0D81
MT750   0CF1  0CEC
MT751   0CFB  0CF6
MT754   0D0E  0D37
MT755   0D1A  0D14 0D3A
MT760   0D52  0D4D 0D60 0D62
MT761   0D60  0D50
MT762   0D63  0D54
MT763   0D69  0D57
NOTE    0DEA  0BB6
NOTE1   0E31  0764 076D 0BBA
NTDSH   0AFE  0B0A
ONE     036E  0217 0323 0485 08BD 0B19 0D34
OPARA   05E1  05AA 05CE 05D0 05D2 05D4
PART2   01E6  01E0
PCCO    044C  0453 0518 0AD5 0B81 0BC1 0C2A 0EF3
PCCX1   0461  0450 0AFA
PGCM    073C  073C 0775
PGSW    093B  02F7 0711 0767 077A
PID     02DE  0856
PRA     0D96  03C8 04A0 04A9 04AC 04B6 04C0 04C3 04CC 04CF 0B17 0B34 0B36 0B4E
              0B50 0EE4 0EEC
PRA1    0D94  0B12 0B75 0B86
PRA3    0D93  0B10 0B7D 0B84 0C1B 0C26 0EE8
PRA4    0D92  03CC 0426 042D 0434 0458 0470 0530 0532 05A3 062C 063A 0660 0B1F
              0EDC
PRDWT   0830  083A 0940 097B 098A 0A0B 0A63 0C64 0C94 0CB2 0CD4
PRQ2    0587  0570 0572
PRSP    059F  052F
PRSW    0B9F  09E7 0B65 0B68 0BCE 0BFE
PRWC    0491  046E
PR00    0573  056E
PR01    057E  056F
PR03    0594  0571
PR3     0DB2  0AD7 0BA9
PR4     0DCE  0BAD
PR6     0BA1  0B70
PR7     0BA5  0B73
```



```
PR8     0E06  0B7B
RAD     02E0  04B8 0730
RDSWS   0306  02FF 030D 0771 083D
RID     02DF  02F6 03E3 041C 04AE 0700 071C 0721 075C 0773 0850 087A 089F
RST     04D3  051C 06FD 074F
RSTX2   051E  04D9
RSTX3   0520  04DA
RST1    04DA  04DD
RST2    04DE  04D7
RTN1X   090F  090A
RTN2X   0916  0911
RWD     07F0  0723 0778 07FE 0987 09B1 0A54 0BDD
RWDX0   0804  07D9 07F2
RWDX1   0805  07F4
RWD2    07FE  07FB
RWD3    07F1  07F8 0803
RWD4    0800  07FD
SENSE   065C  0623 063E
SNSPR   0442  0472 0475 0478 0480 0484 0487 0488
SNWC    07BA  079B
SNWC1   07BB  0794
SPEC    066C  01D3 01D9 0B1D
STCN    0917  090C 0913 0923
STCN1   0919  090B 0912 0920
STCN2   091F  091D
STCN3   0921  091E
SVE     051A  0507
SVEXT   0359  0352
SVINT   0332  014E 031C 0359
SVIN0   033E  034E 0357
SVIN1   0340  0348
SVIO    0364  0333 0344 0345 0358
SV0     035B  034C
SV1     035C  033E
SV2     035D  033C
SV3     035E  0353
SV4     035F  033B 0340 0349 034B 0356
SV5     0360  033F 0342 0346
SV6     0361  033D 0343 0354
SV7     0362  0338 034F
SW      0462  03E1 03F4 03F6 09F8 0A40 0A45 0C0C
SW0     02E1  02DA 0436 045A 04D4 0663 06F3 070C 0740 083F 08CA 095C 09A5 0ABD
              0BB1 0BDF 0ED5
SW1     02E2  02DC 0309 030C 0718
SYDR    050D  0509
SYDR1   050F  050C
TAAQ    0368  0311 0315
TADSW   036C  0326 0329 032D
TADWC   036D  032A
TAX1    030F  0314 031D 032F
TERM    02E3  0334 0419 0456 0536 062E
TERR    0371  0317
TMIC    0500  04F2 04FF
TMICA   04FD  04F4
TMICB   0505  04FC
TMRDT   07C0  07C4 0993 0995 0A6A 0A6C 0A72 0A74 0A7A 0C17 0CB7 0CB9 0CBB 0CD6
TMRD1   0790  07C3
TMRD4   07C4  098E 0A67 0CB6
TMRX2   07C7  079D
TMRX3   07C8  07C1
TMWRT   078D  07AF 07C5 0948 094D 0980 0985 0A10 0A19 0A1E 0A29 0A2B 0C15 0C49
              0C99 0C9B 0C9D 0CA4
TMWR0   07A5  0795 079F
TMWR1   079A
TMWR2   079B  07A3
TMWR3   07A1
TMWR4   07AA  07C6 0947 094C 097F 0A0F 0C68
TMWR6   07B1  07AE
```

```
        TMWR7   07B7
        TMWR8   07AF
        TMWR9   079F   078F 07C2
        TOTA    0E69   092D 09E1 0A70 0A78 0A7E 0A80 0A87 0A8E 0A90 0A96 0AC7 0ACC 0B23
                       0B2C 0B3C 0B42 0B57 0BF7
        TRK9    0B04   0AF6
        TURA1   06D9   021B
        TURA2   06D8   0297
        TWRX0   07BC   0797 07A1 0952 0963 099B 09AC 0A6E 0A76 0A7C 0CC8 0D3E
        TWRX1   07BD   0790
        TWRX2   07BE
        TWRX3   07BF   078E
        UNMK3   0302   02FD 03B8 048C 0654
        UNMK4   0304   02FE 03BA 048E 0656
        WAITA   0372   300A
        WAIT1   014B   3001
        WAIT2   03B7   3002
        WAIT3   047A   3003
        WAIT4   0626   3004
        WAIT5   07A7   3005
        WAIT6   07DE   3006
        WAIT9   0370   3009
        WC      03BE   03DB 03DC 03FA 040D
        WDCON   05E5   03EB 0402 05AE
        WORD    05D8   05AF 05B4 05B9 05C0
        WRDSW   065F   0628 0642 0648 064D
        WRITE   065A   063D
        XIOSN   063E   0641
        XIOWR   063D   064A
        END OF ASSEMBLY
```

TABLE OF CONTENTS

1. PURPOSE

THE MAGNETIC TAPE TIMING TEST (MTTIM) IS DESIGNED TO TEST WRITE AND READ DELAY, INTER-RECORD GAP, CREEP AND ERASE HEAD ON THE 2400 MAGNETIC TAPE UNIT SERIES FOR COMPLIANCE WITH THE PRODUCT SPECIFICATIONS.
THE PROGRAM IS ABLE TO TEST,

1. SYSTEMS WITH ONE OR TWO TAPE DRIVES.
2. DRIVES WITH 9 TRACK OR 7 TRACK READ-WRITE HEADS.
3. MODELS 1, 2, OR 3 WITH 2 OR 4 USEC STORAGE.

IF SYSTEM HAS TWO DRIVES, BOTH DRIVES MAY BE SEQUENTIALLY TESTED IN ONE CONTINUOUS RUN OF THE PROGRAM.

2. PREREQUISITES

THIS PROGRAM ASSUMES THAT THE 2400 MAGNETIC TAPE FUNCTION TEST RUNS AND NO TAPE CONTROL ERRORS EXIST. EQUIPMENT REQUIRED CONSISTS OF,

1. 1442 CARD READ/PUNCH OR 1054 PAPER TAPE READER.
2. 1053 OR 1816 TYPEWRITER, OR 1443 PRINTER.
   A. IF 1443 IS USED - A CARRIAGE TAPE WITH AT LEAST CHANNEL 1 PUNCHED SHOULD BE USED.
3. 1800 PROCESSOR CONTROLLER.
4. ONE OR TWO 2400 SERIES MAGNETIC TAPE DRIVES.
5. THIS PROGRAM REQUIRES THE RELOCATABLE DIAGNOSTIC LOADER.

3. USE PROCEDURE

3.1 PROGRAM LOADING

3.1.1 ON TAPE DRIVE(S) TO BE TESTED,

1. LOAD TAPE REEL.
2. DEPRESS LOAD-REWIND KEY.
3. DEPRESS START KEY. AFTER TAPE REWINDS TO LOAD POINT, DRIVE(S) SHOULD BECOME READY.

3.1.2 REFER TO RELOCATABLE DIAGNOSTIC LOADER DOCUMENTATION FOR LOADING PROCEDURE.

3.1.3 IF OPTIONS ARE DESIRED, GO TO 3.2.2.

IF NO OPTIONS ARE DESIRED, GO TO 3.2.1.

3.2 OPERATION

3.2.1 TYPICAL OPERATING PROCEDURE

IF NO OPTIONS ARE SET THE PROGRAM ASSUMES,

1. BOTH DRIVES ARE TO BE RUN.
2. OUTPUT DEVICE IS TO BE 1053/1816 TYPEWRITER.

TO EXECUTE PROGRAM DEPRESS THE START BUTTON.

3.2.2 OPERATING OPTIONS

IF OPTIONS ARE DESIRED, SET SWITCHES DESIRED FROM TABLES 1 AND 2 AND DEPRESS THE START BUTTON.

TABLE 1 GENERAL CONTROL

1. SWITCHES MAY BE SET PRIOR TO PROGRAM LOADING OR AT WAIT 1.
2. SWITCHES 0-1 MAY BE CHANGED ONLY BY A RESET-START OPERATION.
3. SWITCHES 5-15 MAY BE CHANGED ANYTIME.

```
*************************************************************************
*          DATA ENTRY SWITCHES          * DESCRIPTION                   *
* 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15                                 *
* . .       . . . . .      .     .  .  1..HALT BEFORE EACH ROUTINE       *
* . .       . . . . .      .     .  1.....HALT ON ERROR                  *
* . .       . . . . .      .     1........BYPASS ALL PRINTOUTS EXCEPT GRAPH*
* . .       . . . . .      1..............LOOP PROGRAM                   *
* . .       . . . . 1.....................USE 1443 AS OUTPUT DEVICE       *
* . .       . . . 1.......................LOOP RTN5 IN READ, AFTER INITIAL WRITE*
* . .       . . 1.........................BYPASS PRINTING RTN 5 GRAPH     *
* . .       . 1...........................REQUEST RTNS 1-4 TO PRINT TIME FOUND *
* . .       1.............................BYPASS ALL HEADING PRINTOUTS    *
* . 1.....................................DO NOT RUN DRIVE 1              *
* 1.....................................DO NOT RUN DRIVE 0              *
*                                                                       *
*  NOTE 1 - DELAY TIMES ALWAYS PRINT IF TIME IS OUTSIDE ALLOWABLE LIMITS.*
*  NOTE 2 - IF DRIVE 1 IS EDITED AS NOT AVAILABLE - SWITCH 1 IS NOT USED.*
*                                                                       *
*************************************************************************
```

TABLE 2 LOOP ROUTINE

1. THESE SWITCHES CAN BE CHANGED AT ANY TIME.
2. IF ZERO IS ENTERED, THE PROGRAM WILL NOT LOOP BUT WILL RUN ALL ROUTINES IN SEQUENCE.
3. IF IT IS DESIRED TO START ON A ROUTINE OTHER THAN ROUTINE 1, AND CONTINUE

THE TEST FROM THAT POINT,

A. SET STARTING ROUTINE PER TABLE 2.
B. START PROGRAM.
C. WHILE PROGRAM IS RUNNING SELECT ROUTINE ZERO.
D. PROGRAM WILL COMPLETE THE SELECTED ROUTINE AND THEN RUN THE REMAINING ROUTINES IN THEIR NORMAL SEQUENCE.

```
*****************************************************************************
* PROGRAM SWITCHES                    * DESCRIPTION                         *
*                                                                           *
*   5 6 7                                                                   *
*   X X X.............................ENTER A ROUTINE NUMBER FROM 0 TO 7.   *
*                                                                           *
*****************************************************************************
```

3.3 TERMINATING PROCEDURE

1. THE PROGRAM WILL TERMINATE WHEN ALL DRIVES WHICH ARE SELECTED HAVE BEEN TESTED.

2. THE PROGRAM WILL TERMINATE IF ERROR PRINTOUT E003 OCCURS. (SEE SEC. 4.3)

3.4 RESTART PROCEDURE

PRESS THE STOP, RESET AND START BUTTONS. THE PROGRAM SHOULD GO TO WAIT 1. IF THIS DOES NOT OCCUR, THE PROGRAM MUST BE RELOADED.

3.5 PROGRAM HALTS

PROGRAM WAITS ARE USED IN THIS PROGRAM, AND ARE IDENTIFIED BY REFERENCING THE B REG AND I REG.

A PROGRAM WAIT IS OF THE FORM,

30XX, (B REG).

A DESCRIPTION OF THE INDIVIDUAL PROGRAM WAITS CAN BE FOUND AT THE BEGINNING OF THE PROGRAM LISTING. A TYPICAL WAIT DESCRIPTION FOLLOWS. IT IS INCLUDED TO SHOW THE FORMAT OF THE LISTING, AND IT IS NOT NECESSARILY A DESCRIPTION OF AN ACTUAL WAIT.

```
*****************************************************************************
3001 0  014C            DC      WAIT1+1     WAIT FOR DATA ENTRY
                     *                      SWITCHES TO BE SET.
                     *                      PUSH START TO
                     *                      CONTINUE THE PROGRAM.
*****************************************************************************
```

B REG, (FIRST 4 DIGIT GROUP) CORRESPONDS TO B REG READING.

I REG, (SECOND 4 DIGIT GROUP) CORRESPONDS TO I REG READING.

4. PRINTOUTS
PID AND MID AS SEEN IN DESCRIPTIONS BELOW WILL NOT BE FOUND IN PRINTED HEADI
INSTEAD, A DESCRIPTION OF THE MESSAGE WILL BE PRINTED.

4.1 COMMAND MESSAGES

```
PID  MID  RID  RAD  UNIT
                   NO.
B900 C000 XXXX XXXX 000X
          DRIVE 0 IS NOT READY

B900 C001 XXXX XXXX 000X
          DRIVE 1 IS NOT READY
```

4.2 INFORMATION PRINTOUTS

```
PID  MID  RID  RAD  UNIT
                   NO.
B900 A000 0008 XXXX 000X
          ALL ROUTINES ARE COMPLETE

B900 A001 0008 XXXX 000X
          PROGRAM IS COMPLETE.

                          MIN  TIME MAX
                          LIM  FND  LIM
B900 A002 XXXX XXXX 000X XXXX XXXX XXXX
          WRITE DELAY TIMING, PRINTED IF BIT  6 OF DATA ENTRY SWITCHES IS ON. (
          IF RID IS 0001-TIME FND IS FOR A WRITE WHEN AT LOAD POINT.
          IF RID IS 0003-TIME FND IS FOR A WRITE WHEN NOT AT LOAD POINT.

                          MIN  TIME MAX
                          LIM  FND  LIM
B900 A003 XXXX XXXX 000X XXXX XXXX XXXX
          READ DELAY TIMING, PRINTED IF BIT  6 OF DATA ENTRY SWITCHES IS ON. (M
          IF RID IS 0002-TIME FND IS FOR A READ WHEN AT LOAD POINT.
          IF RID IS 0004-TIME FND IS FOR A READ WHEN NOT AT LOAD POINT.

                          IO
                          MSEC VAR   MIN
                          AVG  AVG   AVG
B900 A004 0005 XXXX 000X XXXX XXXX XXXX
          INTERRECORD GAP AVERAGES FOUND BY ROUTINE 5.  (INCHES)

                          MIN   AVG  MAX
                          CREEP CREEP CREEP
                          FND        FND
B900 A007 0006 XXXX 000X XXXX XXXX XXXX
          FORWARD CREEP FOUND.  (INCHES).
```

4.3 ERROR PRINTOUTS

```
PID  MID  RID  RAD  UNIT MIN   AVG   MAX
                   NO.  CREEP CREEP CREEP
                        FND        FND
B900 E001 0006 XXXX 000X XXXX XXXX XXXX
          CREEP WAS LESS THAN .05 (INCHES).

                          DSW
                          RECEIVED
B900 E003 XXXX XXXX 000X XXXX
          DSW WRONG AFTER BACKSPACE, PUSH START TO RESTART PROGRAM.

                          DSW
                          RECEIVED
```

```
B900 E004 XXXX XXXX 000X XXXX
          TEST ABORTED DUE TO DSW OR UNEXPECTED INTERRUPT.
          IF DSW IS-FFFF-INTERRUPT OCCURRED ON A LEVEL OR ILSW
          BIT OTHER THAN THAT EDITED FOR MAGNETIC TAPE.

                        MIN  TIME  MAX
                        LIM  FND   LIM
B900 E005 XXXX XXXX 000X XXXX XXXX XXXX
          WRITE DELAY TIMING ERROR.  (MSEC)
          IF RID IS 0001-ERROR IS FOR A WRITE WHEN AT LOAD POINT.
          IF RID IS 0003-ERROR IS FOR A WRITE WHEN NOT AT LOAD POINT.

                        MIN  TIME  MAX
                        LIM  FND   LIM
B900 E006 XXXX XXXX 000X XXXX XXXX XXXX
          READ DELAY TIMING ERROR.  (MSEC)
          IF RID IS 0002-ERROR IS FOR A READ WHEN AT LOAD POINT.
          IF RID IS 0004-ERROR IS FOR A READ WHEN NOT AT LOAD POINT.

                        MIN   AVG  MAX
                       CREEP CREEP CREEP
                        FND        FND
B900 E007 0006 XXXX 000X XXXX 0000 XXXX
          CREEP WAS ZERO.  (INCHES).
          NOTE   ANY NEGATIVE CREEP VALUE IS PRECEEDED BY A MINUS SIGN.

                        MIN   AVG  MAX
                       CREEP CREEP CREEP
                        FND        FND
B900 E008 0006 XXXX 000X XXXX XXXX XXXX
          CREEP WAS NEGATIVE.  (INCHES)
          NOTE   EACH NEGATIVE CREEP VALUE IS PRECEEDED BY A MINUS SIGN.
```

NOTE

PROGRAM ID, ROUTINE NUMBER, ROUTINE ADDRESS, MESSAGE ID, UNIT NUMBER AND DSW ARE ALWAYS PRINTED IN HEXADECIMAL. ALL OTHER WORDS OF ANY MESSAGE ARE PRINTED IN DECIMAL. ON DECIMAL PRINTOUTS, ASSUME A DECIMAL POINT AS SHOWN BELOW.

WHERE PRINTOUT IS IN INCHES	XX.XX	
WHERE PRINTOUTS ARE IN TIME	MODEL 3	MODEL 1 AND 2
	XX.XX	XXX.X

IN ADDITION TO THE ABOVE PRINTOUTS, ROUTINE 5 PRINTS A PLOT OF RECORD GAP VS WRITE GO DOWN TIME.

5. COMMENTS

A. MTTIM CONSISTS OF A MAGNETIC TAPE TIMING MONITOR ROUTINE, A SERIES OF COMMON MAGNETIC TAPE SUBROUTINES, AND A SERIES OF TESTS. SECTION 5.B GIVES A DESCRIPTION OF EACH OF THE COMMON SUBROUTINES AND THEIR CALLING SEQUENCES. SECTION 5.C GIVES A DESCRIPTION OF EACH OF THE TEST ROUTINES.

THERE IS ONE TABLE AROUND WHICH ALL ROUTINES ARE ORIENTED. THIS TABLE IS THE DEVICE STATUS TABLE, CALLED DST. INDEX REGISTER 1 ALWAYS CONTAINS THE NUMBER OF THE TAPE DRIVE BEING USED AND INDEX REGISTER 2, THE BASE ADDRESS OF THE DST TABLE. THE DST TABLE IS THE BASIC MEANS OF COMMUNICATION BETWEEN ROUTINES.

B. COMMON SUBROUTINES

EACH SUBROUTINE ASSUMES THAT INDEX REGISTER 1 CONTAINS THE UNIT IDENTIFICATION AND INDEX REGISTER 2 CONTAINS THE BASE ADDRESS OF THE DST TABLE.

```
CALL     NAME

BSI L    BSP
        USE- BACKSPACE ONE RECORD.

BSI L    DCC
DC       ADRS.  OF CALL STRING
        USE- BUILD THE PROPER IOCC WORDS FROM THE CALL STRING AND ISSUE THE XIO
             COMMAND.

BSI L    DELAY
DC       NUMBER OF LOOPS.
        USE- DELAY 25 USEC FOR EACH LOOP SPECIFIED.

BSI L    DIND
DC       ADRS.  OF AREA CODE
DC       ADRS.  OF MODIFIER
        USE- BUILD THE PROPER IOCC WORDS AND SENSE THE DEVICE.

BSI   L  DSWO
        USE- CALLS ON SUBROUTINE DIND AND RETURNS WITH THE DSW STORED IN THE
             DSW TABLE AND IN THE A REGISTER.

BSI   L  HALT
        USE- MASKS ALL INTERRUPT LEVELS AND WAITS FOR OPERATOR ACTION.

BSI   L  INTRT
DC       RETURN ADDRESS
        USE- SAVES FOR USE AFTER THE NEXT INTERRUPT THE RETURN ADDRESS
             SPECIFIED IN THE CONSTANT.

BSI   L  LOG
        USE- DETERMINE THE DESIRED OUTPUT DEVICE, CONVERT AND PRINT THE MESSAGE
             CODE SET UP BY SUBROUTINE MLG.

BSI   L  MLG
DC       ADRS. OF LEFT HALF OF HEADING
DC       ADRS. OF RIGHT HALF OF HEADING
DC       MESSAGE ID
DC       LINE AND FORMAT NUMBER.
        USE-1. SETS UP THE HEADING TO BE PRINTED AND CALLS ON PCCO.
            2. SETS UP THE MESSAGE TO BE PRINTED AND CALLS ON LOG.

BSI   L  PCCO
        USE- DETERMINES THE DESIRED OUTPUT DEVICE AND PRINTS A PRESET MESSAGE
             WITH NO CONVERSION.

BSI   L  RWD
```

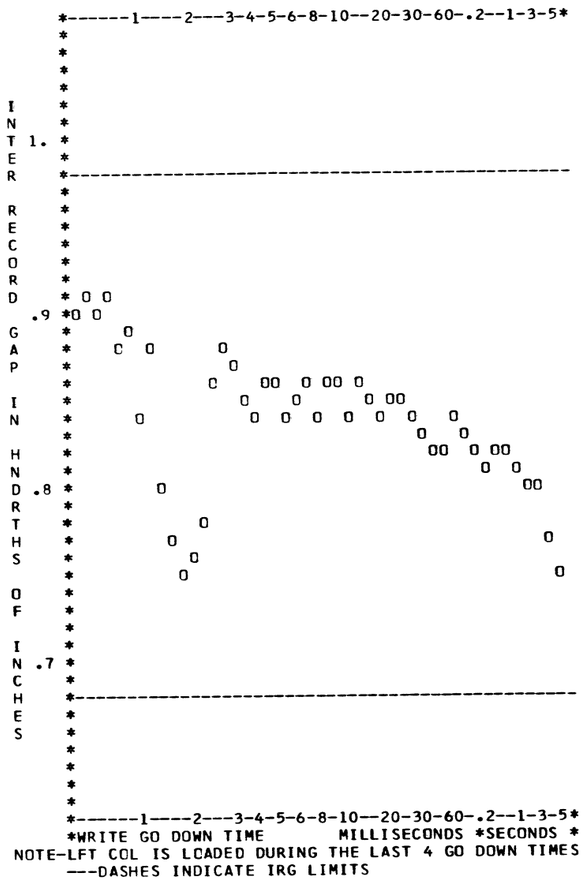
USE- REWINDS THE DRIVE SPECIFIED BY XR1.

BSI L TMRDT
USE- READS THE UNIT SPECIFIED BY XR1 AND TIMES THE LENGTH OF TIME TO A CHANGE IN THE WORD COUNTER.

BSI L TMWRT
USE- WRITES ON THE UNIT SPECIFIED BY XR1 AND TIMES THE LENGTH OF TIME UNTIL THE WORD COUNTER HAS CHANGED TWICE.

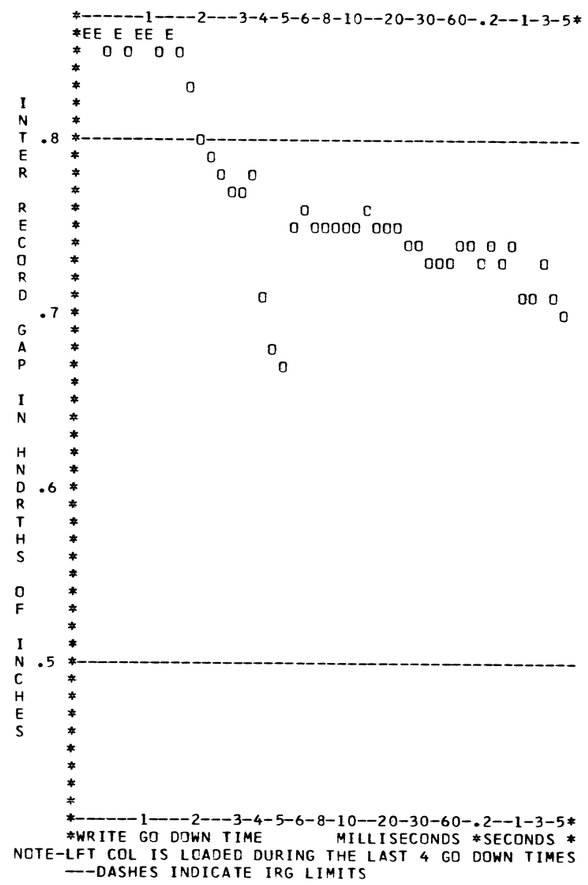
C. TEST ROUTINES

RTN. NO.	DESCRIPTION
1 THRU 4	THESE ROUTINES TIME READ AND WRITE DELAYS AND CHECK FOR TIME BEING WITHIN LIMITS. IF TIME IS OUTSIDE LIMITS AN ERROR PRINTOUT IS GIVEN. TIME WHICH IS WITHIN LIMITS IS PRINTED ONLY IF REQUESTED. (SEE TABLE 1)
1	WRITE DELAY AT LOAD POINT.
2	READ DELAY AT LOAD POINT.
3	WRITE DELAY NOT AT LOAD POINT.
4	READ DELAY NOT AT LOAD POINT.
5	INTERRECORD GAP TEST THIS ROUTINE WRITES A SERIES OF RECORDS WITH CONTROLLED GO LINE DOWN TIME BETWEEN RECORDS. THE SEQUENCE IS -- A. WRITE A RECORD B. DELAY 10 MILLISECONDS C. WRITE A RECORD D. LOAD THE LEFT COLUMN IF NEXT VARIABLE DELAY IS 2.0,3.0,4.0, OR 5.0 SECONDS. E. WRITE A RECORD F. DELAY A VARIABLE TIME (0.5MILLISECONDS TO 5 SECONDS) G. WRITE A RECORD H. WRITE A RECORD THE ABOVE SERIES IS REPEATED 47 TIMES WITH THE VARIABLE DELAY INCREASING EACH TIME. WHEN VARIABLE DELAY REACHES 5 SECONDS, THE SERIES IS RESTARTED FOR A TOTAL OF FIVE PASSES. THE TAPE IS THEN REWOUND AND ALL RECORDS READ AND ALL GAPS CHECKED FOR LENGTH. A GRAPH OF INTERRECORD GAP VERSUS VARIABLE GO LINE DOWN TIME IS THEN PRINTED. A SUMMARY IS ALSO PRINTED SHOWING AVERAGE GAP LENGTH WITH 10 MILLISECONDS DELAY, VARIABLE DELAY AND NO DELAY.
6	WRITE-BACKSPACE-WRITE CREEP TEST. THIS ROUTINE CHECKS FOR TAPE CREEP BY WRITING SEVERAL RECORDS, BACKSPACING OVER THE LAST RECORD WRITTEN AND REWRITING IT.THE LENGTH OF THE RESULTING GAP IS THEN CHECKED AND COMPARED TO THE ORIGINAL GAP.



NOTE-LFT COL IS LOADED DURING THE LAST 4 GO DOWN TIMES
---DASHES INDICATE IRG LIMITS

TYPICAL 7 TRACK GRAPH



```
     *------1----2---3-4-5-6-8-10--20-30-60-.2--1-3-5*
     *EE E EE E
     *  0 0  0 0
     *
     *          0
I    *
N    *
T .8 *-----------0------------------------------------
E    *            0
R    *             0  0
     *               00
R    *                     0     C
E    *                    0 00000 000
C    *                               00   00 0 0
O    *                                 000  C 0   0
R    *
D    *                 0                        00 0
  .7 *                                              0
G    *
A    *                  0
P    *                   0
     *
I    *
N    *
     *
H    *
N    *
D .6 *
R    *
T    *
H    *
S    *
     *
O    *
F    *
     *
I    *
N .5 *-----------------------------------------------
C    *
H    *
E    *
S    *
     *
     *
     *
     *
     *------1----2---3-4-5-6-8-10--20-30-60-.2--1-3-5*
     *WRITE GO DOWN TIME      MILLISECONDS *SECONDS *
NOTE-LFT COL IS LOADED DURING THE LAST 4 GO DOWN TIMES
     ---DASHES INDICATE IRG LIMITS
```

MISADJUSTED 9 TRACK DRIVE

NOTE-POINTS PLOTTED AS E ARE OUTSIDE
THE GRAPH LIMIT.

--- LAST PAGE --

0 0 0

6.1 EDIT PROCEDURE

THE FOLLOWING EDIT PROCEDURE IS FOR CARD INPUT. THE EDIT PROCEDURE FOR PAPER TAPE INPUT IS LOCATED IN THE PAPER TAPE EDIT UTILITY PROGRAM DOCUMENTATION. THE PROPER EDIT CARDS MUST BE THE LAST CARDS IN THIS PROGRAM DECK. THE FOLLOWING FORMS ARE PROVIDED TO AID IN MANUALLY PREPARING THESE EDIT CARDS OR UPDATING EXISTING EDIT CARDS. IF IT IS NECESSARY TO PREPARE OR MODIFY EDIT CARDS, FILL IN THE NECESSARY DATA IN THE FORMS PRIOR TO PUNCHING THE CARDS. CARD COLUMNS THAT ARE SHADED SHOULD BE LEFT BLANK.

THE LAST EDIT CARD IS THE "END EDIT CARD." THE INFORMATION IN THIS CARD INCLUDES:

1. AN "E" IN COLUMN 1.
2. THE PID FOR THIS PROGRAM (COL 2-3).
3. A TERMINATOR WORD OF "FFFF" (COL. 7-10).

CARD 0 MUST CONTAIN ALL SEVEN ENTRIES. REFERENCE THE COLUMN HEADING FOR THE NECESSARY ENTRIES.

COLUMN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	26	31	36	41	46	51	56	61	66	71
		PROGRAM ID					CARD SEQUENCE NUMBER					NUMBER OF EDIT ENTRIES					ILSW BIT FOR TAPES EXAMPLE: BIT 0 = 8000 BIT 1 = 4000 ETC.					INTERRUPT ADDRS. FOR TAPE (HEX) EXAMPLE: LEVEL 7 WOULD BE 0012		NUMBER OF TRACKS DRIVE 0 0000 = 9 TRACK 0001 = 7 TRACK		NO. OF TRACKS DR 1. 0000 = 9 TRACK 0001 = 7 TRACK FFFF = NO DRIVE 1 ON SYSTEM.		DRIVE 0 MODEL. 0000 = MODEL 3 0001 = MODEL 1 0002 = MODEL 2		DRIVE 1 MODEL. 0000 = MODEL 3 OR NO DRIVE 1 ON SYS. 0001 = MODEL 1 0002 = MODEL 2		CORE STORAGE SPEED 0000=2.00 MICRO SEC 8000=2.25 MICRO SEC 0001=4.00 MICRO SEC				
CARD 0	E	B	9	0	0		E	D	0	0		0	0	0	7																
END	E	B	9	0	0		F	F	F	F																					

DATE	28 FEB 66	01 JUL 66	04 NOV 66	15 MAY 67	01SEP67	01OCT67	14NOV69
EC NO.	415120	415178	415233	411731	411857	411875	431319

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